City of Santa Cruz

2025 Urban Water Management Plan

Prepared by:
City of Santa Cruz Water Department

June 2026

City of Santa Cruz Water Department

2025 Urban Water Management Plan

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ACRONYMS AND ABBREVIATIONS

Acronym	Term
ADU	Accessory Dwelling Unit
AMI	Advanced Metering Infrastructure
ASHCP	Anadromous Salmonid Habitat Conservation Plan
ASR	Aquifer storage and recovery
AWWA	American Water Works Association
CCF	Centum (hundred) cubic feet
CESA	California Endangered Species Act
cfs	cubic feet per second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Investment Program
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
EDD	Employment Development Department
F	Fahrenheit
FESA	Federal Endangered Species Act
FY	fiscal year
GIS	Geographic Information System
GPCD	gallons per capita per day
GPF	gallons per flush
GSP	Groundwater Sustainability Plan
GUI	Graphic User Interface
HCP	Habitat Conservation Plan
IRF	Infrastructure Reinvestment Fees
LAFCO	Local Agency Formation Commission of Santa Cruz County
LRDP	Long Range Development Plan
MG	million gallons
MGA	Santa Cruz Mid-County Groundwater Sustainability Agency
MGD	million gallons per day
MGY	million gallons per year
NCEI	National Centers for Environmental Information
NMFS	National Marine Fisheries Service
RHNA	Regional Housing Needs Allocation
SB	Senate Bill
SCMU	Santa Cruz Municipal Utilities
SCWSM	Santa Cruz Water System Model
SOWF	Securing Our Water Future
STVR	short-term vacation rental
UCAP	Utility Customer Assistance Program

Acronym	Term
UCSC	University of California, Santa Cruz
US	United States
USGS	United States Geological Survey
UV	Ultraviolet
UWMP	Urban Water Management Plan
WSAC	Water Supply Advisory Committee
WSAIP	Water Supply Augmentation Implementation Plan
WSAS	Water Supply Augmentation Strategy
WSCP	Water Shortage Contingency Plan
WSRA	Water Service Reliability Assessment
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

1 INTRODUCTION AND OVERVIEW

1.1 Urban Water Management Planning Act

This report has been prepared by the City of Santa Cruz Water Department in response to the Urban Water Management Planning Act. The Act, which became part of the California Water Code with the passage of Assembly Bill 797 in 1983, requires that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare and adopt an Urban Water Management Plan (UWMP), and update it every five years.

The Act requires water agencies to evaluate and describe their water resource supplies and projected needs over a 20-year planning horizon and to address a number of related subjects including water conservation, water service reliability, water recycling, opportunities for water transfers, and contingency plans for drought events. Optionally, water agencies can use a 25-year planning horizon (to ensure that 20-year projections are still available between UWMP update cycles). The City uses a 25-year planning horizon for its UWMP.

The purpose, required contents, and process for preparing and adopting UWMPs are specified in Water Code sections 10608 and 10610-10657. The overall goal is to provide water suppliers throughout the State a framework for carrying out their long-term planning responsibilities and for reporting their strategies to meet future water challenges to both state government and the communities they serve. These sections of the Water Code are included as Appendix A of the 2025 Urban Water Management Plan Guidebook (California Department of Water Resources [DWR], 2026).

1.2 Recent Changes to the Water Code

Over time, the Act has continued to be revised and expanded, driven by issues such as prolonged droughts, groundwater overdraft, regulatory modifications, and changing climatic conditions. There have been only minor changes to the Water Code since 2020, primarily the addition of several definitions. The UWMP requirements for 2025 are unchanged. A summary of the changes to the Water Code since 2020 is included as Appendix B of the 2020 Urban Water Management Plan Guidebook (DWR, 2026).

1.3 Report Format

For this 2025 submittal cycle, the City has elected to utilize the basic structure and organization used in the 2015 and 2020 UWMPs, which is in alignment with 2025 Urban Water Management Plan Guidebook (DWR, 2026). Required content is grouped by topic as follows:

Chapter 1 – Introduction and Overview: This chapter covers the background, purpose, and scope of an UWMP and includes the lay description.

Chapter 2 – Plan Preparation: This chapter covers the process used to develop the 2025 UWMP, including efforts in coordination and outreach.

Chapter 3 – System Description: This chapter describes the City's water area served including population, climate, and other factors affecting the City's water management planning, including governance and the City of Santa Cruz Water Department's organizational structure.

Chapter 4 – System Water Use: This chapter covers the past, current, and projected water uses within the City's water area served. It also provides information on distribution system water losses.

Chapter 5 – Conservation Target Compliance: This chapter provides information about the City's baseline per capita water use and urban water use targets and success in achieving its 2020 target.

Chapter 6 – System Supplies: This chapter describes and quantifies the current and projected sources of water available to the City, including surface water, groundwater, recycled water, transfers, and future water projects that support the City's Water Supply Augmentation Strategy including the Santa Cruz Water Rights Project, and the Santa Cruz Water Program. Climate change impacts to water supply and energy use are also addressed in this chapter.

Chapter 7 – Water Supply Reliability and Drought Risk Assessment: This chapter characterizes the reliability of the City water supply system over a 25-year planning horizon under differing hydrologic conditions including normal/average year, single dry year, and five consecutive dry year scenarios. The five-year Drought Risk Assessment is also included in this chapter. These analyses are conducted using both historic hydrology and a projected climate change hydrology.

Chapter 8 – Water Shortage Contingency Planning: This chapter comprises the City's Water Shortage Contingency Plan. It summarizes the City's plan for addressing water shortages and describes actions that would be undertaken in response to a catastrophic interruption of water supplies.

Chapter 9 – Demand Management Measures: This chapter describes the measures currently being implemented by the City to promote conservation and discusses the future water conservation activities.

Chapter 10 – Plan Adoption, Submittal, and Implementation: This chapter describes the steps taken to adopt and submit the UWMP and Water Shortage Contingency Plan and to make the plan available for public use and reference.

1.4 Urban Water Management Plans in Relation to Other Planning Efforts

UWMPs serve a variety of purposes and are intended to be consistent with and support other local, regional, and statewide plans and processes.

Information about water use and supplies reported by water agencies is collected and used by the State in updating the California Water Plan every five years. They provide a common basis for cooperative water resource management through preparation of Integrated Regional Water Management Programs, such as one now being implemented in Santa Cruz County, of which the City of Santa Cruz is an active project participant. They provide data on water sources and uses that supports planning efforts such as Groundwater Sustainability Plans and Local Hazard Mitigation Plans. Land use agencies rely on a water agency's UWMP as a long-range planning

document to aid in updating city and county General Plans and for the preparation of environmental documents under the California Environmental Quality Act. They also serve as a detailed source of information to coordinate local water supply availability and certain land use decisions made by cities and counties under Senate Bills 610 and 221 of 2001.

1.5 UWMPs and Funding Eligibility

For an urban water supplier to be eligible for any state water grants or loans administered by California Department of Water Resources, the agency must have a current UWMP on file that has been determined by California Department of Water Resources to address the requirements of the Water Code.

Urban water suppliers must also comply with the requirements of the Water Conservation Act of 2009 in order to be eligible for state water grants and loans, meaning an agency must both meet its water use target and report compliance in its 2025 UWMP.

1.6 2025 Urban Water Management Plan Lay Description

This 2025 UWMP is the City's eighth update since the first plan was prepared in 1986. Each update reflects current water supply conditions, long-term planning needs, and state requirements for water suppliers. The UWMP evaluates the City's water demands, available supplies, and strategies for maintaining water reliability in light of drought, climate change, and storage limitations.

1.6.1 System Water Use and Water Demand

For many decades, water use in Santa Cruz increased along with population and new water service accounts, except during two major drought periods in the late 1970s and the early 1990s. Around 2000, this pattern changed: demand began to flatten, accelerated by price changes, drought, economic downturn, and other factors. In 2015, after two years of drought and water rationing, annual water use fell to a level of about 2.5 billion gallons, similar to the use during the 1970s drought. In 2025, demand remains at a similar level, around 2.6 billion gallons. While demand did rebound to prior levels following droughts in the 1970s and 1980s, demand has not rebounded to pre-drought conditions following 2015, contrary to previous projections. Looking ahead, water demand is expected to grow slowly and reach approximately 2.9 billion gallons per year by 2045 and 2050.

1.6.2 Conservation Target Compliance

California's Water Conservation Act of 2009, also known as Senate Bill X7-7, required water suppliers to reduce per-person water use by 20 percent by 2020. Santa Cruz met and exceeded this requirement: the City's 2020 target was 110 gallons per person per day, but actual use was only 74 gallons per person per day. Santa Cruz met the state conservation standards and continues to maintain compliance.

1.6.3 Existing System Water Supply

Santa Cruz relies almost entirely on local water sources that depend on rainfall. Most supply comes from surface water, including North Coast streams (Liddell Spring, Laguna Creek, and

Majors Creek), the San Lorenzo River, and Loch Lomond Reservoir, with a smaller share provided by groundwater from the Beltz Well system. Over the past decade, surface water from the San Lorenzo River supplied about 60 percent of the total, North Coast sources about 20 percent, Loch Lomond about 15 percent, and groundwater about 5 percent.

The City does not currently operate its own recycled water system, but the Pasatiempo Golf Course, a customer of the Water Department, uses recycled water supplied by the City of Scotts Valley and treated onsite. This reduces demand for potable water from the Santa Cruz system.

1.6.4 Future Water Projects

Although Santa Cruz has a very low system-wide water demand, it still faces ongoing water supply reliability challenges. The amount of water available from the City's flowing water sources can change dramatically from year to year, resulting in inconsistent water supply. Climate change is expected to make the City's water supplies even more variable, and the City has limited storage capacity to weather multi-year droughts. The City is also committed to improving fish habitat by diverting less water from its flowing sources at certain times. To address these reliability issues, the City is advancing a set of water system projects designed to improve long-term reliability.

1.6.4.1 Policy and Planning Framework

In 2014-2015, the City worked with a community-led Water Supply Advisory Committee to develop a Water Supply Augmentation Strategy. This strategy identifies four main elements, which are being pursued together:

- Element 0: Demand Management – Expanding conservation programs to further reduce water use.
- Element 1: Transfers and Exchanges – Partnering with neighboring water districts (Soquel Creek Water District and/or the Scotts Valley Water District) to rest groundwater wells and replenish regional groundwater basins.
- Element 2: Aquifer Storage and Recovery – Actively storing surface water in groundwater basins for later use.
- Element 3: Recycled Water or Desalination – Developing a new potable supply if groundwater storage and transfers are not feasible or sufficient.

Since 2015, the City has carried out extensive technical studies to provide more details about potential projects including their costs, amount of water that could be produced, and time to implement. This planning work resulted in two key documents:

- Securing Our Water Future Policy (2022): Establishes principles such as public health, equity, affordability, public acceptance, and regional collaboration, and sets goals of adding 500 million gallons of supply by 2027 and closing the water supply gap by 2032.
- Water Supply Augmentation Implementation Plan (2025): Provides a detailed, phased roadmap for advancing aquifer storage and recovery, transfers, recycled water, and if needed, potable reuse or desalination. The plan identifies a preferred supply portfolio centered on aquifer storage and recovery and regional partnerships, along with adaptive decision points.

1.6.4.2 Projects

Since 2015, the City's water system has been undergoing significant modernization through its Capital Investment Program, referred to as the Santa Cruz Water Program. Key supply-related projects include:

- **Aquifer Storage and Recovery Program:** Aquifer storage and recovery allows the City to store treated surface water into the Mid-County Groundwater Basin during wetter periods and extract it during droughts. The program is being built out through the conversion of existing Beltz wells, improvement of the Beltz Water Treatment Plant, and development of new aquifer storage and recovery wells, with multiple sites already in pilot testing, design, or construction. Full implementation is expected by 2031 and would provide up to 3.7 million gallons per day (MGD) of extraction capacity.
- **Transfers with Scotts Valley Water District:** A new pipeline connection between the City and Scotts Valley Water District (Intertie 1), expected to be operational in 2026, will enable up to 1 MGD of water to move between the two systems. Santa Cruz would seasonally send surplus surface water to Scotts Valley, allowing them to rest their groundwater wells, and would receive groundwater back during dry periods. This "in lieu" or "passive" recharge approach would help improve conditions in the Santa Margarita Groundwater Basin and builds regional drought resilience. Full implementation is projected for 2030.
- **Transfers with Soquel Creek Water District:** Existing interties between the City and Soquel Creek Water District allow up to 1.4 MGD to move between the systems, with minor upgrades potentially needed to improve efficiency. Future transfers from Soquel Creek Water District could be facilitated by the Pure Water Soquel project, which is a key component for groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. During dry periods when surface water sources may be constrained, Soquel Creek Water District could pump groundwater and send it to the City. It is anticipated that transfers from Soquel Creek Water District could provide up to 1.4 MGD or more with infrastructure improvements. Full implementation of the Intertie is anticipated by 2030.
- **Graham Hill Water Treatment Plant Projects:** The City is launching a major modernization of the Graham Hill Water Treatment Plant beginning in 2027, replacing the existing conventional pretreatment process with a high-rate clarification process, adding a new ozone contact process and building, converting the existing filters to biological filtration, and constructing two new tanks to replace the existing wash water storage tank. Additional upgrades include chemical storage, operations and maintenance buildings, and improved stormwater and sewer systems. Once completed, the plant's capacity will increase to 18 MGD, enabling the City to fully utilize its surface water rights to meet supply reliability goals.
- **Tait Diversion and Coast Pump Station Improvements:** The City plans to upgrade the Tait Diversion to increase capacity from 12 cubic feet per second (cfs) to 28 cfs and to improve fish screening and overall operational flexibility. These improvements will allow the City to use its modified water rights more effectively and reduce reliance on the Felton Diversion inflatable dam. Construction is expected to begin in 2031 and last about two years. The project enhances both environmental protection and supply flexibility.

1.6.5 Water Service Reliability Analyses

The UWMP includes two statewide-required assessments:

- Drought Risk Assessment (DRA) – evaluates the next five years (2026–2030).
- Water Service Reliability Assessment (WSRA) – evaluates reliability through 2050 under normal, dry, and extended drought conditions.

Both the DRA and WSRA incorporated the City's planned water supply augmentation program. Although the planned water supply augmentation projects are not yet complete, the projects are advancing and are expected to be built. Therefore, the projects are included in the forecasts of future water supplies. In line with the 2015 recommendations of the Water Supply Advisory Committee, the 2022 Securing Our Water Future Policy, the City's 2025 Capital Investment Program, and the water supply alternatives recommended in the final Water Supply Augmentation Implementation Plan, the DRA and WSRA assume the following planned projects will be implemented.

- By 2026, the City will have completed construction of Intertie 1 and will be implementing transfers with the Scotts Valley Water District at up to 0.7 MGD.
- By 2027, the City will have completed conversion of the Beltz 12 well facility to permanent ASR operations.
- By 2028, the City will have completed conversion of the Beltz 8 well facility to permanent ASR operations and will be implementing transfers from the Soquel Creek Water District at up to 1.0 MGD.
- By 2029, the City will have completed conversion of the Beltz 9 well facility to permanent ASR operations.
- By 2030, the City will be implementing transfers with the Scotts Valley Water District at up to 1.0 MGD and transfers from the Soquel Creek Water District at up to 1.4 MGD.
- By 2035, the City will have completed conversion of the Beltz 10 well facility to permanent ASR operations, upgraded the Beltz Water Treatment Plant, and developed two new ASR wells in the Santa Cruz Mid-County Groundwater Basin. The City will also have completed the Facility Improvements Project at the Graham Hill Water Treatment Plant which will increase water treatment capacity to 18 MGD and improvements to the Tait Diversion and Coast Pump Station to increase its capacity to 18 MGD.

The City conducted both the DRA and the WSRA using a historic rain and streamflow pattern (hydrology) and a projected climate change hydrology.

The WSRA under historic hydrology found that water supply would meet projected demand under all conditions. The WSRA under the selected climate change condition found that water supply would meet projected demand under normal/average year and single-dry year conditions in all years through 2050. Under the selected climate change condition in the five-consecutive-year drought condition, in 2030 a small shortage (four percent) could occur in the fifth year of the drought sequence, but after 2035, implementation of planned projects would provide adequate supply to meet projected demand through 2050.

The short-term DRA and longer-term WSRA show that while the City remains vulnerable to extreme drought, particularly in the near term, the planned projects that the City is actively pursuing are expected to provide adequate supply to reliably meet projected demand through 2050. In the event that supplies fall short of demand resulting in a water shortage emergency, the Water Shortage Contingency Plan would be implemented.

1.6.6 Strategies for Managing Reliability Risks

The City of Santa Cruz faces ongoing challenges in providing enough water now and in the future, which is why continued work on water supply augmentation projects is essential. The main issue is that climate change is resulting in the amount and timing of available water varying greatly, especially during multi-year droughts and under expected climate change conditions. Other constraints include limited storage capacity, requirements to protect fish species and comply with water rights, and changing water quality.

This UWMP includes a Water Shortage Contingency Plan (WSCP), as required by the California Water Code. The plan explains how the City of Santa Cruz manages the water system during drought-related shortages and outlines the steps the City would take in a water shortage emergency. It also describes how the City assesses water supply and demand, enforces water use rules, and responds to major disruptions—such as a regional power outage, earthquake, or other emergencies.

The WSCP includes six standard water shortage levels and actions that would be taken to reduce demand at each level. Shortage stages in this WSCP are based on peak season demand and correspond to the six standard shortage levels defined in Water Code of up to ten, twenty, thirty, forty, fifty and greater than fifty percent shortage, as summarized in Table 1-1.

Table 1-1: Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	Water Shortage Warning. Stage 1 applies to relatively minor water shortage that requires up to a 10% level of demand reduction. The allocation system applies to all stages. At Stage 1, allocations are provided to customers, but excess use penalties are not yet implemented.
2	Up to 20%	Water Shortage Alarm. Stage 2 applies to moderate water shortages with a demand reduction requirement of up to 20%. This condition requires more vigorous public information and outreach. The primary demand reduction measure that will be implemented at this stage and all stages going forward is the use of excess use penalties for water use above customer allocations.
3	Up to 30%	Water Shortage Emergency. Stage 3 applies to a serious water shortage with a demand reduction requirement of up to 30%. This condition is a serious situation that will require significant reductions by each customer class. Allocations will be reduced to Stage 3 levels.
4	Up to 40%	Severe Water Shortage. Stage 4 applies to a serious water shortage with a demand reduction requirement of up to 40%. This condition is a serious situation that will require significant reductions by each customer class. Allocations will be reduced to Stage 4 levels. Under this scenario, virtually all available water must be reserved either for health and safety purposes or to sustain local business.
5	Up to 50%	Critical Water Shortage. Stage 5 represents an imminent and extraordinary crisis threatening health, safety, and security of the entire community. Under this dire situation, extreme measures are necessary to cut back water use by up to half the normal amount. Not enough water would exist even to meet the community's full health and safety needs, the top priority. All water should be reserved for human consumption, sanitation, and fire protection purposes and any remaining amount allocated to minimize economic harm. A shortage of this severity could be expected to generate stress and confusion, much the same as any major emergency and at some point, could transform into a full-blown natural disaster that can no longer be governed by local ordinance and may need to be managed by the basic principles and command structures of the state Standardized Emergency Management System. The City has experienced water shortages in the past but never one of such large proportion.
6	>50%	Catastrophic Water Shortage. For Stage 6, Santa Cruz takes the position that this level of shortage would most likely only occur due to a major disaster that caused significant damage to our water treatment and/or distribution infrastructure. In such a disaster, such as a large earthquake, the Santa Cruz response would not come from this WSCP, but rather from the Santa Cruz Water Department's Emergency Response Plan.

Water use in Santa Cruz is already very low, which helps conserve water but also means there is little room for further reductions. This "hardened demand" makes it harder to achieve large cutbacks during more severe shortages. Curtailments beyond Stage 2 are not feasible to implement without significant impacts to public health and safety and the Santa Cruz economy (as summarized in Appendix I), so the City is focusing on its Water Supply Augmentation Strategy to address future shortages by increasing supply. Under the WSCP, the City will primarily rely on water allocations to reduce demand at each shortage stage, supported by outreach, operational changes, mandatory restrictions, and other actions as needed.

1.6.7 Challenges Ahead

Conditions affecting water supply and demand will continue to change over time. While this UWMP describes the system as it exists in 2025 and forecasts needs based on the best available information, uncertainty remains. Continued implementation of the City's Water Supply Augmentation Strategy and planned investments are essential for protecting the community's water reliability in the future and preparing for future challenges.

2 PLAN PREPARATION

2.1 Basis for Preparing a Plan

In accordance with the California Water Code, every urban water supplier with 3,000 or more service connections or supplying more than 3,000 acre-feet of water per year is required to prepare an Urban Water Management Plan (UWMP) every five years. With 24,748 active service connections, the City of Santa Cruz clearly meets the definition of "Urban Water Supplier" and therefore must prepare a plan.

The Santa Cruz water system also qualifies under the California Health and Safety Code, section 116275, as a "Public Water System" that provides drinking water for human consumption and is regulated by the State Water Resources Control Board, Division of Drinking Water. The City operates a single, retail drinking water system. It receives no water from any wholesale supplier, nor does it supply either raw or treated water to another agency at the present time, except under limited transfers as described in Chapter 6 of this document.

Table 2-1: Public Water Systems (submittal table 2-1R)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (Million Gallons)
CA4410010	Santa Cruz Water Department	24,748	2,506

2.2 Regional Planning and Compliance

The City of Santa Cruz actively participates in several regional, interagency, groundwater and watershed basin management efforts. As indicated in Table 2-2, however, the City is choosing to prepare an individual UWMP.

Table 2-2: Plan Identification (submittal table 2-2)

Select One	Type of Plan	Name of Regional Alliance or RUWMP
☒	Individual Urban Water Management Plan (UWMP)	Not applicable
☐	Regional Urban Water Management Plan (RUWMP)	Not applicable

Similarly, for the purpose of determining, reporting, and assessing compliance with its urban water use baselines and targets as described in Chapter 5, the City of Santa Cruz is choosing to report as an individual supplier.

2.3 Reporting Year and Units of Measure

All information in this plan, except where otherwise noted, is reported on a calendar year basis, and volumes are expressed in units of million gallons (Table 2-3).

Table 2-3: Supplier Identification (submittal table 2-3)

DWR Submittal Table 2-3 Requested Information	Response
Type of Supplier	Supplier is a retailer
Fiscal or Calendar Year	UWMP Tables are in calendar years
Units of measure used in UWMP	Million Gallons (MG)

2.4 Coordination and Outreach

2.4.1 Wholesale and Regional Coordination

The City of Santa Cruz does not receive a water supply from any wholesaler; therefore, wholesaler reporting is not required. Accordingly, Submittal Table 2-4R, Water Supplier Information Exchange, is not included in this plan.

2.4.2 Coordination with Other Agencies and the Community

Water Department staff prepared the Draft UWMP in fall 2025 through summer of 2026 following guidance outlined in the state's Urban Water Management Plan Guidebook 2025 (California Department of Water Resources [DWR], 2026). Throughout development of this plan, staff communicated and coordinated with neighboring water agencies, city and county land use agencies within the area served, as well as the staff from the City's wastewater treatment facilities, City of Scotts Valley, and the Santa Cruz County Sanitation District in accordance with section 10620(d)(2) of the Act.

Written notice regarding the plan review and update was sent to both the City of Capitola and the County of Santa Cruz in October 2025, more than 60 days prior to the public hearing, as required by section 10621(b) of the Act (Appendix B). Notices were provided both to the City Manager/County Administrative Officer and the Community Development Director/Planning Assistant Director of these two jurisdictions.

In May 2026, the City conducted outreach to all major public water agencies, wastewater utilities, and land use agencies in Santa Cruz County. This effort included the following organizations:

- Association of Monterey Bay Area Governments
- Central Water District
- City of Capitola
- City of Scotts Valley
- City of Watsonville
- City of Watsonville, Water Division
- County of Santa Cruz
- Local Agency Formation Commission of Santa Cruz County
- Pajaro Valley Water Management Agency
- Regional Water Management Foundation
- Resource Conservation District of Santa Cruz County
- San Lorenzo Valley Water District
- Santa Cruz Mid-County Groundwater Sustainability Agency
- Santa Margarita Groundwater Sustainability Agency
- Scotts Valley Water District

- Soquel Creek Water District

Additional coordination focusing on projected population and demand was conducted through correspondence and meetings with the County of Santa Cruz, City of Capitola, and the University of California, Santa Cruz. Additional coordination regarding wastewater and recycled water was conducted with County of Santa Cruz and the Pasatiempo Golf Course. As a department of the City of Santa Cruz, the Water Department also coordinated with staff from the City's Planning and Community Development, Economic Development, and Public Works departments during the development of this UWMP.

All of these entities were notified of availability of the Draft UWMP when it was released in May 2026 and directed to an electronic copy of the draft plan on the department website.

The active involvement of the local community within the City's area served was also encouraged during the development of the UWMP. Plan development and various specific plan elements were presented at public Santa Cruz Water Commission meetings in 2025 and 2026 where the public was given the opportunity to provide input and comment. Water Commission meetings addressing topics covered in this UWMP included the following:

- October 6, 2025: 2025 Urban Water Management Plan Overview
- December 1, 2025: 2025 Update to the Long-Range Demand Forecast
- February 2, 2026: Climate Change Planning Scenario Review Process
- March 2, 2026: Drought Risk and Water Service Reliability Analyses
- April 6, 2026: 2025 Urban Water Management Plan and Water Shortage Contingency Plan

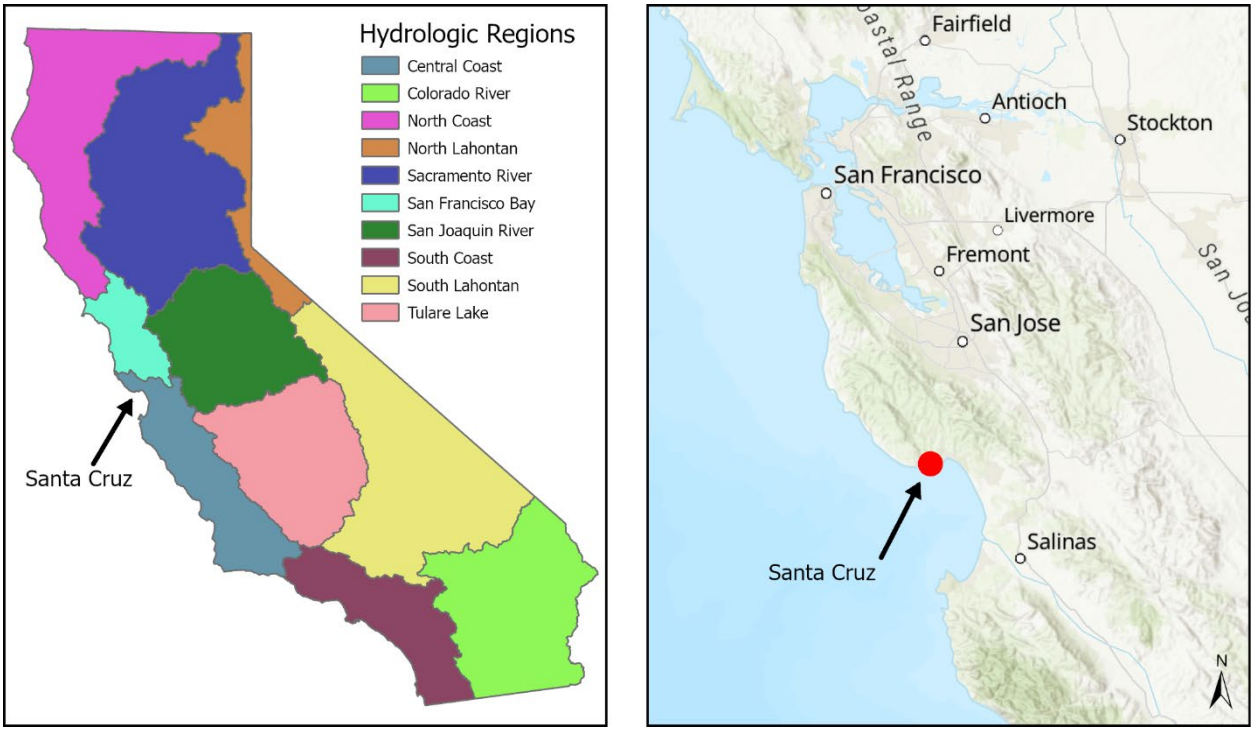
The process of plan adoption, submittal, and implementation, including associated public hearings, is described in Chapter 10.

3 SYSTEM DESCRIPTION

3.1 General Description of Area Served

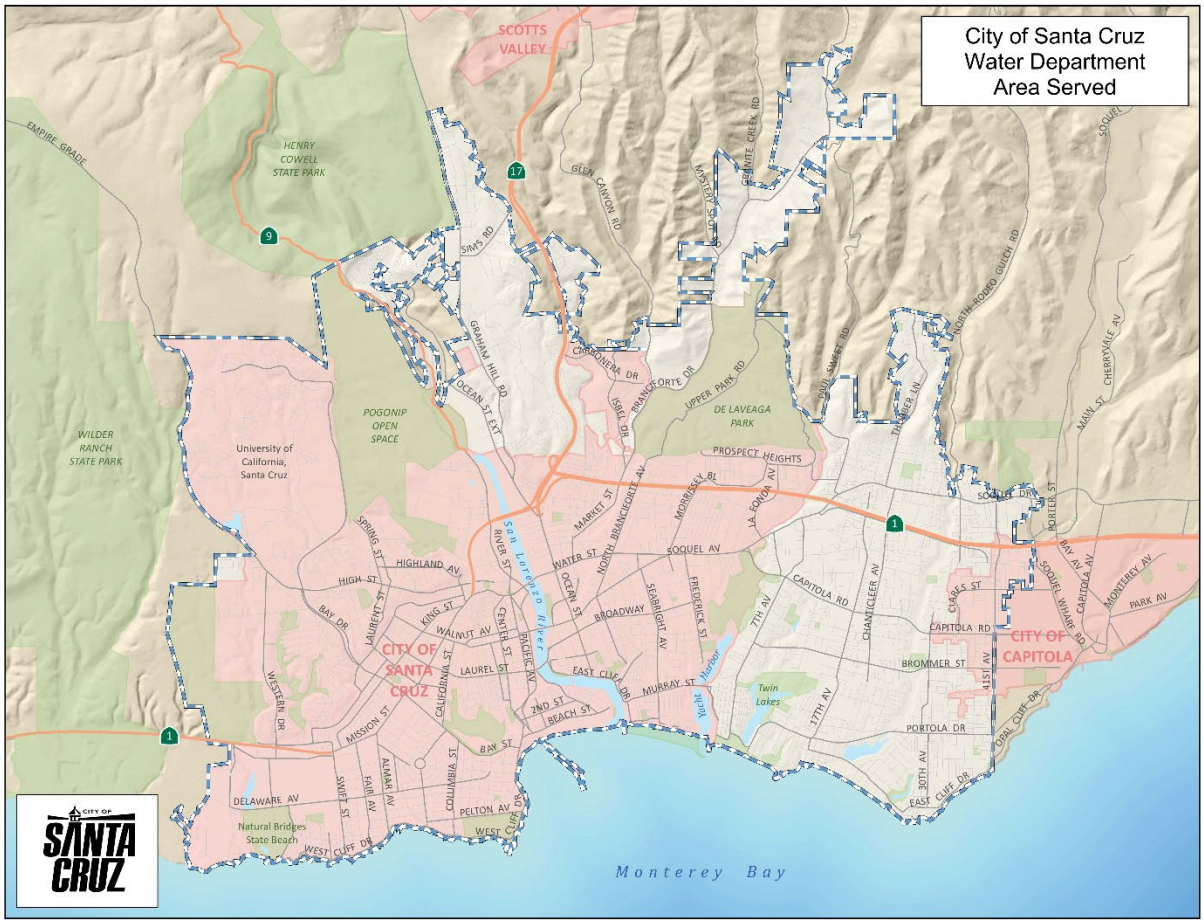
The City of Santa Cruz is located on the central coast of California along the northern shore of Monterey Bay. The City's position on the northern end of the state's Central Coast Hydrologic Region and vicinity relative to the San Francisco Bay Area are shown below in Figure 3-1.

Figure 3-1: California Hydrologic Region and Vicinity Maps



Water service is provided to an area approximately 20 square miles in size, including the entire City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the city. A generalized map of the area served, excluding the coastal agricultural lands north of the City, is provided in Figure 3-2. No significant changes to the City's area served have occurred in many years.

Figure 3-2: City of Santa Cruz Water Department Area Served



People are drawn to the Santa Cruz area for its recreational attractions, its small-town ambiance and sense of community, its pleasant weather, its natural beauty and scenic coastline, and its higher education facilities. The sandy beaches and nearby mountains attract millions of visitors to the region every year. The City is bounded by several state parks and open-space lands that provide facilities for bicycling, hiking, and other outdoor activities. The seashore and ocean waters of the Monterey Bay National Marine Sanctuary serve as a prime destination in the summer months for sunbathers, surfers, and tourists. Other visitor attractions include the Santa Cruz Beach Boardwalk, Municipal Pier, and Pacific Avenue Mall.

The University of California, Santa Cruz (UCSC) is situated atop the upper west side of the City overlooking downtown and Monterey Bay. During the 2025 academic year, enrollment was slightly higher than 19,000 undergraduate and graduate students (UCSC, 2025).

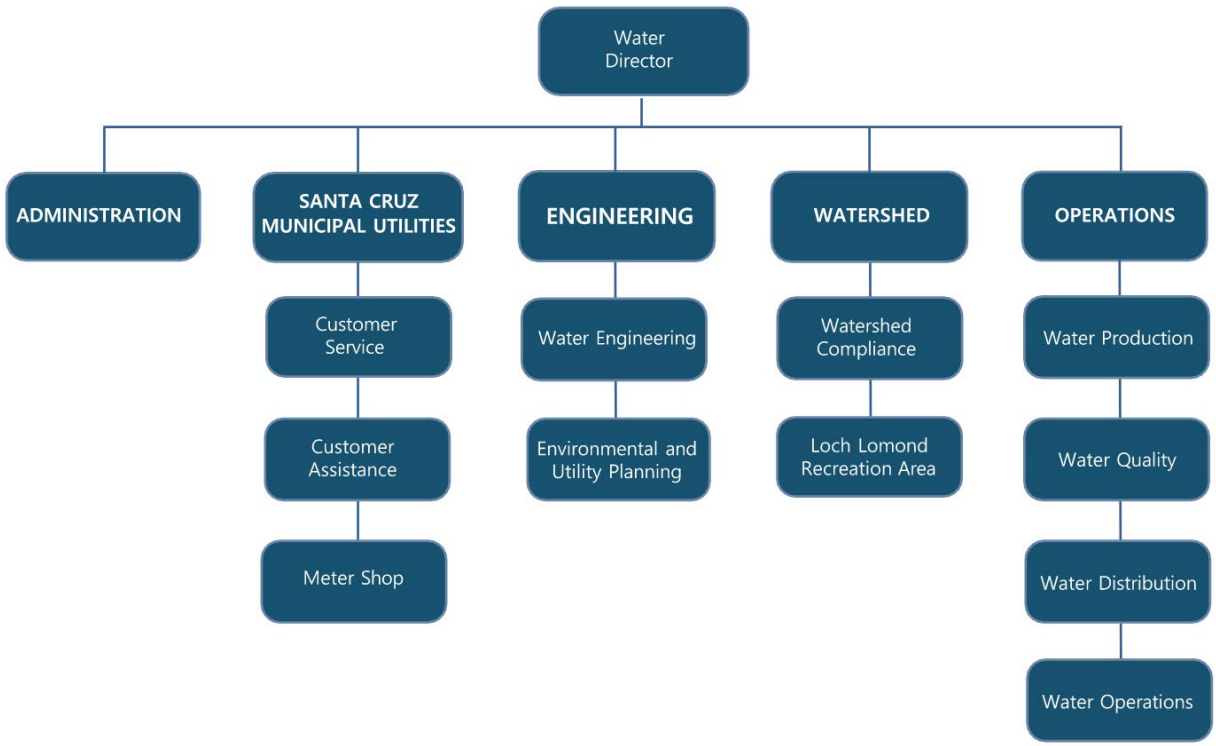
3.2 Water Department

The Santa Cruz Water Department (Water Department) is a municipal utility that is owned and operated by the City of Santa Cruz. It is led by a Director who is appointed by the City Manager. The governing body for the Water Department is the seven-member City Council. A seven-member Water Commission advises the Council on policy matters involving the operations and

management of the water system. The Commission is composed of six members who reside within the City limits and one member who resides in the City's water area served but outside City limits.

The Water Department is organized into sections. These include Administration, Santa Cruz Municipal Utilities (Customer Service, Customer Assistance, and Meter Operations), Engineering (Engineering and Environmental and Utility Planning), Watershed (Watershed Compliance and Loch Lomond Recreation Area), and Operations (Water Production, Water Quality, Water Distribution, and Water Operations). There is currently the equivalent of 129.25 full-time staff positions in the Water Department. An organization chart of the Water Department is shown in Figure 3-3.

Figure 3-3: Water Department Organization



The Water Department's mission statement is as follows:

> *"To ensure high-quality drinking water through responsible stewardship for the well-being of our community and the health of the environment."*

The Water Department's major water infrastructure facilities include three water treatment plants, including the Graham Hill Water Treatment Plant (which treats surface water supplies) and two groundwater treatment plants related to the Beltz well system; four raw water pump stations; ten treated water pump stations; 15 distribution tanks with a total maximum capacity of 21 million gallons of treated water storage; seven surface water diversions; seven production

wells;[1] and approximately 300 miles of treated and raw water pipelines interconnecting the entire system.

The Water Department operates financially as an enterprise in which all the costs of running the system are paid by water rates, service charges, and related revenues. The Water Fund receives no tax or general fund revenues. In addition to providing water service, the Water Department has responsibility for billing and customer service functions related to sewer, refuse, and recycling services inside the City limits.

Long-range goals and policies for guiding growth and development in the City, including civic and community facilities like the water system, are contained in the City's 2030 General Plan (City of Santa Cruz, 2019a). The General Plan includes a series of policy statements regarding water service that support and promote the General Plan's overarching goal of achieving a safe, reliable, and adequate water supply (Appendix C). Because these policies have not been updated since the development of the City's Securing Our Water Future policy (described in Chapter 6, Section 6.8), some of these policies require updating to reflect the City's current direction for water supply planning.

3.3 Climate of Area Served

Santa Cruz enjoys a pleasant Mediterranean climate that is characterized by warm, mostly dry summers and mild, wet winters. Due to its proximity to Monterey Bay, fog and low overcast are common during the night and morning hours, especially in the summer. Average monthly climate data for Santa Cruz are shown in Table 3-1 below.

Mean monthly temperatures range between 51 to 65 degrees Fahrenheit (F), with the warmest weather usually occurring during August and September (National Centers for Environmental Information [NCEI], 2021). Extreme temperatures are rare and short-lived, with weather conditions being moderated by the oceanic influence and presence of summer fog.

Rainfall in Santa Cruz averages 30.63 inches annually (NCEI, 2021) but varies considerably over the course of the year as shown in Table 3-1. The bulk of seasonal rainfall occurs between November and March. In the watershed above the City's Loch Lomond reservoir in the Santa Cruz Mountains, rainfall averaged approximately 45 inches per year between 1990 and 2020.

[1] The City operates four groundwater production wells within the Beltz well system and three production wells at the Tait Diversion that are assumed to be hydraulically connected to surface water and considered to be tied to the City's appropriative rights for surface diversion.

Table 3-1: Climate Data for Santa Cruz (Current 30-year Normal)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean High Temp (F)	62.5	63.9	66.5	69.3	71.4	74	74.3	75.8	76.7	73.9	66.7	61.5
Mean Low Temp (F)	41.4	42.7	44.1	45.7	49	51.6	54.3	54.6	52.9	49.5	44.4	40.9
Mean Temp (F)	51.9	53.3	55.3	57.5	60.2	62.8	64.3	65.2	64.8	61.7	55.6	51.2
Precipitation (in)	6.42	6.1	4.31	2.04	0.87	0.24	0.01	0.04	0.1	1.32	3.17	6.01
Evapotran-spiration (in)	1.6	2.2	3.6	4.5	5.2	5.5	5.3	4.8	3.9	3.0	1.8	1.4

Sources: Temperature and precipitation data: National Oceanic & Atmospheric Administration National Centers for Environmental Information (NCEI), 2021. Evapotranspiration data: DWR, 2025.

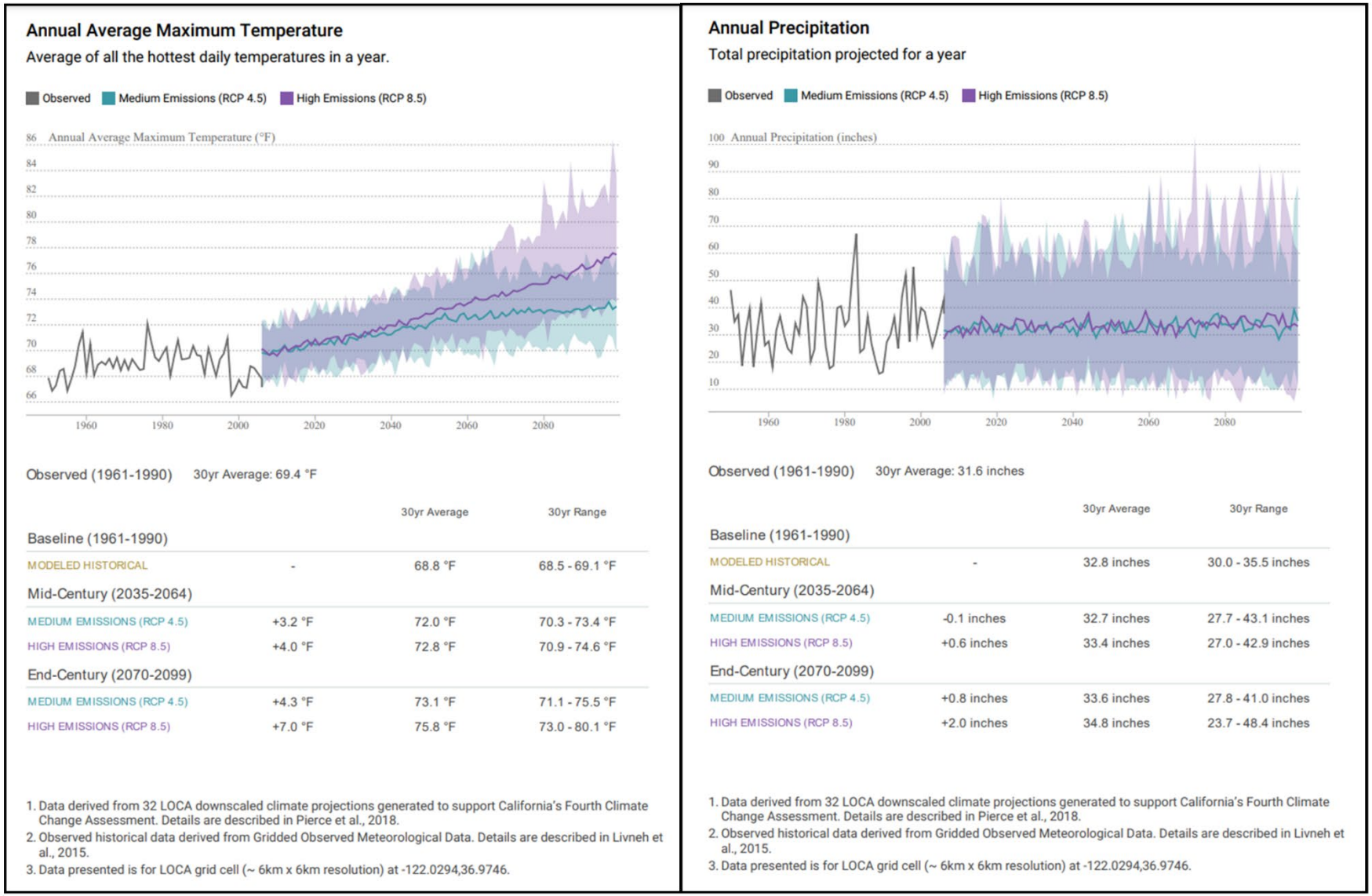
Reference evapotranspiration—a standard measurement of environmental parameters used for determining irrigation needs—averages 39.0 inches per year in Santa Cruz. Average monthly evapotranspiration varies seasonally from a low of 1.2 inches in December and January to a high of 5.1 inches in June (DWR, 2012).

Like other coastal communities, the marine influence on local air temperature, humidity, and cloud cover helps keep demand for water relativity low in the City's area served. The presence of summer fog moderates outdoor water use during peak summer season compared to inland locations within Santa Cruz County and elsewhere in California.

Future average temperatures in Santa Cruz are expected to increase because of climate change. Figure 3-4 below shows two projections of mean temperature to 2100 under different climate change scenarios from the Cal-Adapt Local Climate Change Snapshot (Cal-Adapt, 2018).[2] A temperature increase of between 4.3 and 7.0 degrees F compared to the historic average is predicted by the end of the century. Cal-Adapt models of future mean annual precipitation also show a slight increase over time. An increase in precipitation ranging from 0.8 inches to 2.0 inches compared to the historic average is predicted by the end of the century. Although Cal-Adapt shows an increase in the mean precipitation, climate change is expected to result in more variable weather patterns (e.g., fewer and more intense storm events). Greater variability can lead to longer and more severe droughts and floods, which presents water supply challenges statewide. Anticipated climate change impacts on the City's water supply are discussed in Chapter 6, Section 6.10.

[2] The Local Climate Change Snapshot tool was generated by Cal-Adapt to support California's Fourth Climate Change Assessment. For water supply planning purposes and analyses in the UWMP, the City uses a local hydrologic model that is perturbed based on projected climate change impacts, as described in Chapter 6, Section 6.10.

Figure 3-4: Projected Mean Temperature and Annual Precipitation for Santa Cruz



Source: Cal-Adapt, 2018.

The City's 2025–2030 City of Santa Cruz Local Hazard Mitigation Plan – Climate Adaptation Plan indicates changing temperatures and precipitation will impact ecosystems, fire risk, water quality and quantity, human, and environmental health (City of Santa Cruz, 2025). As a coastal community, the City of Santa Cruz recognizes the significance of climate change to the City's economic well-being, public health, and environment, and has begun taking steps as a local agency to respond. Impacts of ongoing climate change on water demand, water supply, and water system reliability are discussed further in Chapters 4, 6, and 7.

3.4 Population and Demographics of Area Served

The current population residing in the Santa Cruz water area served is estimated to be 94,992 people. Approximately two thirds of the total population, approximately 63,000, lives inside the City limits. Of those, approximately 9,800 reside on campus at UCSC within City limits. Approximately 32,000 people, or about one third of the area served population, live outside the City limits. Since the 2020 US Census, the area served population has decreased by approximately 1,400 people, with a net decrease inside the City limits and small net increase outside City limits.

Table 3-2 shows the current and projected population for the water area served through 2050, in five-year increments. The 2025 population estimate for within-City population is based on annual California Department of Finance data. Population served in Capitola and the unincorporated portion of the area served is based on 2020 census data, updated annually based on the number of new residential units and annual California Department of Finance data for average household size. [3] The population forecast was developed by M.Cubed as part of the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (Appendix D) and is based on California Department of Finance estimates for population within the City of Santa Cruz, as well as on development forecasts generated in coordination with local jurisdictions and on average household sizes reflective of current Census and California Department of Finance estimates. According to the forecast, the total number of people receiving water service is expected to grow by about 28,000 people and reach slightly more than 130,000 in 2050. This equates to a population growth rate of approximately one percent per year.

Table 3-2: Population - Current and Projected (submittal table 3-1R)

Year	2025	2030	2035	2040	2045	2050
Population Served	94,992	104,569	112,142	118,728	122,375	126,022

Notes: Population projections from the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast prepared by M.Cubed (M.Cubed, 2025) (Appendix D).

Demographic information is presented in Table 3-3. In addition to information for the City of Santa Cruz, information for the State of California is included for comparison.

[3] Note that prior to 2025, the Water Department's annual population estimates were based upon California Department of Finance data for within-City population, and population served in Capitola and Santa Cruz County was updated annually based on the number of new residential accounts, assuming an average of three persons per household. The method for estimating population was updated in 2025 to better account for current residential development patterns (specifically, the increase in new multi-family units).

Table 3-3: Demographics for City of Santa Cruz and California

Demographics (2023)	City of Santa Cruz	California
Median Age (years)	30.7	37.6
Racial Makeup – race alone or in combination with one or more other races (%)		
White	77.6	59.1
Black or African American	3.9	7.2
American Indian and Alaska Native	3.5	2.8
Asian	13.1	17.9
Native Hawaiian	0.5	0.9
Some other race	15.5	29.6
Hispanic or Latino of any race (%)	22.4	39.8
Mexican	17.0	32.3
Puerto Rican	0.7	0.6
Cuban	0.1	0.3
Other Hispanic or Latino	4.7	6.7
Educational Attainment (%)		
Bachelor's Degree or Higher	57.7	36.5
Primary Language Spoken at Home (%)		
English Only	73.4	55.9
Limited English-Speaking Households	2.0	8.3
Median Household Income ($)	111,427	96,334
Population below Federal Poverty Level (%)	17.6	12.0

Source: U.S. Census Bureau, 2024

3.5 Land Use and Housing

All three jurisdictions served by the Santa Cruz water system (Cities of Santa Cruz and Capitola and the County of Santa Cruz) have general plans, local coastal programs, zoning regulations, and development standards that determine the location, type, and density of growth allowed in the region. The General Plan serves as the principal policy and planning document guiding long-range land use decisions in cities and counties.

The cities of Santa Cruz and Capitola have both completed comprehensive updates to their General Plans within the last ten years. The City of Santa Cruz General Plan timeline extends to 2030 (City of Santa Cruz, 2019a), and the Capitola General Plan, updated in 2019, has a 20-to-30-year planning horizon (City of Capitola, 2019). The County's General Plan was most recently updated in 2024 as part of the County's Sustainability Policy and Regulatory Update (Sustainability Update) (County of Santa Cruz, 2024). The Sustainability Update also included updates to the County's Local Coastal Program and modernization of the County Code.

In addition to city and county General Plans, UCSC has Long Range Development Plans (LRDPs) for both its main campus (UCSC, 2021) and its marine science campus (UCSC, 2017) located on the southwestern edge of the City. These plans provide a comprehensive framework

to guide physical development, land use, and resource protection to meet UCSC's academic and institutional objectives. The main campus LRDP has a planning horizon through 2040. Both the main campus and marine science campus LRDPs were used to inform the development of projected population and demand estimates in this UWMP (Appendix D).

The size of the City water area served has remained relatively fixed over time due to a long-standing prohibition against new water connections along the North Coast, the acquisition of open space lands which created a greenbelt around the City, and the County's urban services boundary, all of which have served to inhibit urban sprawl. Accordingly, most growth and redevelopment going forward is expected to be concentrated within the confines of the existing area served boundary. Any proposed changes to the City's area served boundary that do come forward are subject to approval by both City Council and the Santa Cruz Local Agency Formation Commission (Santa Cruz LAFCO).

The City's land use patterns are the result of historic development, the establishment of the UCSC campus in 1964, and more recent land use policies established by the City. The Water Department serves all areas within the City. Land use within the City consists of a mix of residential, commercial, mixed use, office, industrial, public and institutional, park, open space, parking, and vacant land uses. Within the County of Santa Cruz, the areas served by the Water Department include a portion of the Live Oak Plan area, including all of the Pleasure Point Community Plan area. Land use in this area is predominantly residential with a mix of commercial, office, light industrial, open space, parks and public facilities. Within the City of Capitola, the Water Department serves a portion of the 41st Avenue West Capitola residential neighborhood and a portion of the 41st Avenue/Capitola Mall commercial district which includes the Capitola Mall (a region serving shopping plaza), an auto plaza, two hotels as well as a variety of other retail, office, and service establishments within the area served. Much of the development within the City's area served is relatively dense with small parcels, which contributes to lower water use.

Within the City of Santa Cruz, only a small amount of land remains undeveloped. The same is true in the parts of the County and City of Capitola served by the City. Because of the relative scarcity of undeveloped land, most future growth in the area is likely to be achieved through redevelopment, remodeling, increased density on underutilized land, and infill development in the urban core and along major transportation corridors, along with new construction on the limited amount of undeveloped land remaining. Within the City of Capitola, the Capitola Mall is a region serving shopping plaza planned for redevelopment currently including 1,777 new residential units proposed at conceptual level design.

Many of the major decisions made by local governing bodies about public improvements and private development are also subject to the review and oversight of, or may be appealed to, the California Coastal Commission. Accordingly, major changes within the City water area served have tended to occur slowly, and only after exhaustive public process. However, recent changes in State law (such as expansion of the Builder's Remedy, broader ability to create duplexes and lot splits, and California Environmental Quality Act streamlining for infill developments and rezoning), have resulted in a noticeable increased pace of development and redevelopment since 2020.

According to utility billing records, there are some 38,014 housing units within the City's water area served. The number of housing units, broken down by account type and jurisdiction is

shown in Table 3-4 below. Approximately 18,984, or a little over half of all households in the area served are classified as single-family accounts.[4] The other 19,030 homes are multiple family dwelling units consisting of various housing types including duplexes, condominium and townhouse complexes, apartments, mobile homes and alternative housing types such as live/work units, mixed use development, single room occupancy, and accessory dwelling units. A large proportion of the local housing stock (over 50 percent) is rented (U.S. Census Bureau, 2024). The figures below do not include dormitory rooms, apartments, and other housing units located on the UCSC main campus, nor does it include residential units associated with mixed use/commercial accounts.

Table 3-4: Housing Units within Area Served

Jurisdiction	Single-Family	Multi-Family	Total
City of Santa Cruz	12,136	11,041	23,177
County of Santa Cruz	6,705	7,862	14,567
City of Capitola	143	127	270
Total within Area Served	18,984	19,030	38,014

Notes: 2025 Annual Sales Report, EDEN Multi-Family consumptions-FY26 report January 7, 2026.

Each of the three jurisdictions served by the City has an adopted Housing Element that addresses its required regional fair share of the statewide housing needs established by the Association of Monterey Bay Area Governments. These documents set forth goals and objectives for housing construction, rehabilitation, and conservation for the period through 2031.

The housing elements include regional housing goals for the three jurisdictions served by the City. For this housing element cycle, the City is planning for an additional 3,950 units, with 1,421 (36 percent) of those being low-income units[5] (City of Santa Cruz, 2023). The County is planning for a total of 2,350 units to be built Countywide through 2031, with 1,000 (43 percent) being low-income units[6] (County of Santa Cruz, 2023). Capitola has a goal to construct 1,336 units by 2031 in its housing element; of these, 712 (53 percent) are targeted for low-income levels[7] (City of Capitola, 2024). Only a portion of the housing within the County and City of Capitola is expected to be within the Santa Cruz Water Department area served.

The 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (Appendix D), includes an updated housing estimate for 2025 and a forecast through 2050 broken down by forecasts for housing growth in the area served by inside-City and outside-City. Housing unit forecasts were compiled in coordination with planning staff from the City of Santa Cruz, County of Santa Cruz, and City of Capitola. This housing projection includes both market-rate and low-income housing; meaning that water use for planned low-income housing has been accounted for in the City's projected water demands.

[4] Water account categories are not the same as housing type. A single-family account has one dwelling unit per meter but may be any type of residence. A multi-family account has two or more dwelling units per meter.
[5] Total new construction units for very low- and low-income levels, as summarized in Table 2-1 of the 2023 Housing Element (City of Santa Cruz, 2023)
[6] Total new construction units for extremely low, very low-, and low-income levels, as summarized in Table 4.2-1 of the 2023 Housing Element (County of Santa Cruz, 2023)
[7] Total new construction units for extremely low, very low-, and low-income levels, as summarized in Table 5-2 of the 2023 Housing Element (Capitola, 2024)

In the last five years, new single-family accounts decreased by 111 and multifamily accounts have increased by 424 units. In 2025, total combined occupied and unoccupied housing units within the area served were estimated to be 40,305, and the total number of housing units is projected by 2050 to grow by 11,923 to 52,228. Some of the projected units are already permitted and under construction.

The housing projection accounts for forecasted units, as opposed to zoning availability. It is important to note that while each jurisdiction must demonstrate it has land zoned that can accommodate its fair share of the regional housing needs (its Regional Housing Needs Allocation or RHNA), it does not necessarily mean such housing will be constructed. Like other California coastal communities, housing supply in the area served remains limited and housing affordability is a major economic, political, and social issue for families, residents, and employers alike. The City now incentivizes smaller, more vertical, mixed-use or multifamily-type housing units along its major transportation corridors, and State law has streamlined approvals of housing and Accessory Dwelling Units (ADUs). These changes have increased the pace of housing development (primarily multifamily units and ADUs). The collective vision for increased housing in the community remains strong, although over the long term, the type and quantity of housing that is ultimately built will depend largely on market forces.

3.6 Employment and the Economy

Overall, UCSC is a key component of the region's economic fabric in terms of employment, spending, research, and business creation. It is the area's largest single employer. Other top employers include the County of Santa Cruz, City of Santa Cruz, Joby Aviation, Santa Cruz Nutritionals, and the Santa Cruz Beach Boardwalk. Tourism and lodging are additional major economic drivers in the community. Commercial development is centered in downtown Santa Cruz and along the major transportation corridors including River, Mission, Ocean and Water Streets, and Soquel Avenue in the City of Santa Cruz and around 41st Avenue in Capitola. The Harvey West area and west side of Santa Cruz support a diverse mix of light industry, retail, high tech, research, and consumer goods and service enterprises. Regional hospitals, medical and health care facilities and services are concentrated along Soquel Drive in unincorporated Santa Cruz County.

The State Employment Development Department estimates employment within the City's water area served in the fourth quarter of 2024 (the most recent quarter for which complete data was available) to be about 49,181. The three largest employment sectors are health care and social assistance, educational services, and accommodation and food services (Table 3-5). Employment has increased since 2020. In particular, the retail trade and accommodation and food services sectors rebounded after being impacted by the global COVID-19 pandemic and economic shut down in spring of 2020.

Table 3-5: Employment within the Area Served

Major Industry Sector[1]	Business Establishments	Employment
Agriculture, forestry, fishing & hunting	23	268
Mining	**	**
Utilities	**	**
Construction	313	2,421
Manufacturing	142	3,674
Wholesale trade	101	737
Retail trade	344	5,450
Transportation & warehousing	43	1,190
Information	59	426
Finance & insurance	87	736
Real estate & rental & leasing	179	546
Professional, scientific, & technical services	439	2,346
Management of companies and enterprises	13	238
Admin & support & waste management & remediation	146	1,449
Educational services	114	7,286
Health care & social assistance	1,357	10,083
Arts, entertainment, & recreation	79	2,033
Accommodation & food services	344	6,224
Other services	259	1,767
Non-classified	**	**
Government	17	2,286
Total	4,065	49,181

Notes: Data and geographic information system (GIS) analysis by Labor Market Division of the California Employment Development Department (EDD). www.labormarketinfo.edd.ca.gov. (EDD, 2025).
1. Industry sector based on North American Industry Classification System.
* No data
** Data are confidential and suppressed

4 SYSTEM WATER USE

This chapter describes the City's customer classification system, summarizes trends in water consumption, and presents projections of water use out to the year 2050. It also covers water for low-income housing units, future water savings, expected water savings from plumbing codes and standards, and information on distribution system losses.

4.1 Customer Classification System

The City divides its water customers into eight major classes and one miscellaneous category, as follows. In addition to designating accounts into various customer classes, the City also groups its customers into either "inside-City" or "outside-City" categories for billing purposes.

Single-Family Residential: Individually metered residential units (regardless of housing type).

Multiple-Family Residential: Any residential account with more than one dwelling unit served by one water meter.

Business: Commercial establishments including restaurants, hotel/motel, retail, medical, schools, offices, churches and mixed-use buildings. This category also includes county and state government accounts.

Industry/UCSC: This category is comprised of one primary customer – the University of California, Santa Cruz (UCSC) – and a small number of manufacturing businesses.

Municipal: These are City-owned and operated facilities such as city offices, parks, police and fire stations, a wastewater treatment plant, street medians, and parking lots.

Irrigation: Dedicated water services for landscape irrigation associated with large multiple-family residential complexes and homeowners' associations, or with commercial, industrial, and institutional sites, including schools, churches, parks, etc.

Golf Irrigation: Accounts serving the two golf courses in the City's area served.

Coast Irrigation: Agricultural accounts receiving non-potable water on the North Coast.

Other: Miscellaneous uses such as temporary construction accounts, hydrant meters, and bulk water sales.

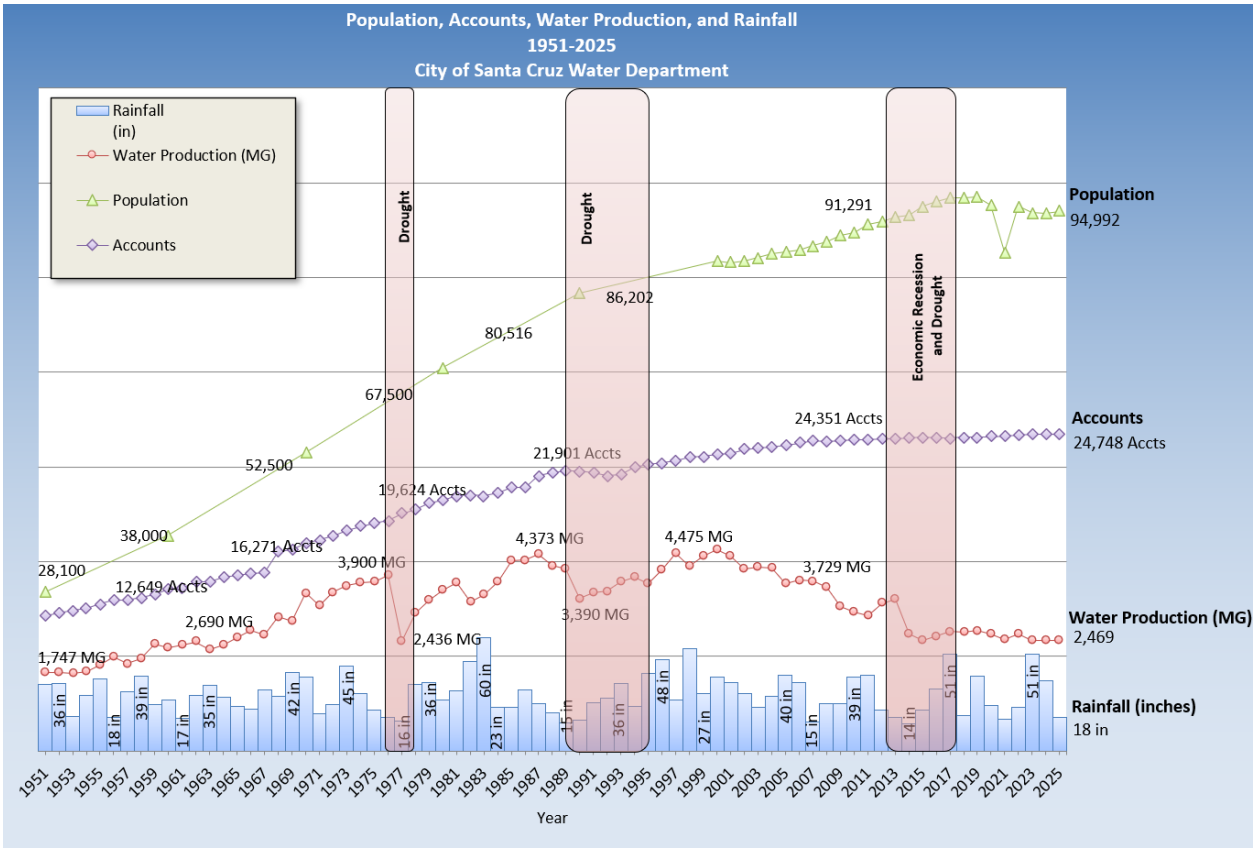
While not customer classes, water transfers to other agencies and water consumed during testing of aquifer storage and recovery (ASR) facilities are accounted for in consumption data. As part of the City's implementation of the Water Supply Augmentation Strategy (see Section 6.8), beginning in 2018, the City began piloting water transfers to the Soquel Creek Water District under the "Cooperative Water Transfer Pilot Project for Groundwater Recharge and Water Resource Management", and since 2019, the City has been piloting and demonstrating ASR at existing groundwater wells in the Beltz well system.

Except for coast irrigation accounts that receive raw water, all water supplied is potable water. The City does not currently provide recycled water within its service territory; although, through an agreement with the City of Scotts Valley recycled water is supplied to the Pasatiempo Golf Course, which is within the City of Santa Cruz area served.

4.2 Historical Water Use

The overall trend in population, number of accounts and total annual water use going back to the 1950s is presented in Figure 4-1.

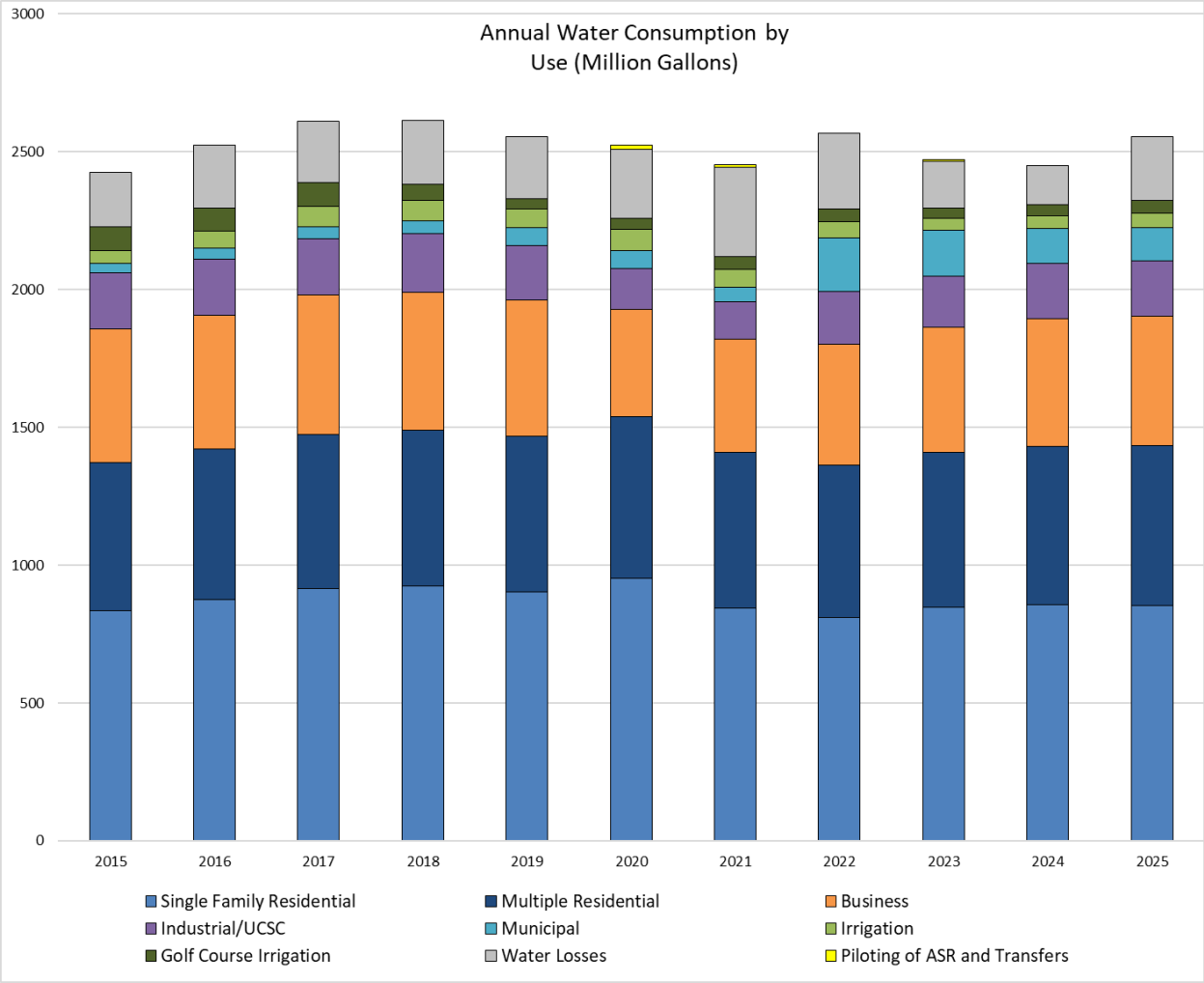
Figure 4-1: Historic Trends for City of Santa Cruz



Until the early 2000s, the general trend in system demand was one in which water use rose roughly in parallel with account and population growth over time, except during two major drought periods in the late 1970s and the early 1990s. Around 2000, this pattern changed and system demand began a long period of decline, accelerated by pricing changes, drought, economic downturn, and other factors including the influences of active conservation programs and updated plumbing codes.

In 2015, after two years of water rationing, annual water use fell to a level of about 2.5 billion gallons, similar to the level experienced during the major drought in the late1970s. While demand did rebound following droughts in the 1970s and 1980s, demand did not rebound to pre-drought conditions following 2014, contrary to earlier projections. In the ten years since 2015, demand has remained relatively flat. A breakdown of annual water consumption by the City's major customer classes since 2015, along with system water losses, is illustrated in Figure 4-2.

Figure 4-2: Annual Water Consumption by Use (million gallons)



Notes:
1. Municipal water use increased in 2022 due to decommissioning of the recycled water system within the City's wastewater treatment facility (WWTF) due to the construction of Soquel Creek Water District's Pure Water Soquel project. A portion of the Pure Water Soquel project is constructed on the WWTF property, which required the WWTF reclaimed water system to be relocated; due to these construction activities the reclaim process water was replaced temporarily with potable water. Municipal water use is expected to fall back to pre-2022 levels by 2027 upon completion of project work at the WWTF.
2. Validated water loss audit results for 2025 were not yet available as of preparation of this UWMP, thus the 2025 water loss value is a placeholder only, equal to the average water loss for the prior five years (2020-2024).

4.3 2025 Demands by Sector

Actual demands for potable and non-potable water in calendar year 2025 are reported by use type in Table 4-1 below.

Table 4-1: Total Uses for Potable and Non-Potable Water (submittal table 4-1R)

Use Type	Additional Description (as Needed)	Potable or Non-Potable[1]	2025 Actual Water Use Volume (MG)
Single-Family	Individually metered dwellings	Potable	854
Multi-Family	2 or more dwelling units	Potable	581
Commercial	Business	Potable	469
Industrial	Industrial other than UCSC	Potable	40
Industrial	UCSC - Main Campus	Potable	157
Industrial	UCSC - Coastal Campus	Potable	4
Institutional/Governmental	Municipal	Potable	119
Landscape	Dedicated irrigation accounts	Potable	53
Landscape	Golf irrigation - potable water	Potable	46
Distribution System Water Loss	Placeholder Value - Average of 2020-2024 Losses	Potable	232
Total			**2,555**

1. Recycled water demands are not reported in this table

Notes: System water losses for 2025 were not yet available as of preparation of this UWMP, thus the 2025 water loss value is a placeholder only, equal to the average water loss for the prior five years (2020-2024). Figures above do not include raw water sales of 3 MG in 2025 for coastal irrigation. No drinking water was otherwise used for groundwater recharge, saline water intrusion barrier, or wetlands or wildlife habitat.

In addition to the potable water demand listed below, the City also supplied 3 million gallons of raw water to coast irrigation accounts in 2025. Recycled water demand at Pasatiempo Golf Course is reported separately in Table 4-2 below.

Water loss data was not yet available for 2025 at the time this UWMP was being prepared. A placeholder value (the average water losses from 2020-2024) was included in Table 4-1 to provide a general sense of the volume of recent observed water losses. The City completed a system-wide replacement of its metering system in late 2025. This project replaced all meters older than three years and outfitted all meters with an Advanced Metering Infrastructure (AMI) radio. The AMI technology is described further in Section 9.2.2.

4.4 Water Demand Projections

The forecast of future water demand is a foundational component of any Urban Water Management Plan (UWMP). In 2014 and 2015, the City of Santa Cruz worked with M.Cubed to develop a long-term water demand forecast using econometric forecasting. This forecast was used for the first time in the 2015 UWMP, and was updated for subsequent UWMPs, most recently in 2025 for use in this 2025 UWMP. Appendix D includes a summary and results from M.Cubed's forecasting work.

Econometric demand forecasting develops statistically-based models of average water use per service by customer class. The demand forecast was developed based on these models and

incorporating empirical relationships between water use and key explanatory variables, including season, weather, water rates, household income, employment, conservation, and drought restrictions. Monthly models of water demand were then combined with service and housing growth forecasts to predict future water demands. The approach built on similar models of water demand developed for the California Urban Water Conservation Council, Bay Area Water Supply and Conservation Agency, California Water Service Company, and Contra Costa Water District (M.Cubed, 2015).

Water use was rationed by the City of Santa Cruz in 2014 and 2015 due to severe drought conditions. In the years following the end of rationing, water sales remained significantly below the long-term projections included in the 2015 UWMP. Following up on the 2015 work, M.Cubed prepared a comparative analysis for the calendar year 2018 to analyze the divergence between projected and actual sales. After normalizing for weather, the forecast was found to be approximately 19 percent greater than actual sales in 2018. Most of the forecast error was found to be attributable to changes to the City's water rate structure adopted in 2016, which increased the marginal cost of water service (M.Cubed, 2019). Weather was not found to be a significant explanatory factor, nor were differences in actual and projected sales to large customers (UCSC and the two golf courses). The long-term forecast for the 2020 UWMP was adjusted to reflect the higher marginal cost of water service, and to incorporate other updated information such as population and land use projections, average water user per service connection, and accounting for COVID-19 impacts on water use (M.Cubed, 2021).

Subsequently, M.Cubed updated its long-term forecast for this 2025 UWMP. This update included:

- Updated land use and housing projections based on coordination with the City of Santa Cruz Planning Department, City of Capitola, County of Santa Cruz, and UCSC,
- Updated area served population estimates,
- Updated baseline estimates of average water use per service connection by customer class based on customer-level billing data, and
- Adjusted baseline estimates of average water use to account for the effects of plumbing codes, on-going conservation, and marginal water service cost.

The resulting water demand projection predicated on average weather and normal (predicted) income and growth, by customer class, is presented in Table 4-2. For reference, the 2015 demand forecast projected stable demand of 3.4 billion gallon per year for 2020 through 2035, and the 2020 demand forecast projected demand of approximately 2.6 billion gallons per year in 2025 through 2040. As summarized below, current expectations for water system demands are for demand to increase steadily from about 2.5 billion gallons per year in 2030 to about 2.9 billion gallons per year in 2050.

Table 4-2: Total Uses for Potable, and Non-Potable Water – Projected (submittal table 4-2R)

Use Type	Additional Description (as needed)	Projected Water Use (MG)				
		2030	2035	2040	2045	2050
Single-Family	Individually metered dwellings	847	846	846	846	846
Multi-Family	2 or more dwelling units	663	730	792	856	919
Commercial	Business	451	437	436	442	447
Industrial	Industrial other than UCSC	38	39	40	41	42
Institutional/Governmental	Municipal	51	47	47	47	47
Landscape	Dedicated irrigation accounts	52	48	48	49	50
Landscape	Golf irrigation - potable water	40	36	35	35	35
Industrial	UCSC - Main Campus	199	245	292	292	292
Industrial	UCSC - Coastal Campus	15	21	26	26	26
Distribution System Water Loss		191	199	208	214	219
Agricultural	North Coast agriculture	12	12	12	12	12
Total		2,559	2,660	2,782	2,860	2,935
Total (Rounded)		2,600	2,700	2,800	2,900	2,900

Notes:
1. Projected water use is based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025). The totals in this table have been edited to round the projected use values to the nearest 100 MG. Values are rounded because the City's demand projections are modeled estimates of future use, and not exact values. Rounding helps communicate the uncertainty that is inherent in long-range demand projections by avoiding a false sense of precision.
2. This table includes 12 MG of projected raw water use for North Coast agriculture projected for 2030 through 2050, although this is not an urban use covered by the UWMP. Projected recycled water use is not reported in this table.
3. Water losses are projected at 7.5 percent of total water production (excluding coastal irrigation), as detailed in Appendix D. The City's SB 555 target for real water loss is 25.7 gallons per service connection per day (comprised of 18.4 gallons from real losses and 7.3 gallons from apparent losses). At the City's current number of service connections, this would equate to a standard of 229 MGY. As shown in Table 4-5, the City's water losses are currently meeting the target.

4.5 Estimating Future Water Savings

Current levels of customer demand and the long-term forecast indicate that the Santa Cruz community has already achieved levels of water conservation well beyond the levels anticipated in prior UWMPs and well beyond the levels forecasted by implementation of the City's 2017 Water Conservation Master Plan.

As described in Appendix D, the City of Santa Cruz Updated Long-Range Water Demand Forecast includes passive savings from plumbing code effects. In the forecast, the baseline average water use per service was developed based on observed water use in each customer category. Baseline average use was then adjusted over the forecast period for the effects of plumbing codes and changes in marginal water service costs. Indoor residential water use was adjusted for plumbing code effects, with a floor of 36 gallons per capita per day (GPCD) set. This floor is set because 36 GPCD is the average water use of highly efficient WaterSense retrofitted households, as measured by the 2016 Residential End Uses of Water Study (Water Research Foundation, 2016), and average indoor water use is not expected to fall below this

already highly efficient level.[8] Non-residential baseline water use per service, other than Industrial, was also adjusted for plumbing codes effects.

In this demand projection, water savings from the City of Santa Cruz water conservation activities were assumed to be subsumed within adjustments made to marginal water costs. This is because as marginal water cost increases, customers demand less water by forgoing consumption or improving efficiency. For example, households may install more efficient water using appliances or change their landscaping and irrigation practices. The estimates of price elasticity used in the demand forecast capture these dynamics.

Plumbing code effects in the demand projection were derived from estimates prepared by M.Cubed for the California Department of Water Resources (DWR) (M.Cubed, 2016b). Plumbing code and appliance efficiency standards considered include:

- Assembly Bill 715, enacted in 2007, requiring standards for toilets and urinals.
- Water use standards for residential and commercial clothes washers and dishwashers established by the U.S. Department of Energy.
- CalGreen Code requirements for new construction and renovation.
- Senate Bill (SB) 407, enacted in 2009, requiring compliance with plumbing fixture standards for all buildings in California by 2019. SB 407 also requires compliance or disclosure of non-compliant plumbing to a purchaser or transferee for single-family, multi-family, or commercial transactions.
- SB 837 passed in 2011, which reinforces the disclosure requirement under SB 407.

Table 4-3: Inclusion in Water Use Projections (submittal table 4-3R)

DWR Submittal Table 4-3R Requested Information	Response
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.	2025 UWMP Chapter 4, Section 4.5
Are Lower Income Residential Demands Included In Projections?	Yes

4.6 Water Use for Lower Income Households and Affordability

In its demand forecast, the City expects over 11,000 new housing units to be built in its area served by 2050. Chapter 3, Section 3.5 provides details about these housing units, including units that are planned for lower income categories. The water demand for these low-income units is captured in the City's overall demand forecast. Although demand for low-income units was not calculated as a separate category, the anticipated low-income units are factored into the City's demand forecast.

In 2020, the City of Santa Cruz completed an updated Water/Sewer Affordability Analysis to help support the City's water rate setting process. The analysis was conducted for each census block in the City's water area served and was focused on the affordability of essential water use for both single and multi-family residential customers. Key findings of the 2020 study included:

[8] According to a 2020 report prepared by the California State Water Resources Control Board, efficient indoor residential water use for homes equipped with efficient fixtures and appliances ranges from 24 to 39 gpcd at the household level and from 28 to 43 gpcd when averaged across the service areas of California urban retail water suppliers (State Water Resources Control Board, 2020).

- Essential water and sewer service in Santa Cruz remain affordable for most customers.
- Approximately 20 percent of households served by the City of Santa Cruz are located within census blocks with high affordability ratios indicating that water and sewer service costs may constitute a financial burden.
- Approximately 16 percent of households are located within census blocks where the financial burden of water and sewer service costs were scored high due to both high affordability ratios and high poverty prevalence. These customers are most likely to struggle with meeting basic living expenses, of which water and sewer service are a part.

The City is currently preparing an updated cost of service analysis and affordability analysis to support future rate adjustments.

Since April 2025, Santa Cruz Municipal Utilities (SCMU), which encompasses water, sewer, and refuse services, has offered the SCMU Single-Family Customer Assistance Program (UCAP) which is designed to support qualifying single-family residential account holders. Customers enrolled in the PG&E CARE program, or government assistance programs such as Cal Fresh, Medi-Cal, Medicaid, and others may qualify for the UCAP. Participants receive a monthly credit on their SCMU bill for up to 24 months; re-enrollment would then be considered based on available funds and continued eligibility. The monthly credit amount represents a 25 percent discount off an average monthly single-family SCMU bill, and credit amounts are re-assessed annually to keep pace with a 25 percent discount. Re-enrollment in UCAP may be possible if funding allows, customer still qualifies, and the customer is in good standing. UCAP participants can also receive waivers for late payment fees, and early leak notifications to help avoid increased water bills. SCMU plans to expand the UCAP to multi-family customers in 2026. An outreach flyer for the UCAP is included as Appendix E.

4.7 Distribution System Water Losses

The volume of total system water demand is composed primarily of metered water sales in addition to a range of authorized, metered and unmetered operational uses such as main flushing, water tank maintenance, firefighting, and sewer flushing, as well as losses due to underground leaks. The difference between the amount of water produced at the City's water treatment plants entering the distribution system and the amount of water consumed, including both metered and unmetered uses, is referred to as system water losses. System losses have two components: physical losses from leaking service lines and water mains, and apparent losses in which actual consumption is underreported due to sales meter inaccuracies and other factors.

The City has conducted audits of the distribution system annually since the late 1990's to account for unmetered water uses and to track how much water is lost to leakage over time. The City uses American Water Works Association (AWWA) water balance software to help quantify and track water losses associated with the water distribution system and identify areas for improved efficiency and cost recovery. Total water losses vary from year to year, averaging 232 million gallons per year from 2020 to 2024. Validated water loss audits are submitted to DWR on an annual basis; the status of the City's submittals is presented in Table 4-4.

Table 4-4: Water Loss Audit Reporting (submittal table 4-5R)

Public Water System ID #	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
CA4410010	2020	Yes
CA4410010	2021	Yes
CA4410010	2022	Yes
CA4410010	2023	Yes
CA4410010	2024	Yes

Notes: 2025 annual audit data is not yet available.

The State Water Resources Control Board has established water loss standards which suppliers will need to meet beginning in 2028. The City's progress toward meeting its 2028 water loss standard is presented in Table 4-5. More information on distribution system water losses is covered in Chapter 9.

Table 4-5: Progress Toward 2028 Water Loss Standard (submittal table 4-6R)

Real Water Loss	
State Water Board Standard	
2028 Real Water Loss Standard per Unit per Day	18.4
Units for Real Water Loss	Gallons per service connection per day
Most Recent AWWA Water Loss Audit	
Number of Connections	24,430
Volume of Total Real Loss (MG)	121.392
Real Water Loss per Unit per Day	13.6
Apparent Water Loss	
State Water Board Standard	
2028 Apparent Water Loss Standard per Unit per Day	7.3
Units for Apparent Water Loss	Gallons per service connection per day
Most Recent AWWA Water Loss Audit	
Number of Connections	24,430
Volume of Total Apparent Loss (MG)	21.55
Apparent Water Loss per Unit per Day	2.4

Notes: Values are from calendar year 2024, which is the most recent validated water loss audit.

4.8 Climate Change Impacts on Water Use

The City's analysis and exploration of potential climate change effects on water system supplies are described in Chapter 6, Section 6.10, and consideration of potential climate change effects on system reliability are further included in the analyses in Chapter 7.

Using parameters from the econometric demand models, weather effects on City water demand were investigated using historical data on sales and weather and expressed as the expected change in demand per one-degree F increase in average maximum daily air temperature over the entire year (M.Cubed, 2016a). The analysis showed, based on water use patterns, demand would increase from between 0.19 to 1.38 percent for one degree increase in average daily high temperature for every customer group except industrial. Results are summarized in Table 4-6.

Golf consumption is expected to have the largest increase in demand due to change in maximum daily temperature and multifamily consumption is the least responsive. Total system demand would be expected to increase by about 0.45 percent per one degree F increase in average daily high temperature. Therefore, in the higher scenario for projected temperature for the end of the century (2070-2099) shown in Figure 3-4, if average temperature in Santa Cruz were to rise by 7 degrees, water demand could be expected according to this analysis to increase by 3.2 percent.

Table 4-6: Expected Change in Demand per Change in Monthly Temperature

Customer Type	Expected Percent Change in Demand per 1 Degree Fahrenheit Change in Monthly Average Maximum Daily Air Temperature
Single-Family residential	0.62
Multi-Family residential	0.19
Business	0.29
Municipal	1.09
Irrigation	0.80
Golf	1.38
Industrial	0.00

Notes: M.Cubed, 2016a. UCSC is not listed since it was not modeled econometrically in the 2015 demand forecast.

5 SB X7-7 COMPLIANCE

This chapter provides a description and calculations for the City's baseline daily per capita water use and future water use targets, in accordance with technical methods developed by the California Department of Water Resources (DWR), as required by California Water Code section 10608.

> *California Water Code 10608.20: (e) An urban retail water supplier shall include in its urban water management plan . . . the baseline daily per capita water use, urban water use target, interim water use target, along with the bases for determining those estimates, including references to supporting data.*

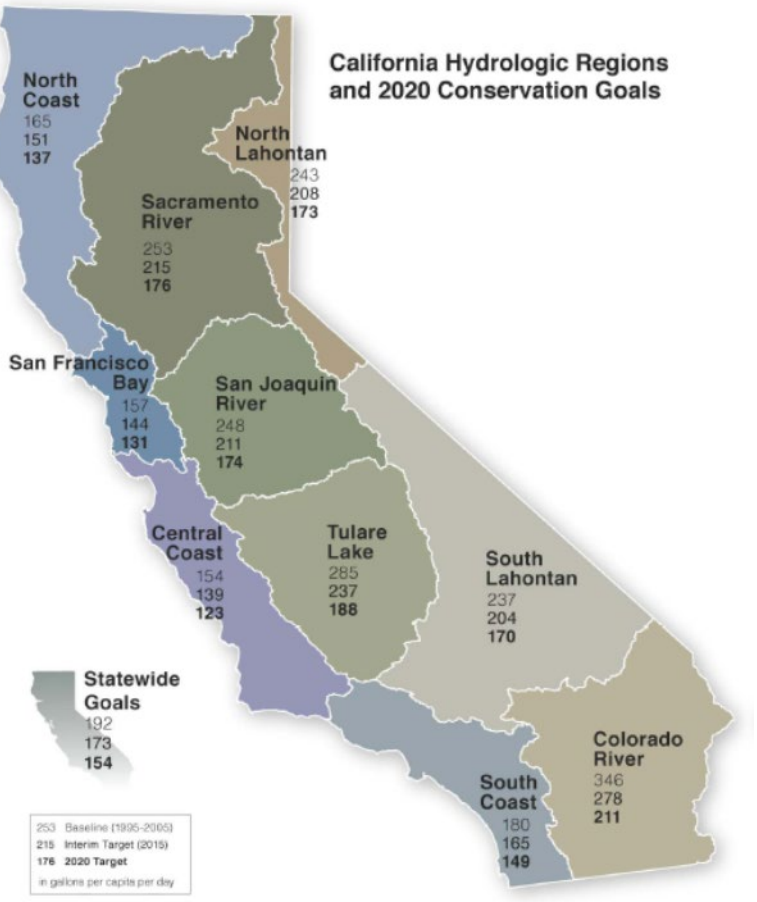
5.1 Background Information

In February 2008, the Governor introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. As part of this effort, the Governor directed state agencies to develop a plan to reduce statewide per capita water use by 20 percent by the year 2020.

The final 20x2020 Water Conservation Plan was issued February 2010 (DWR, 2010). It reported urban water use varied between 152 GPCD in the Central Coast region (Region 3) to 346 gallons per capita per day (GPCD)[9] in the Colorado River region (Region 10) and averaged 192 GPCD statewide. The report concluded that California could achieve a 20 percent reduction in urban per capita water use to an average of 154 GPCD using current and new conservation actions. It also established baseline values and future water use targets for each of the state's ten hydrologic regions, summarized in Figure 5-1.

[9] Gallons per capita per day or GPCD is the total number of gallons used by the region divided by the population.

Figure 5-1: Regional Urban Water Use Targets



With the enactment of the Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, the state was required to set a goal to reduce urban per capita water use by 20 percent by the year 2020. Each retail urban water supplier was required to determine its baseline water use during their baseline period and also determine its target water use for the years 2015 and 2020 to help the State achieve the 20 percent reduction.

To provide for consistent implementation of the law, suppliers are required to conform to Technical Methodologies prepared by DWR, which details the process that urban water suppliers are to follow and the options available for complying with the legislation (DWR, 2016). Water suppliers have some flexibility in setting and revising water use targets. For instance, a water supplier may set its water use target and comply individually, or as part of a regional alliance. The City of Santa Cruz elects to report as an individual retail supplier. In the 2020 UWMP, water agencies were required to demonstrate compliance with their established water use target for the year 2020. Retail water agencies were also required to separately complete and submit the standard tables in the SB X7-7 verification form (Appendix F).

5.2 SB X7-7 Compliance Summary

As shown in Table 5-1, the City's 2020 gross per capita water use target was 110 GPCD, as determined in accordance with DWR's technical methodologies. Accordingly, in 2020 the City achieved compliance with all requirements of SB X7-7, and the City continues to comply with the target currently.

Table 5-1: SB X7-7 Target Progress (submittal table 5-1R)

Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target?	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?
No	Individual Target	110	74	Yes

5.3 2020 Calculated Baseline and Target

The City calculated its 2020 target in compliance with the Water Conservation Act of 2009 using Method 3 of the four approved methods as described in DWR's Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009) (DWR, 2016). Refer to the 2015 UWMP for detailed information on this methodology.

5.4 2020 Population and Gross Water Use

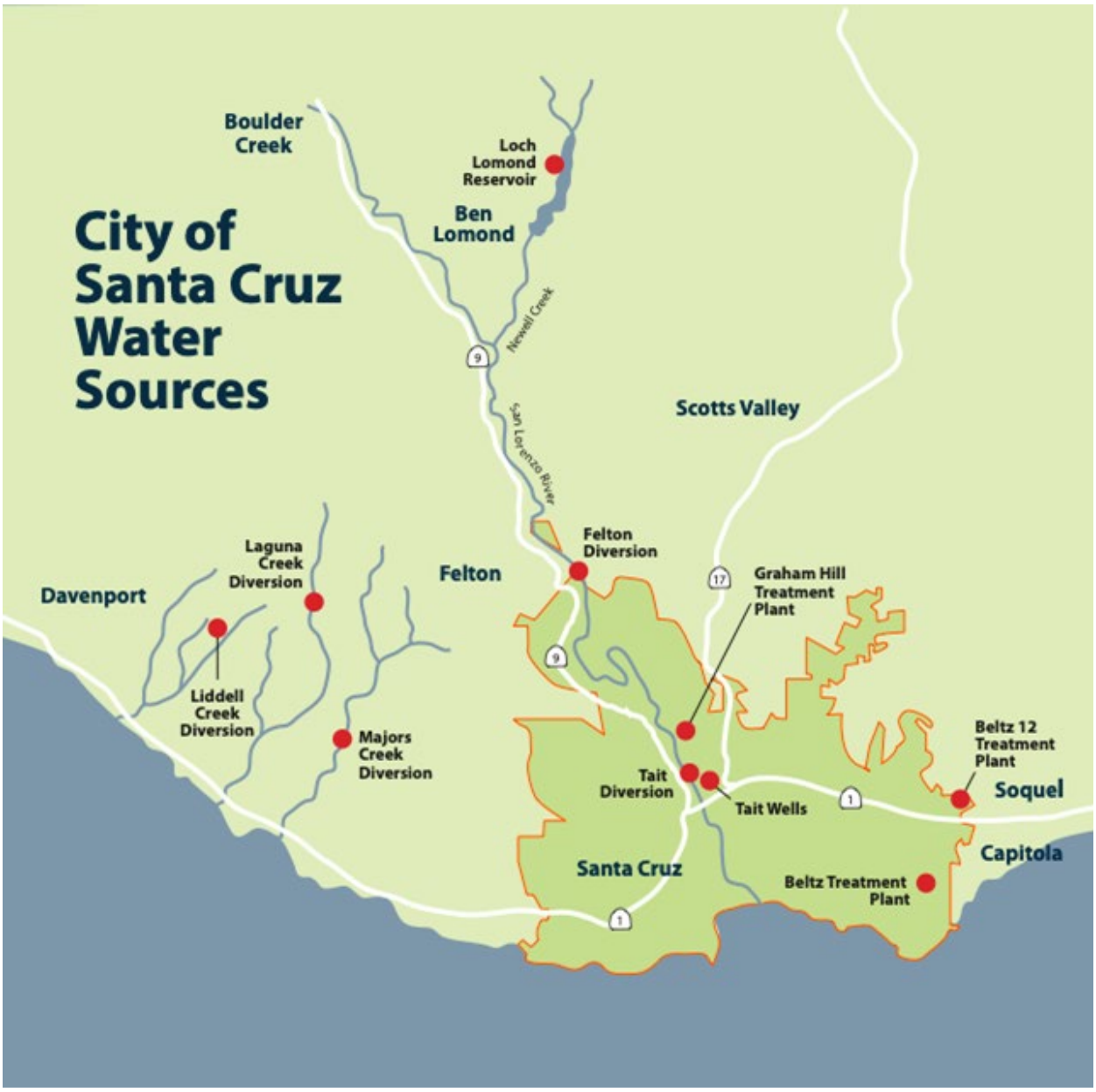
Consistent with requirements for demonstrating SB X7-7 compliance, the 2020 population estimate was developed by the City based upon California Department of Finance estimates for 2020 population within the incorporated City of Santa Cruz and a "persons-per-connection" method for the population outside City limits. The water area served outside Santa Cruz city limits includes portions of the City of Capitola and portions of unincorporated Santa Cruz County.

6 SYSTEM SUPPLIES

This chapter describes the City's water supply system, discusses plans to enhance the City's existing supply portfolio, and presents current and projected supply source production volumes.

The Santa Cruz water system relies predominantly on local surface water supplies, which include the North Coast sources (Liddell Spring and Laguna, Majors, and Reggiardo Creeks), the San Lorenzo River (Felton Diversion, Tait Diversion, and Tait Wells), and Loch Lomond Reservoir. Together, these surface water sources represent approximately 95 percent of the City's total annual water production. The balance of the City's supply comes from groundwater, all of which is extracted from four production wells in the Beltz Well system in the Santa Cruz Mid-County Groundwater Basin, Beltz wells 8, 9, 10 and 12, treated at two groundwater treatment plants, Beltz Treatment Plant and Beltz 12 Treatment Plant. These main production elements of the City's water supply system are illustrated below in Figure 6-1.

Figure 6-1: City of Santa Cruz Water Sources



Prior UWMPs identified that while water supply is adequate in normal and single dry years, the City may experience a lack of adequate supplies during near-term multiple consecutive dry years. To address this supply vulnerability, the City is implementing its Water Supply Augmentation Strategy (WSAS), including improving operational flexibility through revised water rights, developing aquifer storage and recovery (ASR) facilities, and engaging in transfers and/or exchanges with neighboring water districts, as described below. Chapter 7 summarizes the updated water supply reliability and drought risk assessment results for 2025, which indicate improved supply reliability with implementation of the planned projects.

6.1 Purchased or Imported Water

The City of Santa Cruz does not now, nor does it plan to, import water, either from outside the Central Coast Hydrologic Region, or outside the Santa Cruz County boundaries. All of its water supplies are obtained from local sources. The system relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in Santa Cruz County. No water is purchased from state or federal sources or imported to the region from outside the Santa Cruz area.

Water transfers with neighboring systems are described in Section 6.7.

6.2 Groundwater

Even though groundwater constitutes only about 5 percent of the entire City water supply on an annual basis, it is a crucial component of the water system for meeting peak season demands, for weathering periods of drought, and during emergencies or planned system outages.

The Beltz Well system consists of four production wells and two water treatment plants located in the eastern portion of the City water service area. The facilities were originally acquired by the City from the Beltz Water Company in 1964 and are still referred to as the “Beltz” wells. Wells 8 and 9 were installed in 1998 as replacement wells for Wells 1 and 2, which were damaged in the 1989 Loma Prieta earthquake. Well 7, which began operating in 1974, has been replaced by Well 10. The newest well, Beltz 12 and associated water treatment facility, were completed in 2015.

6.2.1 Basin Description

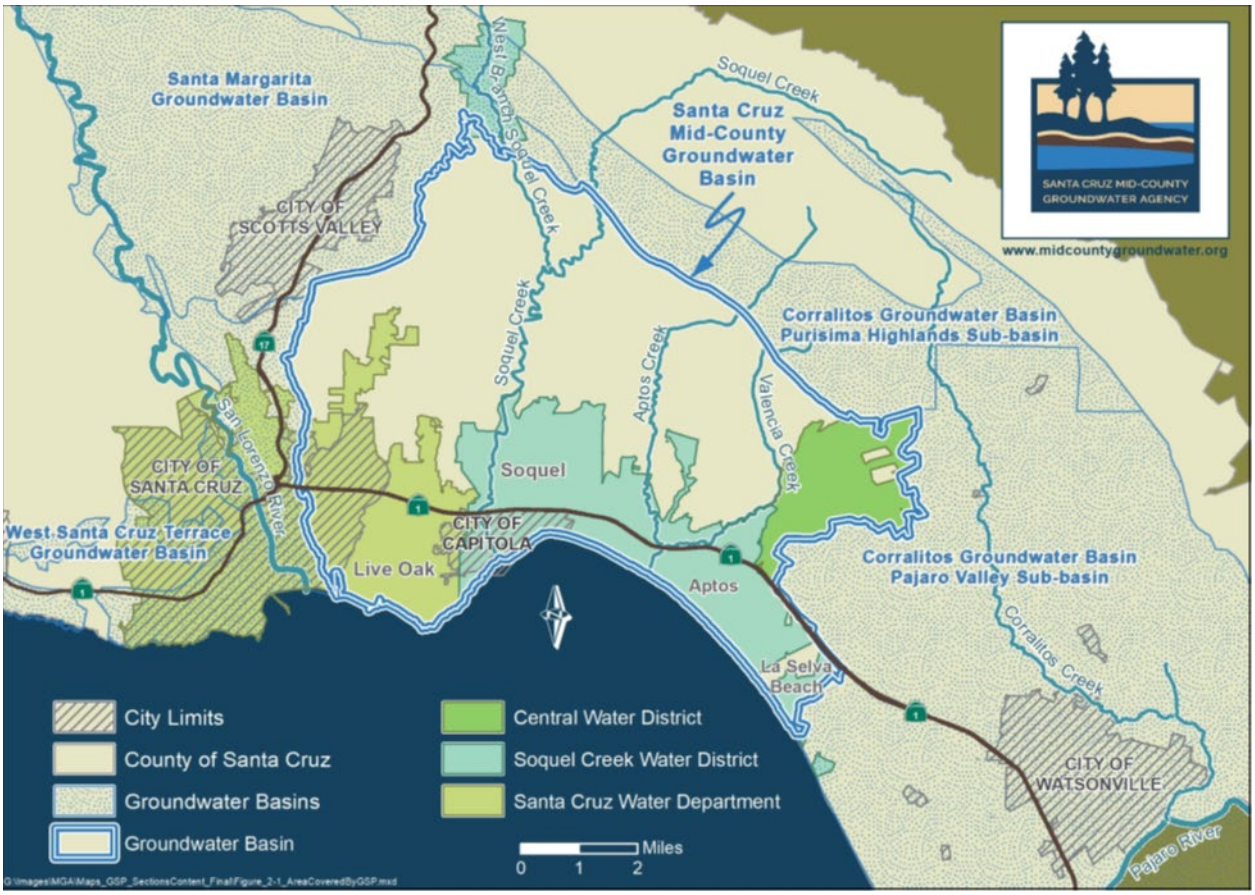
The geographical area from which the City pumps groundwater is identified as the Santa Cruz Mid-County Groundwater Basin, as defined by the California Department of Water Resources (DWR) as Basin Number 3-001 (Basin). The Basin is described in detail in the Santa Cruz Mid-County Groundwater Sustainability Plan (GSP), adopted by the Santa Cruz Mid-County Groundwater Sustainability Agency (MGA) on November 21, 2019. The adopted GSP was submitted to DWR for approval on January 30, 2020. DWR approved the GSP on June 3, 2021, as being found to satisfy the requirements of the Sustainable Groundwater Management Act (DWR, 2021). The Basin GSP is included as Appendix G and is posted online at the following link: https://sgma.water.ca.gov/portal/gsp/all. As required by DWR, a periodic evaluation of the GSP was completed in 2025 and indicated that no GSP amendments were necessary to achieve the sustainability goals (MGA, 2025b).

The Basin was consolidated from all or part of four previously existing basins: Soquel Valley (Basin Number 3-1), West Santa Cruz Terrace (Basin Number 3-26), Santa Cruz Purisima Formation (Basin Number 3-21), and Pajaro Valley Basins (Basin Number 3-2). The Purisima Formation and Aromas Red Sands are the two main geologic formations within the basin. The Basin is defined by both jurisdictional and geological boundaries and is intended to include all areas that constitute the shared groundwater resources in the stacked aquifer system of the Purisima Formation, as well as the Aromas Red Sands and some other units underlying the Purisima Formation.

The Basin lies within the Central Coast hydrologic region that covers 36,290 acres and stretches from the Santa Cruz Mountains to the Pacific Ocean and from Live Oak to La Selva

Beach along the coast of Monterey Bay. The Basin is comprised of a portion of the City of Santa Cruz, all of the City of Capitola, and portions of unincorporated Santa Cruz County. A map of the Basin is shown in Figure 6-2. The City's Beltz Well system is within the western portion of the Basin, shown in the green area labeled Live Oak.

Figure 6-2: Santa Cruz Mid-County Groundwater Basin



Source: Santa Cruz Mid-County Groundwater Sustainability Agency, 2019

The majority of land use in the Basin is residential and open space, with limited amounts of commercial and agricultural lands. Urban and suburban areas are concentrated along the coastal terraces with rural communities and lower population densities in the foothills and mountains.

Groundwater is the primary water supply for most residents within the Basin, except for the approximately 42,000 residents that are supplied by the City water system (MGA, 2019). As described above, customers of the City water system rely primarily on surface water, with a critical portion of water supply coming from groundwater supply from the Beltz Well system.

The entire production of the City's Beltz Well system is derived from the Purisima Formation, which is one of the two primary groundwater aquifers underlying the Basin. Groundwater from the Purisima Formation is used by the City, Soquel Creek Water District, Central Water District, several small water systems, and numerous private rural water wells.

The Purisima Formation is a collection of distinct geologic units composed of sandstone interbedded with layers of siltstone and claystone. These units, designated as AA through FF, vary in thickness and hydrogeological characteristics, with AA being the deepest and oldest unit. The formation is relatively shallow under the City's water service area, but dips southeast, becoming deeper and thicker towards Capitola and Aptos and outcrops at the cliffs along the Monterey Bay shoreline. The A zone is the primary unit of supply for both the City's Beltz Well system and the Soquel Creek Water District's Service Area 1 wells and is continuous and connected between the areas of groundwater extraction. Natural recharge is thought to occur from deep percolation of rainfall in the upper watersheds and along streambeds of Branciforte Creek, Arana Gulch, Rodeo Creek and Soquel Creek.

To better understand how the Purisima Formation responds to pumping stresses and to detect seawater intrusion, the City has installed and maintains a network of 37 monitoring wells at 15 sites, contributing to a network of 174 wells within the Basin that are monitored at least twice a year (MGA, 2019). Groundwater levels and water quality parameters, including chlorides, pH, total dissolved solids, general minerals, and other constituents are measured. Data collected from these monitoring wells are used to evaluate progress toward meeting groundwater sustainability objectives. Groundwater management is described further in Section 6.2.2.

The Basin contains no areas with adjudicated groundwater rights.

6.2.2 Groundwater Management

DWR classifies the Basin as a high priority basin in a state of critical overdraft due to active seawater intrusion. Historical over pumping of the Basin has led to lower groundwater levels in coastal areas and seawater intrusion into coastal portions of the groundwater aquifers. Without active groundwater management, there is a threat of more widespread seawater intrusion into the Basin.

The City has participated in regional evaluation, monitoring, and management activities in the basin for over 50 years. The first major study of regional groundwater resources was conducted in late 1960s by the United States Geological Survey in collaboration with the County of Santa Cruz, the Soquel Creek Water District, and the City of Santa Cruz (Hickey, 1968). The study identified the importance of the Purisima Formation for regional water supply and recognized seawater intrusion into the aquifer as the greatest threat to regional groundwater supplies. Since that time and prior to the passage of the Sustainable Groundwater Management Act in 2014, the City and other agencies that rely on groundwater from the Basin have continued engagement in monitoring and pursued various management strategies to help prevent the intrusion of seawater into groundwater supplies.

With the passage of Sustainable Groundwater Management Act came the formation of the MGA in May 2016 under a Joint Exercise of Powers Agreement. The MGA now oversees groundwater management activities in the Basin and is comprised of four member agencies representing the principal public agencies that extract groundwater or regulate groundwater extraction and/or land use in the Basin: Central Water District, City of Santa Cruz, County of Santa Cruz, and Soquel Creek Water District. The MGA is governed by an eleven-member board of directors including two representatives from each member agency and three private well owner representatives, in addition to alternates. The City of Santa Cruz representatives are appointed by City Council.

The GSP describes the projects and management actions that the MGA has developed to achieve Basin groundwater sustainability, primarily focused on avoidance of seawater intrusion, with related benefits to surface water and groundwater dependent ecosystems. Because the City's water system relies heavily on surface water, an additional focus of the project and management actions is development of a supplemental drought supply to improve the City's water supply reliability, consistent with the City's WSAS (see Section 6.8) and Basin sustainability. The individual member agencies, including the City, have responsibility for implementing the various projects and management actions described in the GSP, including permitting, funding, and oversight. The MGA annual reports to the State provide updates on the projects and management actions.

The project and management actions are categorized into three groups based on how and when they will be implemented and are described below:

Baseline Projects and Management Actions (Group 1)

This group includes existing groundwater management activities and commitments by the MGA member agencies. These activities were already being implemented when the GSP was developed and are expected to continue to be implemented to help achieve groundwater sustainability in the Basin. Group 1 includes the following:

- Water conservation and demand management, implemented by all member agencies
- Installation and redistribution of municipal groundwater pumping, implemented by the City and Soquel Creek Water District

Projects and Management Actions Evaluated Against the Sustainable Management Criteria (Group 2)

This group includes projects and activities planned for near-term implementation. These activities have been developed and fully vetted by the MGA member agencies. Group 2 includes the following:

- Pure Water Soquel, implemented by Soquel Creek Water District. Pure Water Soquel will replenish the groundwater basin and address seawater intrusion by injecting advanced treated purified water into the basin. The project facilities include a new recycled water facility and pump station located at the Santa Cruz Wastewater Treatment Facility, a 1.67-MGD Water Purification Center in the Live Oak area, three seawater intrusion prevention wells, monitoring wells, and approximately 8 miles of associated recycled water and purified water pipelines.
- ASR program, implemented by the City. ASR injects surface water, treated to drinking water standards, into the groundwater basin during normal or wet periods. This stored water can then be extracted and used in dry periods. Over the long term, to support groundwater sustainability, more water would be injected than extracted. The City's ASR program would convert four existing wells to ASR wells, and potentially construct two new ASR wells, resulting in a total extraction capacity of 3.7 MGD. The ASR program is described further in Section 6.8.2.1.
- Water transfers/in-lieu groundwater recharge, implemented by the City and Soquel Creek Water District
- Distributed stormwater managed aquifer recharge, implemented by County of Santa Cruz and Soquel Creek Water District

Identified Projects and Management Actions that May be Evaluated in the Future (Group 3)

This group includes projects and management activities that could be pursued by member agencies in the event that Group 2 activities either fail to be implemented or do not achieve the expected sustainability results. Selection from the projects and management actions in Group 3 will be pursued if and as needed. Criteria for selection and implementation would include factors such as magnitude of water shortage, speed of implementation, and the scale of regulatory and political hurtles. Group 3 projects include:

- Recycled water - groundwater replenishment and reuse
- Recycled water - surface water (reservoir) augmentation
- Recycled water - direct potable reuse
- Desalination implemented through a local or regional project
- Groundwater pumping curtailment and/or restrictions

For more detailed information on specific project and management actions, refer to the GSP (Appendix G), Section 4. For a full description of the City's current and planned activities, see descriptions of the City's WSAS in Section 6.8.

6.2.3 Groundwater Pumping

The Beltz Well system is primarily utilized during the peak demand season, which occurs in the months of May through September. Table 6-1 below shows the actual volume pumped from the City's Beltz Well system over the last five years and also includes piloting of ASR operations at three existing wells. Average pumping volume over this time was roughly 165 million gallons per year. The City's ASR Program is further described below in Section 6.8.2.1.

Table 6-1: Groundwater Volume Pumped (MG) (submittal table 6-1R)

Groundwater Type	Location or Basin Name	2021	2022	2023	2024	2025
Alluvial Basin	Santa Cruz Mid-County Basin (3-001)	183	197	141	113	192

Notes: The City conducted ASR pilot and demonstration testing between 2021 and 2024 which involved injecting treated surface water and subsequent extraction of stored water. During some tests, extracted stored water was discharged to the storm drain system; in other tests extracted stored water was sent to the distribution system. The groundwater pumping figures above include pumping of approximately 78 MG in 2022, 7 MG in 2023, and 17 MG in 2024 of stored water for ASR testing.

6.3 Surface Water

As presented in Chapter 3, the surface water system supplies are located both within and outside of the City of Santa Cruz with a mix of flowing sources and a storage reservoir. The map provided in Figure 6-1 illustrates the various surface water sources that comprise the supply facilities of the City. Each of the surface water sources are briefly described in the following sections.

6.3.1 North Coast Creeks and Spring

The North Coast sources consist of surface diversions from three coastal streams and a natural spring located approximately six to eight miles northwest of downtown Santa Cruz. These sources are Laguna Creek, Reggiardo Creek, Majors Creek, and Liddell Spring. The use of these sources by the City dates back as far as 1890.

Figure 6-3: Laguna Creek Diversion Dam

6.3.2 San Lorenzo River

The San Lorenzo River is the City's largest source of water supply. The main surface water diversion on the San Lorenzo River is the Tait Diversion near the City limits just north of Highway 1. Use of this source dates back to the 1870s and was consolidated under public ownership in 1917. The Tait Diversion is supplemented by three shallow, auxiliary wells located directly across the river referred to as the Tait Wells. These wells are assumed to be hydraulically connected to the river and considered to be tied to the City's appropriative rights for surface diversion. The drainage area above the Tait Diversion is 115 square miles.

Figure 6-4: Tait and Felton Diversions on the San Lorenzo River

The City's other diversion on the San Lorenzo River is the Felton Diversion, which is an inflatable dam and intake structure built in 1974 that is located about six miles upstream from the Tait Diversion. Water is pumped from this diversion to Loch Lomond Reservoir. The facility is used to augment storage in the reservoir during dry years when natural inflow from Newell Creek is low.

While the City is the largest user of water from the San Lorenzo River, two other water districts, several private water companies and many individual property owners share the San Lorenzo River watershed as their primary source for drinking water supply.

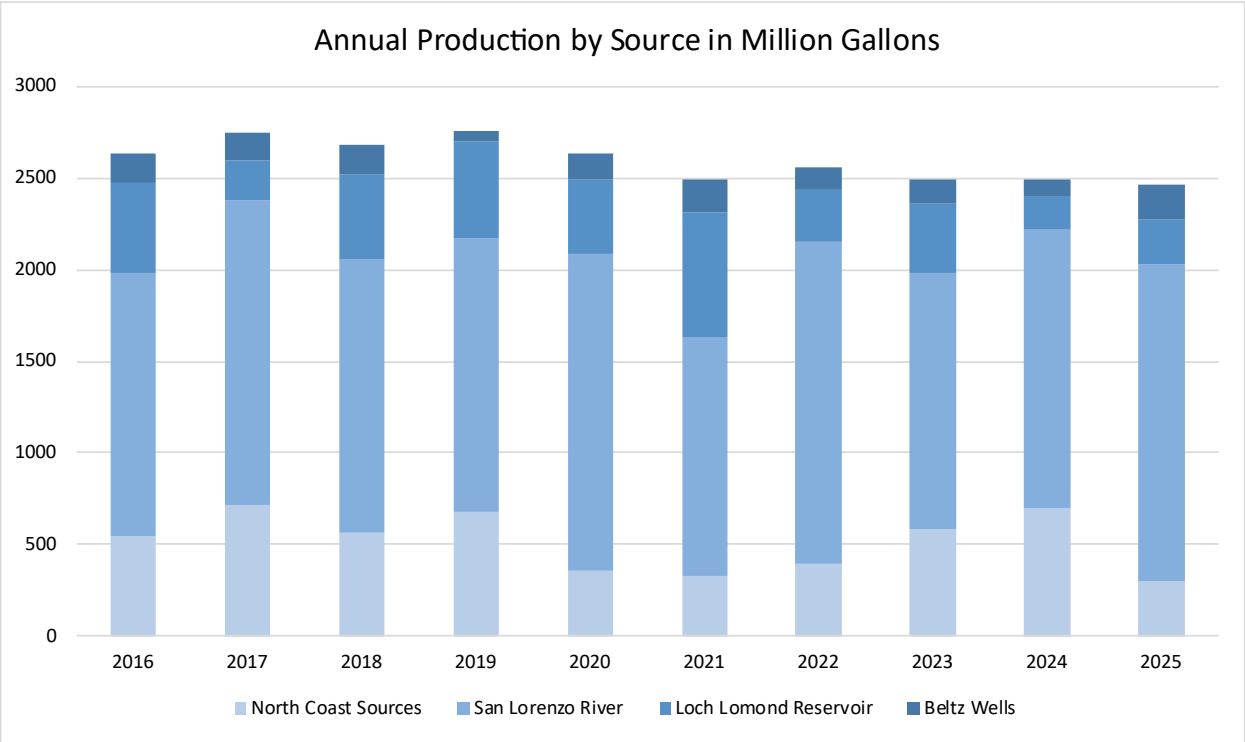
6.3.3 Newell Creek and Loch Lomond Reservoir

Newell Creek Dam, which impounds Loch Lomond Reservoir, is located near the town of Ben Lomond in the Santa Cruz Mountains. The reservoir was created in 1960 with the construction of Newell Creek Dam and has a maximum capacity of 2,860 million gallons (MG). In addition to providing storage of surface water from Newell Creek and the San Lorenzo River, the reservoir and surrounding watershed are used for public recreation purposes, including fishing, boating, hiking, and picnicking (swimming and wading are prohibited). The Newell Creek watershed above the reservoir is about nine square miles. In addition to the City, the San Lorenzo Valley Water District is entitled to receive a portion of the water stored in Loch Lomond.

Figure 6-5: Loch Lomond Reservoir

Gross annual production volumes from the City's surface and groundwater sources over the past ten years are shown in Figure 6-6, broken down by source of supply. During the past decade, the North Coast sources represented 20 percent of the total water supply, the San Lorenzo River represented 60 percent, Loch Lomond Reservoir (Newell Creek) represented 15 percent, and Beltz Well system contributed the remaining 5 percent.

Figure 6-6: Annual Production Volumes by Supply Source



6.3.4 Water Rights, Anadromous Salmonids, and Water System Operations

The City of Santa Cruz follows a variety of policies, procedures, and legal restrictions in operating the water supply system. In general, the system is managed to use available flowing sources to meet daily demands as much as possible. Groundwater and stored water from Loch Lomond are used mainly during the summer and fall months when flows in the coast and river sources decline and additional supply is needed to meet higher daily water demands. Water from Loch Lomond is also used during winter storms when water from surface water sources is too turbid to treat at the Graham Hill Water Treatment Plant.

The City's surface water sources are habitat for two legally protected anadromous salmonid fish species. Central Coast California steelhead were listed as threatened under the Federal Endangered Species Act (FESA) in 1997 and under the California Endangered Species Act (CESA) in 1998. Similarly, coho salmon were listed as endangered under the FESA in 1997 and as endangered under the CESA in 2004. Water operations, including diversions and flow alterations, among others, can degrade or even destroy critical habitat for coho and steelhead by reducing streamflow, increasing water temperatures, and disrupting spawning and rearing areas essential for their survival. Any impacts to coho salmon are of particular concern because coho salmon populations south of the Golden Gate Bridge are on the brink of extirpation.

A Habitat Conservation Plan (HCP) provides a framework for obtaining permits under the CESA and FESA by outlining measures to avoid, minimize, and mitigate the impacts of activities on endangered species and their habitats. To obtain the permits, an HCP must be developed in consultation with the relevant wildlife agencies (California Department of Fish and Wildlife for CESA and the National Marine Fisheries Service for FESA), detailing the conservation strategies and actions that will be implemented by the permitted agency. This is a complex undertaking, one that the City worked on for over two decades resulting in the development of the City's Anadromous Salmonid Habitat Conservation Plan (ASHCP). The ASHCP was finalized in 2025 to specifically address water system activities that may unintentionally affect coho salmon and steelhead trout.

The ASHCP conservation strategy has been designed to avoid, minimize, and fully mitigate the effects of the City's "Covered Activities" on "Covered Species" (coho salmon and steelhead trout) and their habitat in support of the long-term viability of these populations within streams affected by the HCP Covered Activities.[10] The ultimate fate of these populations depends on the actions of many other entities and natural processes both within and beyond areas under the City's control. The conservation strategy recognizes that the City's efforts will support and coordinate with overarching efforts to preserve these species within Santa Cruz County and the larger habitat boundaries for these species. The HCP biological goals and objectives address key limiting conditions in the Santa Cruz Mountains diversity stratum, particularly the effects of surface water diversions, as identified in the recovery plans for steelhead and coho (NMFS, 2012; NMFS, 2016).

The amount of water produced from each of the City surface water sources is controlled by various water rights. To facilitate implementation of the ASHCP and ensure ongoing water supply reliability for the City's customers, significant changes to the City's water rights were undertaken through the Santa Cruz Water Rights Project. These water rights modifications, which were also finalized in 2025, incorporated improvements to instream flows consistent with the ASHCP (referred to as the Agreed Flows) that are essential for the survival of anadromous salmonids in local watersheds. These modifications additionally added flexibility to the location of water diversions and broadened the places of use of the water to provide the operational flexibility needed to implement the ASHCP while maintaining long-term water supply reliability and supporting sustainable regional water resource management.

The ASHCP and water rights modifications bring new significant challenges to water system operations. Particularly, implementation of the Agreed Flows will reduce availability of flowing source waters during certain times necessitating new approaches to ensure water system reliability. The Santa Cruz Water Rights Project included the now-completed water rights modifications as well as water supply augmentation and surface water diversion improvement components in various stages of implementation to enable the City to optimize use and storage of its existing water supplies. The Santa Cruz Water Rights Project includes the following components in addition to water rights modifications.

1. Water Supply Augmentation
    - ASR facilities at the City's existing Beltz well facilities

[10] The HCP Covered Activities include operation, maintenance, and rehabilitation of the City's water supply and water system facilities, including surface water diversions, operation and maintenance of the City's municipal facilities, and management of City lands.

- New ASR facilities at as-yet unidentified locations
- Water transfers and exchanges with neighboring water agencies

2. Surface Water Diversion Improvements
    - Felton Diversion fish passage improvements
    - Tait Diversion and Coast Pump Station improvements

These efforts are not pursued in isolation: the ASHCP, modifications to the City's water rights, and supply augmentation strategies are interdependent components of a unified strategy. Together, they reflect the City's commitment to securing long-term water system reliability while protecting environmental resources—each element reinforcing and enabling the success of the others.

A summary of the City's water rights is presented in Table 6-2.

Table 6-2: Summary of Water Rights Held by the City of Santa Cruz

Source	Date of First Use/Priority	Season of Diversion	Maximum Diversion Rate (cubic feet per second [cfs])	Agreed Flows (Range) (cfs)[1]	Annual Diversion Limit (MG)
North Coast: Liddell Spring: Statement of Water Diversion and Use S002043 Laguna Creek: Statement of Water Diversion and Use S002042 Majors Creek: Statement of Water Diversion and Use S002044 Reggiardo Creek: Statement of Water Diversion and Use S008610	Pre-1914	Year- round	No limit	Liddell Spring: 0.25-14.9 Laguna Creek: 2-15.5 Majors Creek: 0.25-16.0	None
San Lorenzo River: Tait Diversion: License 1553 (A004017) and License 7200 (A005215)	1924 and 1926	Year-round	12.2	8.0-25.2	None
San Lorenzo River: Felton Diversion: Permit 16123 (A022318) and Permit 16601 (A023710)	1965 and 1971	Year-round	Varies by season: Sept: 7.8 Oct: 20 Nov-May: 20 Jun-Aug: 0	10.0-40.0	977
Newell Creek (Loch Lomond Reservoir): License 9847 (A017913)	1957	Sept-Jun	31	1 (released from Newell Creek Dam)	Max collection: 1,825 Max withdrawal: 1,042

1. Agreed flows vary based on month and hydrologic conditions.

6.4 Stormwater

At this time, local urban storm runoff is not used by the City to meet its urban water demands. The City is regulated, however, by the Central Coast Regional Water Quality Control Board and has responsibility to reduce the amount of pollutants discharged in urban runoff, and to improve and protect water quality. The City is currently covered under the State's General Permit for Storm Water Discharges from Small Municipal Storm Sewer Systems. The General Permit

requires the City to develop and implement a comprehensive Storm Water Management Program. A complete description of this program is provided in the Storm Water Annual Report.

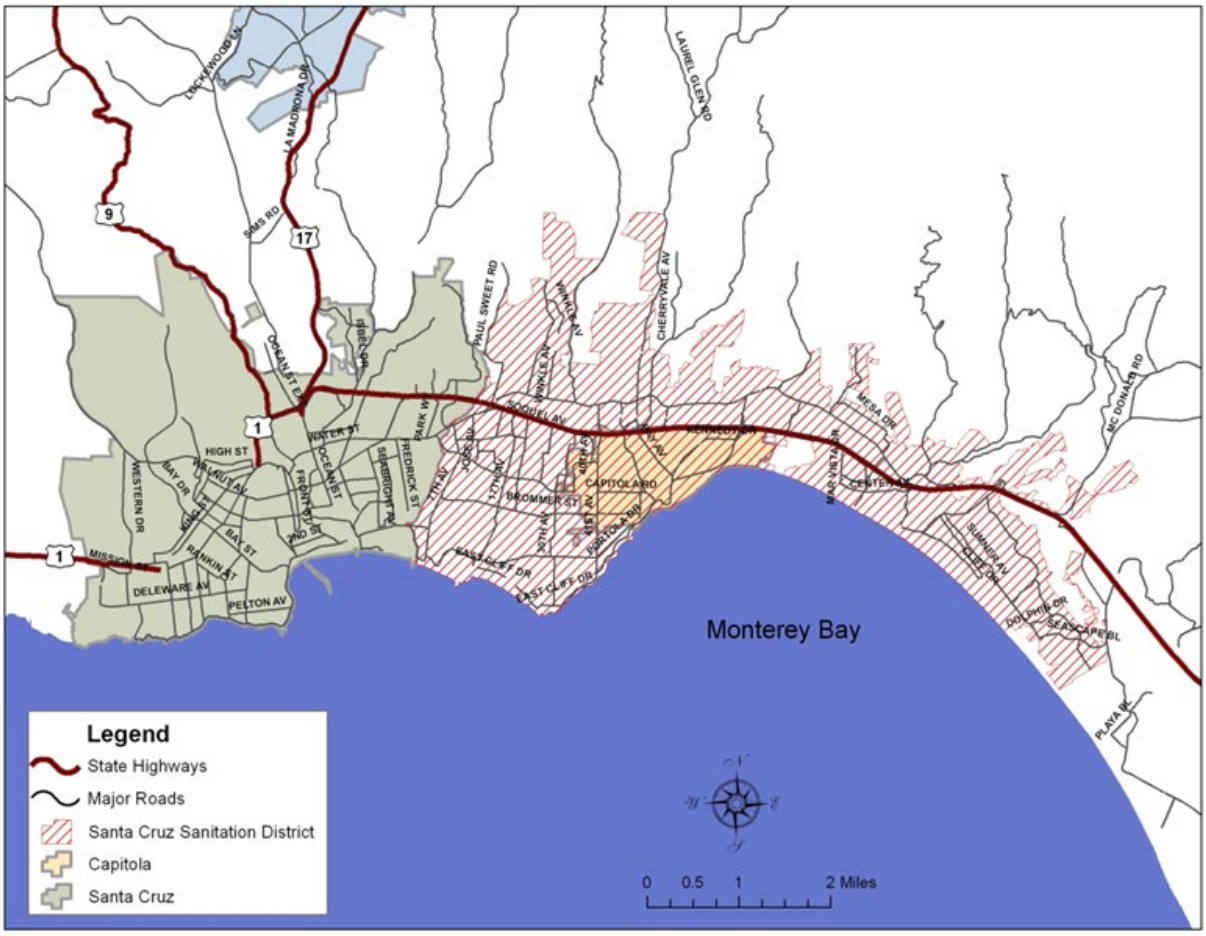
The City of Santa Cruz, through its Public Works Department, maintains seven miles of underground stormwater pipeline, eight miles of surface stormwater ditches, six stormwater pump stations, approximately 1,500 catch basins, and 125 outfalls. The City also maintains the U.S. Army Corps of Engineers flood control channel and levee system on the San Lorenzo River, which is approximately three miles long with five pump stations. The City's operations and maintenance program for the flood control facilities on the San Lorenzo River includes the removal of sand and silt from the channels of the river and Branciforte Creek; maintenance of pumps, gates and levees; and removal of weeds and growth in drainage ditches and catch basins. As a best management practice, the City has routine street sweeping and regularly cleans the storm drain pipeline system, among other activities.

Stormwater system management maintenance in the unincorporated area and Capitola is provided by the Santa Cruz County Flood Control and Water Conservation District, Zone 5, operated through the County Public Works Department. The County Board of Supervisors serves as the Board of Directors for the District. Facilities include underground storm drain systems and above ground ditches and watercourses.

6.5 Wastewater and Recycled Water

The City of Santa Cruz owns and operates a City-wide wastewater collection and regional wastewater treatment and disposal facility providing service to a total urban population of approximately 140,000 people in an area extending beyond the City of Santa Cruz to unincorporated Santa Cruz County (Figure 6-7) (City of Santa Cruz, 2019b).

Figure 6-7: Geographic Area Served by Santa Cruz Wastewater Facility



The City's Wastewater Treatment Facility (WWTF) previously utilized a recycled water system to treat secondary wastewater for daily wastewater facility operations that required using non potable water, such as equipment cleaning, pump priming and chemical dilution. The recycled water system was recently replaced with a new non-potable disinfected tertiary recycled water system as part of the Pure Water Soquel project. The City and Soquel Creek Water District developed a mutually beneficial arrangement as part of the Pure Water Soquel project, in which the City provides source water to the Pure Water Soquel project and, as part of the project, a new non-potable tertiary treatment recycled water system has been installed at the WWTF for in-plant use, as well possible future local non-potable use. The tertiary recycled water system is expected to come online in 2027.

6.5.1 Wastewater

Wastewater collection, treatment, and disposal are described below.

6.5.1.1 Wastewater Collection

Municipal wastewater generated within the City limits is delivered to the WWTF through a collection system consisting of 160 miles of gravity mains, 3.5 miles of force main, and 21

pumping stations. The City's collection system, treatment plant and ocean disposal system are managed and operated by the City's Public Works Department.

The Santa Cruz County Sanitation District, a special district operated through the Santa Cruz County Public Works Department, collects wastewater from the Live Oak, Capitola, Soquel, Aptos, and Seacliff areas through a system consisting of 186 miles of gravity main, 14 miles of force main, and 35 pump stations. It transports wastewater from a central pumping facility in Live Oak to the Santa Cruz WWTF for treatment and disposal. This wastewater is generated from outside the City of Santa Cruz water area served and is treated within the area served.

In addition to the City and County Sanitation District, one small County Service Area serving the community of Woods Cove and a portion of the community of Rollingwoods is connected to the City's wastewater system. Dry weather flows from Neary Lagoon are also diverted through the WWTF to help protect water quality at local beaches for public health and recreation.

A third-party organization is not operating a facility under contract in the Santa Cruz water area served. With the exception of some outlying areas and individual parcels that have onsite wastewater systems, the vast majority of the estimated people residing in the City of Santa Cruz water area served are served by these two wastewater collection systems. Table 6-3 summarizes wastewater collected from these two agencies in 2025.

Table 6-3: Wastewater Collected Within Service Area (submittal table 6-2R)

Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2025 (MG)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Is WWTP Located Within UWMP Area?
City of Santa Cruz	Metered	1,251	Santa Cruz WWTP, Place ID 255632	Yes
Santa Cruz County Sanitation District	Metered	1,105	Santa Cruz WWTP, Place ID 255632	Yes
Total Wastewater Received from UWMP Service Area in 2025		**2,356**		

6.5.1.2 Wastewater Treatment

The City's treatment plant was modernized in the late 1990's from the advanced primary level to provide full secondary treatment in order to meet State and Federal waste discharge requirements (Figure 6-8). The treatment process consists of screening, grit removal, primary sedimentation, biological treatment (trickling filters), secondary clarification, and disinfection (UV). Bio-solids removed from the wastewater stream are treated by gravity thickening, anaerobic digestion, and dewatering by centrifuges.

Figure 6-8: City of Santa Cruz Wastewater Treatment Facility

The City's WWTF is designed to treat an average dry weather flow of 17 MGD and can accommodate peak wet weather flows of up to 81 MGD. Due to conservation measures and reduced demand in recent years, the amount of wastewater generated in the City and the Sanitation District's service areas has dropped substantially, averaging 6 MGD during the dry season.

6.5.1.3 Wastewater Disposal

Wastewater effluent from the WWTF is ultraviolet (UV) disinfected prior to being discharged to the Pacific Ocean through a deep water outfall extending 12,250 feet on the ocean bottom and terminating one mile offshore at a depth of approximately 110 feet below sea level. A 2,100-foot diffuser at the end of the pipe provides a minimum initial dilution of 139 parts seawater to one part wastewater.

The City's wastewater facility is regulated under a waste discharge permit issued by the California Regional Water Quality Control Board, Central Coast Region (Order No. R3-2023-0001). Monterey Bay and surrounding ocean waters were designated in 1992 as a National Marine Sanctuary and is widely recognized for its unique and diverse biological characteristics and physical features. To protect receiving water quality and sanctuary resources, the wastewater influent and effluent characteristics are carefully monitored for compliance with state water quality requirements. The City also performs receiving water monitoring and participates in a regional monitoring program with other dischargers in the Monterey Bay area, known as Central Coast Long-Term Environmental Assessment Network. The City of Scotts Valley treats its wastewater separately and transmits secondary treated effluent to Santa Cruz for combined disposal through the City's ocean outfall.

Table 6-4 below provides the total amount of wastewater treated and disposed by the City's WWTF in 2025.

Table 6-4: Wastewater Treatment and Discharge in 2025 (submittal table 6-3R)

DWR Submittal Table 6-3R Requested Information	Response
Wastewater Treatment Plant Name and Place ID Number	Santa Cruz WWTP, Place ID 255632
Does This Plant Treat Wastewater Generated Outside the UWMP Service Area?	Yes
2025 Volume of Wastewater Received from UWMP Service Area (As Reported in Submittal Table 6-2R)	2,356
Total 2025 Volume of Water Treated	2,340
Effluent Discharge that is Not a Permitted Recycled Water Use	
Treatment Level	Secondary, undisinfected
Volume (MG)	2,029
Delivered to Another Entity for Additional Treatment	
Treatment Level	Tertiary
Volume (MG)	360
Name of Other Entity	Soquel Creek Water District

Notes: Total discharge exceeds wastewater received and volume treated values due to potable water use within the Wastewater Treatment Facility. The quality of wastewater produced at the City's treatment plant currently is best classified under the Title 22 criteria as "Secondary, undisinfected" even though the wastewater plant provides UV disinfection. Figures presented do not include City of Scotts Valley waste discharge volumes.

6.5.2 Recycled Water

Since 2000, the City has been evaluating the use of recycled water through commissioned engineering studies regarding potential uses of recycled water for agricultural irrigation, landscape irrigation, groundwater recharge, direct potable reuse, and use of recycled water from neighboring water districts. These studies include the following:

- Alternative Water Supply Study (Carollo Engineers, 2000)
- Evaluation of Regional Water Supply Alternatives (Carollo Engineers, 2002)
- Integrated Water Plan Environmental Impact Report (City of Santa Cruz, 2005)
- Opportunities and Limitations for Recycled Water Use (Kennedy/Jenks, 2010)
- Current and Potential Future Opportunities for Indirect and Direct Potable Reuse of Recycled Water Use (Kennedy/Jenks, 2010)
- Regional Recycled Water Facilities Planning Study, Phase 1 (Kennedy/Jenks, 2018)
- Water Supply Augmentation Implementation Plan (Kennedy/Jenks, 2025)

The City's Water Supply Augmentation Implementation Plan (WSAIP), described further in Section 6.8.1.3, provides detailed description of possible future uses of recycled water.

6.5.2.1 Recycled Water Coordination

As presented in Section 2.4, preparation of this 2025 UWMP was coordinated with local water, wastewater, groundwater, and planning agencies throughout the water area served and Santa Cruz County. Coordination regarding recycled water use and planning studies (listed in Section 6.5.2, above) has involved working with the following entities:

- Santa Cruz Public Works Department (regional WWTF operator)
- Santa Cruz County Sanitation District (local wastewater collection agency)
- City of Scotts Valley Public Works (local WWTF operator)
- Scotts Valley Water District
- Soquel Creek Water District

- Pasatiempo Golf Course
- County of Santa Cruz
- University of California, Santa Cruz
- State Water Resources Control Board's Water Recycling Funding Program

6.5.2.2 Recycled Water System

The City does not currently operate a recycled water system in its area served. The Pasatiempo Golf Course, located within the City's area served, receives disinfected secondary effluent from the City of Scotts Valley, which it treats to tertiary standards at the Pasatiempo Golf Course Tertiary Plant for use as golf course irrigation, reducing the demand for potable water that would otherwise be used for irrigation. Additionally, as of 2025 Soquel Creek Water District has completed construction of the Pure Water Soquel Project, which will enhance the recycled water system in the region and allow for potential opportunities for future expansion. The Santa Cruz WWTF historically operated a reclaim system used for in-plant process water which was not eligible for designation as recycled water under Title 22 requirements; however, this system has been offline because it is in the process of being replaced. See description of current and planned recycled water use in Section 6.5.2.4 below.

6.5.2.3 Recycled Water Beneficial Uses

Title 22 (California Code of Regulations, Division 4, Chapter 3, Sections 60301-60355) is the regulation overseeing the reuse or recycling of municipal wastewater to protect public health. Level of treatment and bacteriological water quality standards define what beneficial uses are legally allowed. The quality of wastewater produced at the City's treatment plant currently would be best classified under the Title 22 criteria as "Secondary, Undisinfected", even though the wastewater plant provides UV disinfection, and the City consistently meets its receiving water limitations contained in its National Pollutant Discharge Elimination System permit for bacteriological objectives. The City's treated wastewater is therefore potentially suitable for only very limited agricultural applications and for flushing sanitary sewers according to the standards in Title 22.

As part of the Pure Water Soquel project a new tertiary treatment recycled water system has been constructed at the WWTF for in-plant use, as well possible future local non-potable use. The tertiary recycled water system is expected to come online in 2027, and possible uses are discussed in Section 6.5.2.4.

6.5.2.4 Current Use and Planned Uses of Recycled Water

6.5.2.4.1 Current Use

In 2017, the Pasatiempo Golf Course, located within the City's area served, entered into an agreement with the City of Scotts Valley to provide disinfected secondary effluent to the golf course where it is further treated to tertiary standards and used for golf course irrigation. City of Scotts Valley agreed to provide up to 35 million gallons per year for 30 years with the option for the golf course to purchase more if available. The golf course received and used approximately 35 million gallons in 2025.

The City of Santa Cruz continues to supply the remainder of the Pasatiempo golf course water demand as needed for potable water uses and as supplemental water for irrigation.

6.5.2.4.2 Planned Use

The City has been evaluating potential opportunities to develop recycled water projects over the past decade, including the completion of the Santa Cruz Recycled Water Facilities Planning Study (Kennedy/Jenks, 2018), which was a collaborative effort between the City, Soquel Creek Water District and Scotts Valley Water District funded under a State Water Resources Control Board's Water Recycling Funding Program grant. The City subsequently initiated a second phase of study in 2020 that evolved into the 2025 WSAIP study. This analysis recommended a phased approach to achieve the City's sustainable water supply initiatives.

In the near-term, two small non-potable water projects identified in the Santa Cruz Recycled Water Facilities Planning Study are being considered for implementation. Non-potable recycled water will be produced by the newly installed disinfected tertiary treatment recycled water system constructed at the WWTF by 2027 and will provide recycled water for in-plant use. The system could also provide for two potential future recycled water uses:

- City parks: Recycled water could be provided to offset potable use for landscape irrigation at La Barranca Park and Neary Lagoon Park. La Barranca Park is adjacent to the WWTF and contains over 75,000 square feet of irrigated area. The average potable water use, from 2012-2014, to irrigate La Barranca Park and Neary Lagoon Park was approximately 800 gpd at each park (Kennedy/Jenks, 2026). To serve the parks, the City would need to extend the recycled water pipeline to connect to the parks' irrigation systems, install a new supply pump station, and retrofit the parks' irrigation systems in compliance with recycled water use regulations. The project would require the City to obtain a recycled water permit from the Central Coast Regional Water Quality Control Board and Department of Drinking Water for the production and distribution of recycled water.
- Bulk water station: Currently, potable water is provided to construction contractors through four bulk water stations located around the City's area served. A new bulk water station serving recycled water could be developed near Neary Park. Average use from a new bulk water station is estimated at 4,800 gpd (Kennedy/Jenks, 2026). As with the City parks component, the City would need to obtain a permit to produce and distribute recycled water.

These projects would provide minimal benefit from a water supply reliability perspective due to their small capacities; however, they would provide an opportunity for the local community to become more familiar with recycled water use. The City may decide to implement these projects at any time, separate from the proposed water supply recommendations from the WSAIP (described further in Section 6.8).

The current and projected uses of recycled water within the City's area served are presented in Table 6-5.

Table 6-5: Recycled Water Direct Beneficial Uses within Service Area (submittal table 6-4R)

Use Type	Additional Information	2025 (MG)	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Golf course irrigation	Pasatiempo Golf Course	35	35	35	35	35	35
Total		35	35	35	35	35	35

6.5.2.5 Planned Versus Actual Use of Recycled Water

Recycled water, as defined by DWR, was not provided by the City in 2025; however, recycled water provided by Scotts Valley Water District was used at the Pasatiempo Golf Course which is within the City's area served. The 2020 projected recycled water use for 2025 was 35 MG. A comparison of actual versus projected use is provided in Table 6-6.

Table 6-6: Recycled Water Use Projection Compared to Actual (submittal table 6-5R)

Use Type	2020 Projection for 2025 (MG)	2025 Actual Use (MG)
Golf course irrigation	35	35
Total	35	35

6.5.2.6 Actions to Encourage Future Recycled Water Use

Currently the City does not produce recycled water for use outside its wastewater treatment plant, therefore actions to encourage the use, including financial incentives, and development of a plan to optimize the use of recycled water in the City's area served do not apply. As described in Section 6.5.2.4.2, the City may elect to pursue the City Parks and bulk water station recycled water project; however, the project is not currently being advanced.

Table 6-7: Methods to Encourage Future Recycled Water Use (submittal table 6-6R)

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (MG)
City Parks and Bulk Water Station Project	Construct facilities to serve La Barranca Park and Neary Lagoon Park (and new bulk water station) with disinfected tertiary treated water from the WWTF Title 22 system	TBD	2.3

6.6 Desalinated Water Opportunities

For a decade or more, the City pursued a 2.5 MGD desalination facility as a regional project with Soquel Creek Water District to diversify both agencies' water supply portfolio. The WSAS, described in Section 6.8, includes desalinated water, but only as a last resort, and after exhausting several other preferred options (WSAC, 2015). In 2017, the City embarked on development of a Desalination Feasibility Update Review Report to evaluate the feasibility, cost, timeliness, and approach for pursuing a seawater desalination facility. While the 2018 report found such a project to be technically feasible, additional feasibility review of a collector well

system would be required, and it was further determined that the City's timeliness objective would not be met. Subsequently, further study of other supplies was prioritized over seawater desalination.

The WSAIP (described further in Section 6.8) considers desalination as a water supply alternative within one of the water supply portfolios. As outlined in the WSAIP, desalination is part of the WSAIP adaptive roadmap strategy, but is considered a backup in the event that the higher-ranked portfolios prove infeasible.

6.7 Exchanges or Transfers

Three agreements address transfers between the City and Soquel Creek Water District. In 2016, the City and Soquel Creek Water District entered into a "Cooperative Water Transfer Pilot Project for Groundwater Recharge and Water Resource Management" agreement to transfer a small amount of water to Soquel Creek Water District in the winter months when excess surface water from the North Coast is available. The pilot agreement was extended in 2021 through 2026 (Appendix H). The agreement represents a preliminary step in the implementation of the WSAS, described in Section 6.8.1.1, and serves to further study and determine the potential benefits of local exchanges and transfers as a groundwater management tool and supply reliability strategy. The pilot agreement expires in May 2026, and an agreement for long-term transfers from Soquel Creek Water District is currently under development.

The City currently also receives transfers from Soquel Creek Water District that are associated with construction of Pure Water Soquel project. Potable water supplies from the City were used during startup, testing, and commissioning of Pure Water Soquel, and under a 2022 Letter Agreement, Soquel Creek Water District will repay this water use via transfers into the City's system to the extent practicable.

Additionally, under a 2025 Mutual Aid Agreement between the City and Soquel Creek Water District, water may be transferred to provide emergency water supply to either agency if one agency has a water shortage and the other has water available to meet the shortage.

Yearly totals for transfers of treated surface water from the City to Soquel Creek Water District from 2021 to 2025 are as follows:

- 2023: 4 MG

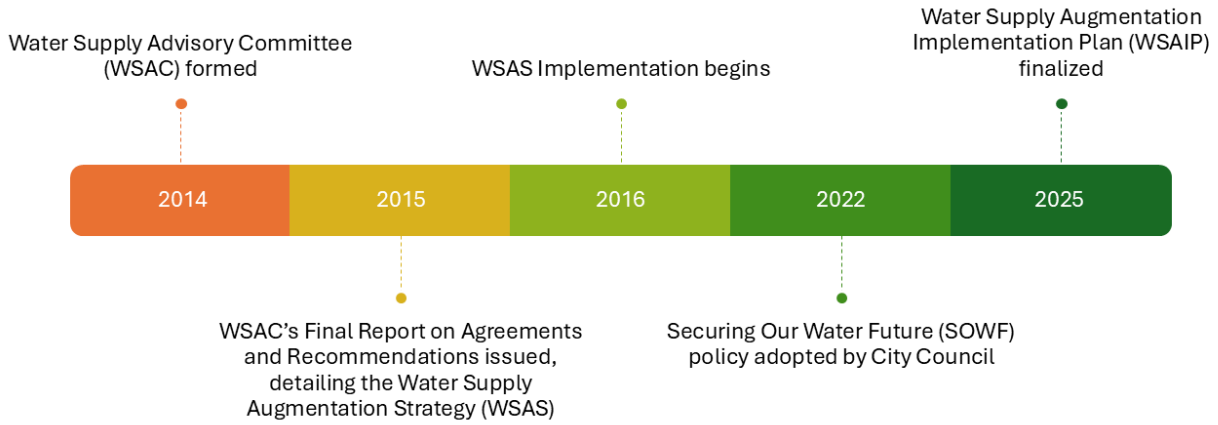
Yearly totals for transfers from Soquel Creek Water District to the City from 2021 to 2025 are as follows:

- 2023: 12 MG
- 2024: 6 MG
- 2025: 37 MG

6.8 Future Water Projects

Future water projects are critical to ensuring future water supply reliability for City of Santa Cruz Water customers. These projects were developed based on the City's ongoing water supply planning efforts. The major milestones in the City's water supply planning time are illustrated in Figure 6-9 and further described below.

Figure 6-9: Major Milestones in City of Santa Cruz Water Supply Planning



6.8.1 Policy and Planning Framework

6.8.1.1 Water Supply Augmentation Strategy

Since 2016, the City of Santa Cruz has been pursuing its WSAS developed by the Water Supply Advisory Committee (WSAC) as described in the 2015 UWMP. The WSAC was formed in 2014 when the City Council approved formation and membership of the citizen committee with the charge to "explore, through an iterative, fact-based process, the City's water profile, including supply, demand and future risks; analyze potential solutions to deliver a safe, adequate, reliable, affordable and environmentally sustainable water supply; and, to develop recommendations for City Council consideration" (WSAC, 2015). The committee developed the WSAC Final Report on Agreements and Recommendations, which was accepted by the City Council in November 2015. The Final Report was incorporated by reference into the 2015 UWMP, and the guiding recommendations continue to serve as the water supply management strategy for the City.

The WSAC recommendations are designed to address the "Problem Statement" included in the WSAC Final report:

> *"Santa Cruz's water supply reliability issue is the result of having only a marginally adequate amount of storage to serve demand during dry and critically dry years when the system's reservoir doesn't fill completely. Both expected requirements for fish flow releases and anticipated impacts of climate change will turn a marginally adequate situation into a seriously inadequate one in the coming years. Santa Cruz's lack of storage makes it particularly vulnerable to multi-year droughts. The key management strategy currently available for dealing with this vulnerability is to very conservatively manage available storage. This strategy typically results in regular calls for annual curtailments of demand that may lead to modest, significant, or even critical requirements for reduction. In addition, the Santa Cruz supply lacks diversity, thereby further increasing the system's vulnerability to drought conditions and other risks…" (WSAC, 2015)*

The overarching goal of the WSAS is to provide significant improvement in the sufficiency and reliability of the City water supply. As presented in the 2015 UWMP, the WSAS portfolio elements include the following (WSAC, 2015):

- Element 0: Demand Management.[11] Additional water conservation with a goal of achieving an additional 200 to 250 million gallons per year of demand reduction by 2035 by expanding water conservation programs.
- Element 1: Transfers and Exchanges. Passive recharge of regional aquifers by working to develop agreements for delivering surface water to the Soquel Creek Water District and/or the Scotts Valley Water District so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in dry periods.
- Element 2: Aquifer Storage and Recovery. Active recharge of regional aquifers by using existing infrastructure and potential new infrastructure in the Purisima aquifer in the Santa Cruz Mid-County Groundwater Basin (previously referred to as the Soquel-Aptos Basin), in the Santa Margarita Groundwater Basin (previously referred to as the Santa Margarita/Lompico/Butano aquifers) in the Scotts Valley area, or in both to store water that can be available for use by the City in dry periods.
- Element 3: Recycled Water or Desalination. A potable water supply using advanced-treated recycled water as its source as a supplemental or replacement supply in the event the groundwater storage strategies described in Element 1 and Element 2 prove insufficient to meet the goals of cost-effectiveness, timeliness, or yield. In the event advanced-treated recycled water does not meet the City's needs, desalination would become Element 3.

Since 2015, the Water Department has advanced the study of these elements, initiating and completing a significant body of work that provides additional details about cost, yield and timeliness of using the available supply augmentation sources to improve supply reliability. These efforts yielded two key policy and planning documents: the City's Securing Our Water Future Policy (adopted in 2022), and the WSAIP (completed in 2025), which lays out a pathway for the City to implement supply augmentation alternatives in a phased manner to increase supply reliability. The Securing Our Water Future Policy is described in Section 6.8.1.2, and the WSAIP is described in further detail in Section 6.8.1.3.

6.8.1.2 Securing Our Water Future Policy

In November 2022, the Santa Cruz City Council adopted a policy that provides guidance for implementing water supply augmentation projects and improving water supply reliability, referred to as the "Securing Our Water Future" policy, or SOWF policy. The SOWF policy incorporated recommendations from the WSAS and provided durable direction to Water Department staff on the key conditions, criteria, and values to be used in evaluating water supply augmentation projects. The SOWF has six guiding principles: public health, affordability and equitable access to water service, public acceptance, regional collaboration, incremental implementation, and ongoing community engagement.

In developing the SOWF policy, Water Department staff worked with Water Commissioners to use, adapt, and update as needed the evaluation criteria developed and recommended by the

[11] Conservation, or demand management, is not considered a water supply for the purposes of the UWMP. Details on the City's conservation program can be found in Chapter 9.

WSAC. This SOWF policy incorporates these criteria as updated by the Department's active engagement with the Water Commission in the years following completion of the WSAC's work.

The SOWF policy has two specific goals:

1. Providing an additional 500 million gallons per year by 2027, and
2. Filling the identified water supply gap by 2032.

Achieving these goals on time may not be possible, because the implementation timelines for new water supply projects are long, but the goals reflect the City's plan to come as close as possible to meeting both objectives.

6.8.1.3 Water Supply Augmentation Implementation Plan

The City's WSAIP, finalized in 2026, advances the planning of the supply augmentation elements identified in the WSAS. The WSAIP is included as Appendix I. The WSAIP incorporates findings from previous efforts, modeling work, and parallel studies, identifying and exploring various water supply opportunities. The WSAIP evaluates multiple water supply alternatives including transfers and exchanges, ASR, recycled water, and desalination. The WSAIP compiled and ranked various portfolios of water supply alternatives, and provided a recommended portfolio. A key part of the WSAIP is an adaptive roadmap strategy which identifies key decision points which could result in changes to the water supply augmentation strategy.

The selected portfolio includes the following water supply alternatives, which are discussed in more detail in Section 6.8.2.1:

- Construction of ASR facilities
- Transfers and in-lieu groundwater banking with Scotts Valley Water District in the Santa Margarita Groundwater Basin
- Transfers with Soquel Creek Water District

Should the selected alternatives prove infeasible or unable to yield the necessary supply, the City could pursue an alternate path as identified in the WSAIP. In this scenario, a local direct potable reuse project would be advanced first. If a potable reuse project could not be completed (e.g., due to inability to secure permits, public opposition, or inadequate wastewater supplies), a desalination project would be advanced. See the WSAIP, included as Appendix I, for more detail on water supply portfolios and the implementation strategy.

6.8.2 Projects

The City of Santa Cruz has embarked on a Capital Investment Program (CIP), the Santa Cruz Water Program, to secure its future water supply portfolio, to improve reliability and resiliency in the face of climate change, and to address aging infrastructure. Some elements of the program will directly implement supply augmentation alternatives identified in the WSAIP to meet the goals of the WSAS. The CIP also includes projects that will support reliability such as improvements to the Graham Hill Water Treatment Plant, Tait Diversion, and Coast Pump Station, as described below. Further information on the CIP projects is included in Appendix J.

6.8.2.1 Aquifer Storage and Recovery Program (WSAS Element 2)

ASR involves injecting surface water, treated to drinking water standards, into the groundwater basin during normal or wet periods. This stored water can then be available for use by the City in dry periods via extraction. To contribute to groundwater sustainability, the long-term average extraction volumes would be lower than long-term average injection volumes. However, maximum annual extraction volumes could exceed injection volumes during drought or dry periods when more water supply is needed to meet City demands. The City has been actively advancing its ASR program, focusing primarily on the portion of the Santa Cruz Mid-County Basin within the City of Santa Cruz area served. The City has completed groundwater modeling of over 20 scenarios, and siting and geotechnical analyses. Pilot testing has been completed at three of the four existing Beltz wells (Beltz 8, 9, and 12). Design has been completed for permanent ASR facilities at two of the four Beltz Wells (Beltz 8 and 12). Multiple wells (Beltz 8 and 12) are in construction or nearing construction as of early 2026, and additional planning and pilot testing continues for other sites.

The current ASR program status is summarized below by well site:

- Beltz 12: Construction of permanent ASR facilities is underway and scheduled to be complete in 2026.
- Beltz 8: Design of permanent ASR facilities is complete; construction is scheduled to begin in summer 2026 and conclude in fall 2027.
- Beltz 9: Pilot testing is complete. Design is scheduled to begin in 2026. Construction is anticipated to begin in late 2027.
- Beltz 10 and 11: A pilot testing work plan is under development; temporary facilities for pilot testing are expected to be constructed in 2026. Construction is anticipated to begin in late 2028.
- Beltz Water Treatment Plant: Design for upgrades to the Beltz Water Treatment Plant to accommodate ASR is anticipated to begin early 2027.
- Additional ASR wells at new sites: The City expects to initiate planning work for two potential new ASR wells in 2026.

6.8.2.2 Transfers with Scotts Valley Water District (WSAS Element 1)

An intertie between the City and Scotts Valley Water District, known as Intertie 1, began construction in 2025 and is expected to be operational in 2026. Intertie 1 facilities consist of approximately two miles of new pipeline and an accompanying pump station. This project will enable the City and Scotts Valley Water District to better coordinate and maximize use of surface and groundwater supplies between the agencies. The completed Intertie 1 will be able to deliver up to 1 MGD of water in either direction. An operation agreement between the City and Scotts Valley Water District for the intertie was executed in 2026 to guide commissioning and preliminary operation of the intertie (Appendix H). City and Scotts Valley Water District staff are actively working to develop an agreement for long-term operation of Intertie 1.

The intertie with Scotts Valley Water District could be used for in lieu water banking in the Santa Margarita Groundwater Basin (where Scotts Valley Water District draws its water supply). The City would seasonally send extra treated surface water to Scotts Valley Water District, when allowed by its water rights, which would offset the demand for the groundwater wells in the

Santa Margarita Groundwater Basin. Then, during dry periods, Scotts Valley Water District could pump enough groundwater both to meet local demand and to send water back to the City.

The potential annual transfer volume for in lieu banking would be limited by the availability of surface water in Santa Cruz and capped by the water demand in Scotts Valley. The average demand in Scotts Valley Water District is 1 MGD, ranging from 0.75 to 1.25 MGD. Scotts Valley Water District can currently produce 1.6 MGD and is currently building a new production well that will increase capacity to 2.0 MGD. In the future, Scotts Valley Water District could produce up to 2.0 MGD to meet the local demand of 1 MGD and send 1 MGD back to the City.

On the City side, transfers up to 1 MGD with Scotts Valley Water District would require minor modifications to the City's infrastructure after Intertie 1 is completed. The Pasatiempo water distribution zone in the City system, where Intertie 1 water arrives in the system, has less than 1 MGD of demand. Minor improvements at the Graham Hill Water Treatment Plant such as a new pressure regulating valve would allow additional flow into the City's Gravity Zone where most of the water demand occurs, allowing the City to accept transfers for 1 MGD back to the City system.

In the future, it may be possible to achieve additional transfer capacity via active recharge (ASR) in the Santa Margarita Groundwater Basin; feasibility of ASR in the basin is currently being studied.

6.8.2.3 Transfers with Soquel Creek Water District (WSAS Element 1)

The City has been working with Soquel Creek Water District on water transfers and exchanges since 2015 through the development of a formal pilot agreement, studies to assess the compatibility of surface and groundwater resources in distribution systems, pilot water transfers, and regular transfers as described in Section 6.7. The existing intertie between the City's water system and the Soquel Creek Water District's water system has a capacity of 1.4 MGD during normal operations, although minor additional pipeline and pump station upgrades may be needed to more efficiently move water through the Soquel Creek Water District service area.

Future transfers from Soquel Creek Water District could be facilitated by the Pure Water Soquel project, which is a key component for groundwater sustainability in the Basin. During dry periods when surface water sources may be constrained, Soquel Creek Water District could pump groundwater and send it to the City. It is anticipated that transfers from Soquel Creek Water District could provide up to 1.4 MGD or more with infrastructure improvements. Details for transfers between agencies need to be negotiated in order to support such transfers. City and Soquel Creek Water District staff are working closely to determine details of transfers and develop agreements.

6.8.2.4 Graham Hill Water Treatment Plant Projects

Upgrades to the City's Graham Hill Water Treatment Plant are critical to the implementation of the WSAS. A major recent project includes the replacement of three of the four concrete tanks which is anticipated to be completed in spring 2026.

Simultaneously with this project, staff has been developing the Facility Improvements Project. This project is a comprehensive evaluation of the treatment plant that identifies the most cost-effective improvements to meet water treatment objectives and improve the overall reliability

and resiliency of the plant. The project consists of replacing the existing conventional pretreatment process with a high-rate clarification process, adding a new ozone contact process and building, converting the existing filters to biological filtration, and constructing two new tanks to replace the existing wash water storage tank. The project will also include an upgraded operations and filter building, a new maintenance building, a new chemical storage building, and site improvements to the sewer and stormwater management system. These investments are designed to address aging infrastructure, prevent noncompliance with drinking water standards under anticipated future conditions, and support mission-critical values of supplying adequate, safe, and reliable water for the City's customers. The City has entered a design-build contract for the Facility Improvements Project and certified a Final Environmental Impact Report for the project in 2024. Construction of the Facility Improvements Project is expected to begin in 2027 and last approximately five years.

6.8.2.5 Tait Diversion and Coast Pump Station Improvements

The Tait Diversion is one of the City's critical water supply sources, supplying water via the adjacent Coast Pump Station facility. The City is investigating improvements to the Tait Diversion facility that would improve reliability and fish screening. Under the City's recent water rights modifications including the addition of the Tait Diversion as a new point of diversion for the existing Felton water rights, the City plans to increase the Tait Diversion capacity to accommodate the combined diversion of water under both the Tait and the Felton water rights at this facility.

As included in the Santa Cruz Water Rights Project, the Tait intake and pump station would be designed to accommodate up to 28 cubic feet per second (cfs) of surface water flows, up from the current capacity of approximately 12 cfs. The increased diversion and pumping capacity would improve operational flexibility by allowing the City to divert additional water without needing to activate the Felton Diversion inflatable dam. The City anticipates that these improvements would begin construction in 2031 and last approximately two years.

Table 6-8: Expected Future Water Supply Projects or Programs (submittal table 6-7R)

Name of Future Projects or Programs	Joint Project with other suppliers? (If Yes, Supplier Name)	Additional Description	Planned Implementation Year	Planned for Use in Year Types	Expected Increase in Water Supply to Supplier (MG) Normal Year	Expected Increase in Water Supply to Supplier (MG) Single Dry Year
Aquifer Storage and Recovery Program	No	Convert existing wells to ASR wells and construct new ASR wells	Full implementation in 2031	All year types	0	632
Transfers with Scotts Valley Water District	Yes, Scotts Valley Water District	The City would supply excess surface water to Scotts Valley Water District when available. Scotts Valley Water District would supply groundwater to City during dry periods.	Full implementation in 2030	All year types	88	272
Transfers from Soquel Creek Water District	Yes, Soquel Creek Water District	Soquel Creek Water District would supply groundwater to City during dry periods.	Full implementation in 2030	All year types	94	337

Notes: Values for increase in water supply correspond to the values in Submittal Table 6-9R for 2050 and are reported in MG to conform to the format of this table. The City more typically represents these project capacities in terms of MGD. As described in Section 6.8.2, the expected supply increases are as follows: ASR program - 3.67 MGD; transfers with Scotts Valley Water District – up to 1 MGD, transfers from Soquel Creek Water District – up to 1.4 MGD. Some related projects (which will help enable the water supply projects listed here) are not compatible with this table and are described in the narrative.

6.9 Summary of Existing and Planned Sources of Water

6.9.1 Existing Sources of Water

The City's existing sources and actual production volumes for 2025 are presented in Table 6-9.

Table 6-9: Water Supplies –Actual (submittal table 6-8R)

Water Supply	Additional Detail on Water Supply	Water Type	2025 Actual Volume (MG)
Surface water (not desalinated)	North Coast	Potable	297
Surface water (not desalinated)	San Lorenzo River	Potable	1,728
Supply from Storage	Loch Lomond	Potable	252
Groundwater (not desalinated)	Beltz Well System	Potable	192
Purchased or Imported Water	Soquel Creek Water District Intertie	Potable	37
Subtotal Potable			*2,506*
Subtotal Non-Potable			*0*
Total			**2,506**

Notes: Net production. Source: Annual production data 2025.

6.9.2 Planned Sources of Water

Table 6-10 provides an estimate of the volume of water, by source, that is reasonably projected to be available from 2030 to 2050. The table displays deliveries for both a normal year and a single dry year. Projected volumes are based on projected water demands, available surface water flows consistent with ecosystem protection goals, and future water projects, and were projected using the City's modeling tool, the Santa Cruz Water System Model.

The City is actively safeguarding against future water shortages by implementing its water supply augmentation program. Implementation of planned future projects is therefore assumed in the forecasting of future water supplies. Consistent with the 2015 direction of the Water Supply Advisory Committee, the 2022 Securing Our Water Future Policy, the City's 2025 CIP, and the recommended water supply alternatives from the final WSAIP (Appendix I), the following assumptions about planned projects have been used in developing projected water supplies over the 25-year planning horizon of the UWMP:

- By 2026, the City will have completed construction of Intertie 1 and will be implementing transfers with the Scotts Valley Water District at up to 0.7 MGD.
- By 2027, the City will have completed conversion of the Beltz 12 well facility to permanent ASR operations.
- By 2028, the City will have completed conversion of the Beltz 8 well facility to permanent ASR operations and will be implementing transfers from the Soquel Creek Water District at up to 1.0 MGD.
- By 2029, the City will have completed conversion of the Beltz 9 well facility to permanent ASR operations.
- By 2030, the City will be implementing transfers with the Scotts Valley Water District at up to 1.0 MGD and transfers from the Soquel Creek Water District at up to 1.4 MGD.
- By 2035, the City will have completed conversion of the Beltz 10 well facility to permanent ASR operations, upgraded the Beltz Water Treatment Plant, and developed two new ASR wells in the Santa Cruz Mid-County Groundwater Basin. The City will also have completed the Facility Improvements Project at the Graham Hill Water Treatment Plant which will increase water treatment capacity to 18 MGD and improvements to the Tait Diversion and Coast Pump Station to increase its capacity to 18 MGD.

The City's CIP and WSAIP also include a future expansion of Soquel Creek Water District's Pure Water Soquel groundwater replenishment and seawater intrusion prevention project by 2040 to facilitate transfers in the Santa Cruz Mid-County Groundwater Basin; although, on-going analysis including groundwater modeling is underway to evaluate if this would actually be needed for additional supply augmentation. It is important to note that the City is implementing its planned water supply augmentation alternatives in an incremental fashion, as established in the SOWF policy and further described in the WSAIP. While the City is actively pursuing its planned projects, the incremental approach ensures that its water supply augmentation program is implemented in an effective, efficient, and economical manner by providing opportunity for ongoing evaluation and adjustment as needed to meet its water supply reliability goals.

Table 6-10: Water Supplies - Projected (submittal table 6-9R)

Water Supply	Additional Detail on Water Supply	2030 Reasonably Available Volume (MG)		2035 Reasonably Available Volume (MG)		2040 Reasonably Available Volume (MG)		2045 Reasonably Available Volume (MG)		2050 Reasonably Available Volume (MG)	
		Normal Year	Single Dry Year	Normal Year	Single Dry Year	Normal Year	Single Dry Year	Normal Year	Single Dry Year	Normal Year	Single Dry Year
Surface water*	North Coast	554	483	554	483	554	483	554	483	554	483
Surface water*	San Lorenzo River	1,778	582	1,911	682	2,011	782	2,111	882	2,111	882
Supply from Storage	Loch Lomond	53	472	53	294	53	294	53	294	53	294
Groundwater*	Beltz Well System – Groundwater and ASR	0	418	0	632	0	632	0	632	0	632
Transfers	Scotts Valley Water District	121	284	88	272	88	272	88	272	88	272
Transfers	Soquel Creek Water District	94	361	94	337	94	337	94	337	94	337
Total		**2,600**	**2,600**	**2,700**	**2,700**	**2,800**	**2,800**	**2,900**	**2,900**	**2,900**	**2,900**

* Not desalinated

Notes: Projected water supply values shown in this table represent output values from the City's Santa Cruz Water System Model using historic hydrology and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

6.10 Climate Change Impacts to Water Supply

As the City of Santa Cruz water supply consists of only local sources maintained and recharged by natural processes, the City water system is vulnerable to any combination of conditions that result in drier or warmer climate, more intense rainfall over shorter periods of time, etc. Prior climate and water system analyses, summarized in the 2020 UWMP, concluded that the City's current water supply situation is inadequate for meeting the longer-term challenges of climate change. More recently, the SOWF policy, item 1.7 (Appendix K) stated that:

> *Climate change, which is already influencing weather patterns in Santa Cruz, is expected to increase the annual variability of Santa Cruz's water supply. This means that more frequent and longer drought conditions are likely, that there will be fewer normal and moderately wet years and that wet conditions, when they occur, are likely to substantially increase flooding events because of a shift in the pattern of precipitation to shorter and significantly more intense storms. This increased variability is a substantial change from historic conditions and is the key driver of sizing supply augmentation projects.*

Given the water supply's vulnerability to climate change impacts, the City has devoted substantial effort to assessing anticipated local climate change conditions and planning future projects that address those conditions. Climate change specific impacts, such as timing, duration, and intensity of droughts cannot be accurately predicted. However, modeling technology can offer insights into the City's water system's resiliency to climate variables by simulating multiple scenarios with different climate conditions as further described in Chapter 7, Section 7.1.4.

6.11 Energy Use

The City of Santa Cruz tracks municipal energy use, including Water Department energy use, on an online public energy dashboard as part of the City's ongoing climate action program. As summarized in Table 6-11, in 2025 the City water system utilized about 6,201,000 kilowatt hours of energy in the production, conveyance, treatment, and distribution of water within the water system. This results in a calculated energy intensity of 2,512 kilowatt hours per million gallons. Additionally, the Water Department generated about 480,000 kilowatt hours of self-generated renewable energy from solar arrays at the Bay Street Tanks site in 2025. The Water Department administration building also has rooftop solar array panels which generate energy.[12] At the Coast Pump Station, a battery system has been installed which improves the City's ability to take advantage of time-of-use electricity rates, and also provides a backup power source.

[12] Note that the Water Administration building and solar generation are not included in Table 6-11 because they are not used in production, conveyance, treatment, and distribution of water within the water system.

Table 6-11: Recommended Energy Reporting - Single Delivery Project - Total Utility Approach (submittal table O-1B)

DWR Submittal Table O-1B Requested Information	Response
Water Delivery Product	Retail Potable Deliveries
Start Date of Reporting Period	1/1/2025
End Date of Reporting Period	12/31/2025
Is upstream embedded energy in the values reported?	No
Units of Measure for Water	MG
Volume of Water Entering Process (MG)	2,469
Energy Consumed (kWh)	6,201,000
Energy Intensity (kWh/vol. converted to MG)	2,512
Quantity of Self-Generated Renewable Energy	479,505 kWh

Data compiled by City of Santa Cruz Public Works using available data from PG&E billing data and PG&E energy manager function. Energy data is approximate and was compiled using information that can be readily obtained by the Water Department (as specified in the DWR UWMP Guidelines).

Narrative for All Water Supply:

- Extraction and Diversion - energy is used to operate equipment at diversion facilities and wells
- Conveyance - energy is used at booster and pump stations to convey raw water
- Treatment - energy is used at surface water and groundwater treatment facilities
- Distribution - energy is used at pump stations to convey treated water and at reservoir/tank sites within the distribution system
- Self-generated renewable energy is produced from solar arrays at the Bay Street Tanks site (distribution system).

7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENTS

This chapter characterizes the City's water service reliability through assessments of forecasted supply relative to forecasted demand. Short-term reliability planning that requires immediate action, such as drought or a catastrophic supply interruption, is addressed in Chapter 8, Water Shortage Contingency Planning.

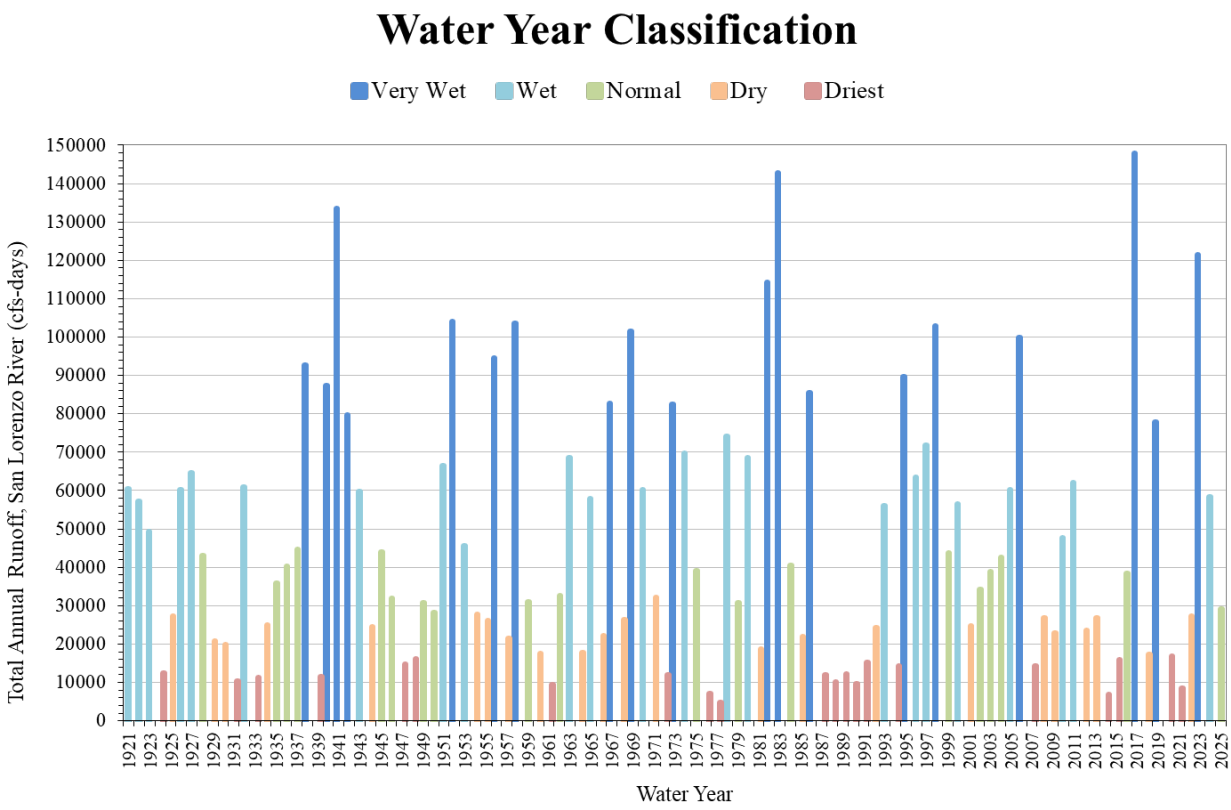
7.1 Constraints on Water Sources

The City of Santa Cruz faces challenges in meeting its present and future water supply needs that necessitate the ongoing implementation of water supply augmentation projects. The City's primary challenge is the limitation in when and how much water is available to meet the area's water service needs, exacerbated by limited storage within the system, particularly during multi-year droughts when rainfall is below average and under anticipated climate change conditions. The following sections outline the known constraints on supply. Refer to Chapter 6, Section 6.8 for a discussion of the ongoing implementation of water supply augmentation projects that the City is actively engaged in to address these identified constraints.

7.1.1 Local Supply Variability and Limited Storage

As explained in Chapter 3, the City water system draws almost exclusively on local surface water sources, whose yield varies from year to year depending on the amount of rainfall received during the winter season and runoff generated to feed the City's surface water supplies. Figure 7-1 below shows the total annual runoff for the San Lorenzo River over the 105-year period from 1921 to 2025 and the classification for each water year. The graph illustrates the dramatic variation in river discharge from year to year. The City's North Coast streams experience similar variability in runoff.

Figure 7-1: Total Annual Stream Discharge from the San Lorenzo River[13]



This natural variation in the level of runoff available in local streams and rivers, from which the City draws most of its supply, is the major factor that results in an inconsistent level of water supply from year to year. Ultimately, the only water available to the City is that which originates from rain that falls on the ocean side of the Santa Cruz Mountains.

The system is highly vulnerable to shortage during drought or extended dry periods, when the flow in local streams and river sources and storage in Loch Lomond Reservoir runs low. Moreover, like other communities on California's central coast, the Santa Cruz water system is physically and geographically isolated with no connections outside of Santa Cruz County.

Loch Lomond Reservoir (impounded by the Newell Creek Dam) is the City's single surface water reservoir. This reservoir is an integral part of the supply system. Some amount of stored water is used each year, mainly in the summer and fall months when the flows in the coast and river sources decline and additional supply is needed to meet higher daily water demands than during winter and spring. Stored water is also used in winter months during storm events when water quality concerns (particularly high turbidity) can make the use of the City's flowing sources more challenging.

[13] In 2025, the Water Department transitioned from using a four-tiered water year classification to using the five-tiered classification system shown in this figure. A comparison of the two classification systems is provided in Chapter 8, Section 8.2.2.1.3.

During dry years, the system relies more heavily on water stored in Loch Lomond to satisfy demand, which draws down the reservoir level lower than usual and depletes available storage. In multi-year drought conditions, the combination of very low surface flows in the coast and river sources and depleted storage in Loch Lomond Reservoir could reduce available supply to a level that cannot support average dry season demands. Compounding the situation is the need to retain a certain amount of water in the reservoir if drought conditions continue into the following year. While the existing system is not able to provide a reliable supply during multi-year droughts or prolonged periods of drier than normal hydrologic conditions within the source watersheds, the City's ongoing implementation of water supply augmentation projects is addressing this deficiency through projects such as aquifer storage and recovery (ASR) and transfers and exchanges with neighboring water districts to store or bank water during normal and wet years to increase supplies during drought (see Section 6.8).

7.1.2 Anadromous Salmonids and Water Rights Constraints

As described in Section 6.3.4, the City finalized its Anadromous Salmonid Habitat Conservation Plan (ASHCP) and water rights modifications in 2025. The ASHCP seeks to optimize habitat conditions for all life-stages of the subject species, coho salmon and steelhead trout, within the natural variability of the local hydrologic regime. The ASHCP includes Agreed Flows which provide improvements to instream flows through bypass flow requirements on all City surface water sources that are essential for the survival of anadromous salmonids in local watersheds. The Agreed Flows, which were also incorporated into the City's water rights modifications, generally require reduced diversions from the North Coast sources and from the San Lorenzo River at certain times. The reduced diversions will result in corresponding increased use of other existing sources such as stored water from Loch Lomond Reservoir and use of groundwater, to be offset in the future by use of planned future sources such as ASR and/or transfers and exchanges.

7.1.3 Source Water Quality and Treatment Capacity

The City's Graham Hill Water Treatment Plant complies with all drinking water standards set by the United States Environmental Protection Agency and the State Water Resources Control Board Division of Drinking Water. These regulations require monitoring of water sources, watershed protection, treatment techniques, and extensive monitoring of treated water quality throughout the distribution system. The City's 2025 Annual Water Quality Report is included as Appendix L.

The Graham Hill Water Treatment Plant is a conventional surface water treatment plant that was commissioned in 1960 as a 12 MGD plant and has undergone an expansion and a number of improvements over the last 50 years. Except for groundwater from the Beltz Well system and transfers from neighboring water districts, all water delivered through the City system is treated at this plant. In other words, it must operate properly 100 percent of the time to maintain water service throughout the entire system. Following the last major expansion the plant can process up to 24 MGD. Currently, the plant's ten-year average production is approximately 7 MGD.

The main water quality issues that the City faces are related to changes in the source water mix. In order to meet the ASHCP Agreed Flows and to accommodate implementation of ASR and/or transfers and exchanges, the City will need to divert more water during the rainy season. During the rainy season, surface water sources can be more challenging to treat due to high turbidity.

As described in Section 6.8.2.4, the City is implementing projects at the Graham Hill Water Treatment Plant to allow treatment of higher turbidity source water that otherwise would need to be bypassed during period high flow periods such as during and after storm events as well as to address aging infrastructure.

7.1.4 Climate Change and Adaptation

The City has long recognized the serious nature of climate change and its potential impacts to the water supply system. As described in Section 7.1.1, the natural variation in runoff available in local streams and rivers from which the City draws most of its supply is the major factor that can result in inconsistent water supply from year to year. As such and as described in Chapter 6, Section 6.10, the impacts of climate change are of critical importance for planning of future water supplies.

In 2022, Santa Cruz City Council adopted the Securing Our Water Future (SOWF) policy as described in Chapter 6, Section 6.8.1.2. During policy development, content was developed on a range of topics including water supply augmentation alternatives available to the City, evaluation criteria used for comparisons of these alternatives, City-specific water system modeling tools, vulnerability of the water system to plausible climate change scenarios, and assessing the economic impacts of curtailments should adequate additional supply not be available to meet customer demand.

Based on work with Professor Casey Brown of the University of Massachusetts at Amherst Department of Civil Engineering and affiliated Hydrosystems Research Group, and Professor Shawn Chartrand of Simon Fraser University's School of Environmental Science, the City developed tools that make it possible to assess the reliability and resilience of the water system across more than 8,000 plausible climate change scenarios in order to ascertain the water system's vulnerability to climate change and the related temperature and precipitation changes projected to result. The SOWF policy then identified an initial climate change scenario and parameters to be used in the near-term for planning of water-supply augmentation alternatives. In selecting this initial climate change scenario, staff considered a wide range of climate scenarios and sought to choose parameters that were moderate and plausible, and that did not either over- or under-estimate potential impacts of climate change on local water resources and water supply reliability.

The selected scenario for initial planning work was Realization 1270 with no precipitation change, a 2-degree C increase in temperature, and a +10 percent coefficient of variability (referred to as R1270-P1). The moderate and plausible R-1270-P1 includes a challenging five-year drought sequence that is currently being used to evaluate the ability of water-supply augmentation alternatives to meet the City's water supply reliability goals.

The SOWF policy additionally includes direction to periodically review, and update as necessary, the climate change scenario used for planning of water-supply augmentation alternatives and to incorporate this review into the five-year Urban Water Management Plan (UWMP) cycle.

Because only a few years have passed since the adoption of the SOWF policy, an initial review structure was developed as described in Appendix M, but the formal review of R-1270-P1 is deferred until the 2030 UWMP. Using data for annual trends of the three climate metrics, cumulative local precipitation, cumulative streamflow discharge for the San Lorenzo River, and

non-cumulative air temperatures, the initial review structure provides a simple decision process focused on an identified determination range for each metric. If observed metrics are found to be evolving outside of the determination ranges on a consistent and persistent bases, the determination will be that trends are evolving outside of the water supply planning process assumptions, and the City would adapt accordingly. Conversely, if observed metrics are found to be evolving inside of the determination ranges, the determination will be that trends are evolving consistently with the water supply planning process assumptions.

Going forward, data for each climate metric will be evaluated annually after the conclusion of each water year in an annual interim review process, ongoing literature and climate trends review will continue, and this initial review process to assess the selected climate change scenario may be adapted in preparation of the first formal review scheduled to be completed in 2030.

7.2 Reliability by Type of Year

For the purpose of assessing water system reliability, the California Department of Water Resources uses the following definitions for determining year type:

Average/Normal Year: This condition represents the water supplies available during normal conditions. This could be a single year or averaged range of years that most closely represents the average water supply available. The year 2010 is used in the Water Service Reliability Assessment below to represent the average year because flows in the San Lorenzo River during this year were very close to the historical average.

Single-Dry Year: A year that represents the lowest water supply available to the agency. The year 1977 is used in the Water Service Reliability Assessment below to represent the single dry year because it was the single driest year in this historical record.

Five-Consecutive-Year Drought: The five-consecutive-year drought represents the driest five-year historical period for the supplier. In this UWMP, the period 1973-1977 is used in both the Drought Risk Assessment and Water Service Reliability Assessment described below because it is the period in the historic record that would pose the greatest challenge to the City's water supply system. Even though the sequence began with very wet, wet, and normal years, the extremely dry period that occurred in the final two years of the sequence in 1976 and 1977 would result in greatest water supply shortages of any five-year period in the historical record. The sequencing of year types in this period is as follows:

- Year One (1973) – Very wet
- Year Two (1974) – Wet
- Year Three (1975) – Normal
- Year Four (1976) – Driest
- Year Five (1977) – Driest

By way of comparison, the drought of 1987-1991 was a period of more consecutive years classified as either dry or driest, but the hydrology of the period of 1973-1977 would result greater supply shortages for the City's water supply system.

While the UWMP requires that reliability assessments be conducted utilizing the historic record as the basis for analysis, the City also elected to conduct the reliability assessments using a

selected climate change scenario, R-1270-P1, as described in Section 7.1.4. Representative average, single-dry, and a five-year consecutive drought period were also selected from the climate change hydrology.

The reliability assessments include two assessments, the Drought Risk Assessment (DRA) and the Water Service Reliability Assessment (WSRA), both performed under historic hydrology conditions and (optionally) under the selected climate change conditions. The DRA looks at near-term water supply reliability through an analysis considering the five-consecutive-year drought beginning at the end of 2025, The WSRA looks at longer-term water supply reliability through an analysis considering the average/normal year, the single dry year, and the five-consecutive-year drought conditions occurring at five-year intervals for 25 years (2030, 2035, 2040, 2045, and 2050).

7.3 Drought Risk Assessment

The Drought Risk Assessment (DRA) includes a supply and use comparison looking ahead assuming the five-consecutive-year drought occurs beginning in 2026. The DRA can be modified or updated on an interim cycle, therefore it is required to include a description of the basis for assessment, an analysis of reliability for individual water sources, as well as a comparison of total water supply and use comparison over a five year drought period, even if this information is provided in detail elsewhere in the UWMP.

7.3.1 Basis for Assessment

The results presented in this section provide perspective on the City's drought risk and water supply reliability based on accepted assumptions and projected conditions in the water system under historic hydrology and a selected climate change hydrology. The data, methods, and basis for assumed water shortage conditions are consistent with those used throughout this 2025 UWMP. Specifically, projected demand is based upon the long-term demand forecast prepared for the City by M.Cubed. In 2014 and 2015, the City of Santa Cruz worked with M.Cubed to develop a long-term water demand forecast using econometric forecasting. This forecast was updated for subsequent UWMPs, most recently in 2025 for use in this 2025 UWMP (Appendix D).

The City of Santa Cruz uses the Santa Cruz Water System Model (SCWSM) developed with the Hydrosystems Research Group at the University of Massachusetts, to analyze the variability of water supplies to determine potential water supply shortages. The SCWSM replaced the City's prior Confluence® model, which was in use through 2023 in a validation process for the SCWSM. The SCWSM includes a representation of the City's water system sources and facilities on a daily timestep, and results can be generated under historic hydrologic conditions or under constructed climate change conditions. Inputs to the system model include a range of parameters related to initial conditions (e.g., reservoir storage), boundary conditions (e.g., inflow hydrology, water demand) and operating rules (e.g., water rights, wells pumping rates, reservoir rules, shutdown of diversion when turbidity is high). Outputs include supply from sources, Loch Lomond Reservoir volume, water flow through pumps, pipelines and diversions, and deliveries to water customers. The SCWSM can be configured to represent the City's existing water system or configured to represent the system modified to incorporate a range of possible water supply alternatives.

The City has chosen to conduct this analysis using both historic hydrology for the period 1973-1977 and a selected climate change scenario, R-1270-P1, for a five-consecutive-year drought as described in Section 7.1.4. Detailed modeling assumptions and results are provided in Appendix N.

As described in Section 6.8, the City is actively safeguarding against future water shortages by implementing its water supply augmentation program. Implementation of planned future projects is therefore assumed in the forecasting of future water supplies. Consistent with the 2015 direction of the Water Supply Advisory Committee, the 2022 SOWF Policy, the City's 2025 Capital Investment Program (CIP) as scheduled and budgeted for, and the recommended water supply alternatives from the final Water Supply Augmentation Implementation Plan (WSAIP), the following assumptions about planned projects have been incorporated into the DRA:

- By 2026, the City will have completed construction of Intertie 1 and will be implementing transfers with the Scotts Valley Water District at up to 0.7 MGD.
- By 2027, the City will have completed conversion of the Beltz 12 well facility to permanent ASR operations.
- By 2028, the City will have completed conversion of the Beltz 8 well facility to permanent ASR operations and will be implementing transfers from the Soquel Creek Water District at up to 1.0 MGD.
- By 2029, the City will have completed conversion of the Beltz 9 well facility to permanent ASR operations.
- By 2030, the City will be implementing transfers with the Scotts Valley Water District at up to 1.0 MGD and transfers from the Soquel Creek Water District at up to 1.4 MGD

The City's CIP and WSAIP also include a future expansion of Soquel Creek Water District's Pure Water Soquel groundwater replenishment and seawater intrusion prevention project by 2040 to facilitate increased ASR in the Santa Cruz Mid-County Groundwater Basin; although, on-going analysis including groundwater modeling is underway to evaluate if this would actually be needed for additional supply augmentation. It is important to note that the City is implementing its planned water supply augmentation projects in an incremental fashion, as established in the SOWF policy and further described in the WSAIP. While the City is actively pursuing its planned projects, the incremental approach ensures that its water supply augmentation program is implemented in an effective, efficient, and economical manner by providing opportunity for on-going evaluation and adjustment as needed to meet its water supply reliability goals.

7.3.2 Total Water Supply and Use Comparison

Table 7-1 presents the results of the DRA. This analysis shows that projected supply would meet projected demand for all five years of the five-consecutive-year drought sequence.

Table 7-2 presents the DRA under the selected climate change scenario. Under these conditions, a minor shortage of two percent would be expected in the fifth year. The magnitude of this shortage is within the margin of error expected in water supply modeling results. If needed, this small degree of shortage in the near-term could be managed as described in the Water Shortage Contingency Plan for a shortage of less than 10 percent.

These results represent an improvement in the City's drought risk outlook as compared to the 2020 UWMP, when substantial shortages of over 20 percent were expected in some years. With

future water supply projects expected to come online between 2025 and 2030, the City's drought risk has been reduced from the 2020 DRA results. This outcome underscores the importance of the City's water supply augmentation efforts and pursuit of its Water Supply Augmentation Strategy (WSAS) and WSAIP (described in Chapter 6, Section 6.8).

Table 7-1: Five-Year Drought Risk Assessment (submittal table 7-5R)

2026	**Total**
Total Water Use (MG)	2,500
Total Supplies (MG)	2,500
Surplus/Shortfall w/o WSCP (Water Shortage Contingency Plan) Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2027	**Total**
Total Water Use (MG)	2,500
Total Supplies (MG)	2,500
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2028	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,600
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2029	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,600
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2030	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,600
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0

Table 7-2: Five Year Drought Risk Assessment Table under the Selected Climate Change Scenario

2026	Total
Total Water Use (MG)	2,500
Total Supplies (MG)	2,500
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2027	**Total**
Total Water Use (MG)	2,500
Total Supplies (MG)	2,500
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2028	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,600
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2029	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,600
Surplus/Shortfall w/o WSCP Action (MG)	0
WSCP - supply augmentation benefit (MG)	n/a
WSCP - use reduction savings benefit (MG)	n/a
Revised Surplus/(shortfall)	0
2030	**Total**
Total Water Use (MG)	2,600
Total Supplies (MG)	2,551
Surplus/Shortfall w/o WSCP Action (MG)	(49)
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	49
Revised Surplus/(shortfall)	0

7.3.3 Individual Water Source Reliability and Determination

The DRA includes an assessment of the reliability of and determination on each water source over the five-consecutive year drought. The DRA captures a period when some water supply augmentation projects, implementing the WSAS, will begin operation. Figure 7-2 illustrates the water supply by source for each year in the drought risk assessment.

The City's flowing sources, the North Coast sources and San Lorenzo River, comprise the majority of the City's water supply. These flowing sources are highly susceptible to reduced flow availability during drought conditions. Reduced water availability from the flowing sources results in increased reliance during dry years on the Beltz Well system for groundwater and Loch Lomond Reservoir for supply from storage. The Beltz Well system is constrained by the

limited capacity of the four existing groundwater wells and is managed as a basin in critical overdraft per the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (Appendix G). While Loch Lomond Reservoir is the City's only supply storage in 2025, beginning in 2027, conversion of individual Beltz well facilities to ASR facilities will be underway with expected conversion of Beltz 12 by 2026, Beltz 8 by 2027, and Beltz 9 by 2028 which will allow for a new opportunity to store surface water in the Mid-County Basin for later withdrawal. Furthermore, beginning in 2026, transfers and exchanges with Scotts Valley Water District at up to 0.7 MGD are expected with the completion of Intertie 1, and beginning in 2028, transfers from Soquel Creek Water District at up to 1.0 MGD are expected. By 2030, the available capacities for transfers and exchanges are expected to increase up to 1.0 MGD with Scotts Valley Water District and up to1.4 MGD from Soquel Creek Water District. These future projects are further described in Chapter 6, Section 6.8.2.

Recycled water used within the system is currently limited to irrigation of the Pasatiempo Golf Course and is supplied from the City of Scotts Valley. This recycled water supply is not expected to be impacted by drought conditions.

As described above, the City also conducted the DRA utilizing the selected climate change scenario. Figure 7-3 illustrates the City's water supply by source that is projected to be utilized under this scenario. While the hydrologic scenarios differ between the two assessments, the reliability assessment of the individual sources is not affected.

Figure 7-2: Drought Risk Assessment Supply by Source

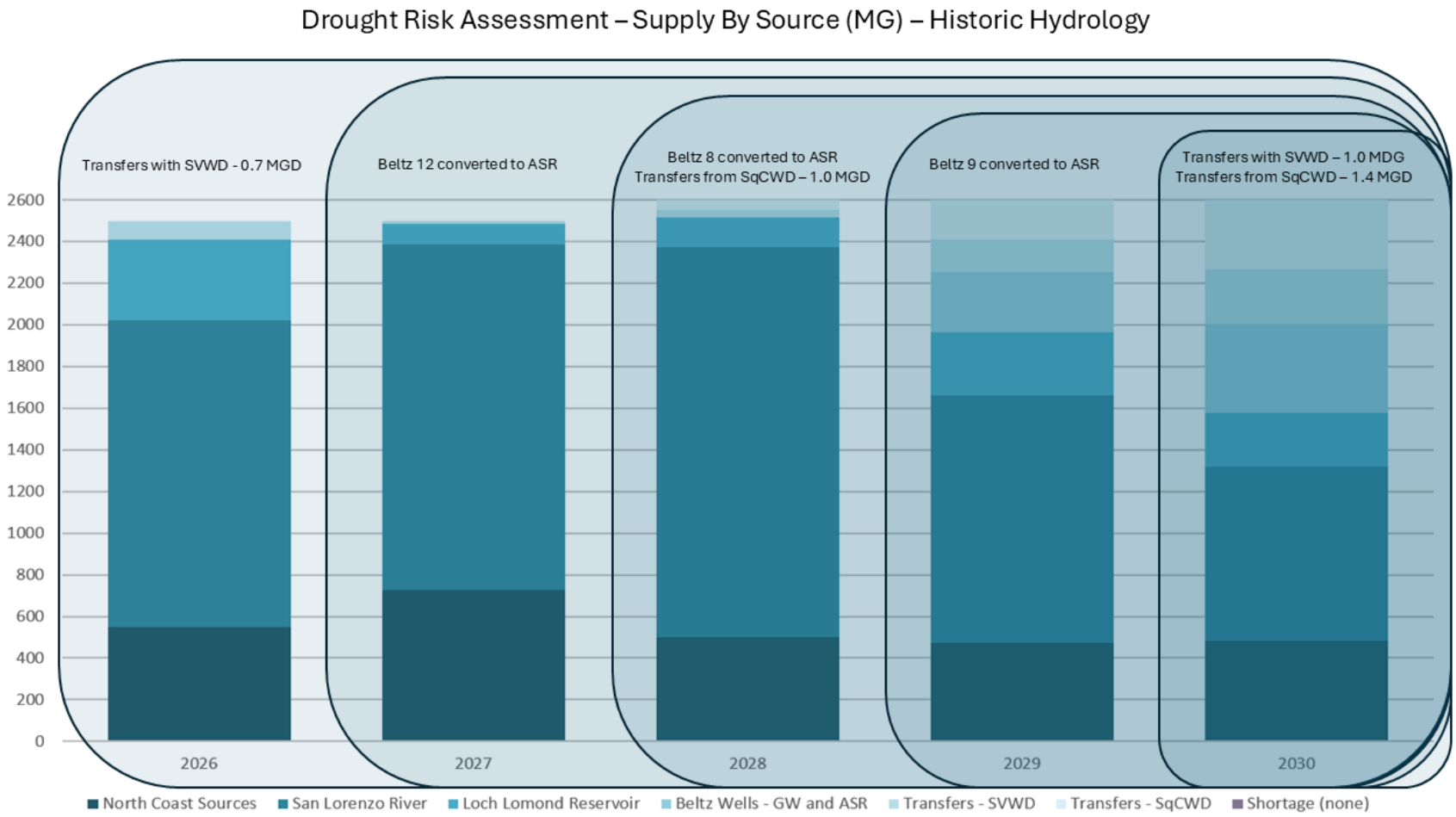
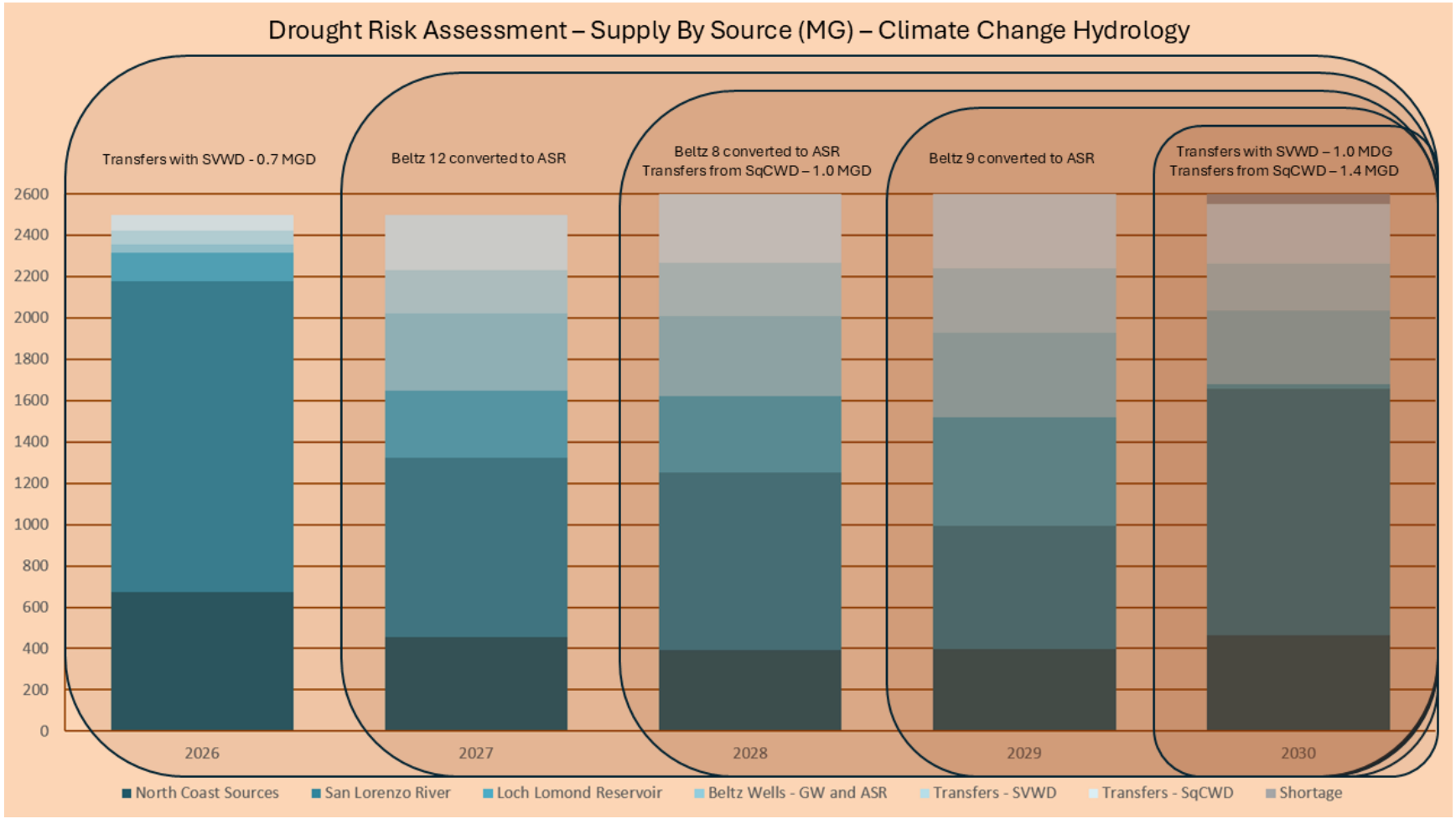


Figure 7-3: Drought Risk Assessment Supply by Source under the Selected Climate Change Scenario



7.4 Water Service Reliability Assessment

To demonstrate supply reliability over time for each year type modelled, Figure 7-4 illustrates projected supply available relative to forecasted demand over the 25-year planning horizon of this water service reliability assessment (WSRA). As further described below and consistent with the City's WSAS, implementation of planned projects has been incorporated into this assessment.

Similar to the DRA, the results presented in this section provide perspective on the City's water supply reliability based on accepted assumptions and projected conditions in the water system under historic hydrology and a selected climate change scenario. The City projects sufficient water supplies available in the normal/average year, the single-dry year, and the five-consecutive-year drought to serve anticipated demand throughout the 2030-2050 analysis period.

As described in Section 6.8, the City is actively safeguarding against future water shortages by implementing its water supply augmentation program. Implementation of planned future projects is therefore assumed in the forecasting of future water supplies. Consistent with the 2015 direction of the Water Supply Advisory Committee, the 2022 SOWF Policy, the City's 2025 CIP as scheduled and budgeted for, and the recommended water supply alternatives from the final WSAIP, the following assumptions about planned projects have been incorporated into the WSRA:

- By 2026, the City will have completed construction of Intertie 1 and will be implementing transfers with the Scotts Valley Water District at up to 0.7 MGD.
- By 2027, the City will have completed conversion of the Beltz 12 well facility to permanent ASR operations.
- By 2028, the City will have completed conversion of the Beltz 8 well facility to permanent ASR operations and will be implementing transfers from the Soquel Creek Water District at up to 1.0 MGD.
- By 2029, the City will have completed conversion of the Beltz 9 well facility to permanent ASR operations.
- By 2030, the City will be implementing transfers with the Scotts Valley Water District at up to 1.0 MGD and transfers from the Soquel Creek Water District at up to 1.4 MGD
- By 2035, the City will have completed conversion of the Beltz 10 well facility to permanent ASR operations, upgraded the Beltz Water Treatment Plant, and developed two new ASR wells in the Santa Cruz Mid-County Groundwater Basin. The City will also have completed the Facility Improvements Project at the Graham Hill Water Treatment Plant which will increase water treatment capacity to 18 MGD and improvements to the Tait Diversion and Coast Pump Station to increase its capacity to 18 MGD.

The City's CIP and WSAIP also include a future expansion of Soquel Creek Water District's Pure Water Soquel groundwater replenishment and seawater intrusion prevention project by 2040 to facilitate increased ASR in the Santa Cruz Mid-County Groundwater Basin; although, on-going analysis including groundwater modeling is underway to evaluate if this would actually be needed for additional supply augmentation. It is important to note that the City is implementing its planned water supply augmentation projects in an incremental fashion, as established in the SOWF policy and further described in the WSAIP. While the City is actively

pursuing its planned projects, the incremental approach ensures that its water supply augmentation program is implemented in an effective, efficient, and economical manner by providing opportunity for on-going evaluation and adjustment as needed to meet its water supply reliability goals.

Figure 7-5 shows the projected supply available relative to demand under the selected climate change scenario. The City projects having sufficient water supply available in the normal/average year and single-dry year conditions under the climate change scenario. Supplies are generally projected to be sufficient to meet demand during five-consecutive-year drought conditions, with the exception of the near-term (2030-2034), when supply would fall short of projected demand by four percent during the fifth year of the drought sequence. Under the five-consecutive-year drought conditions after 2035, with implementation of planned projects, available supplies would meet projected demand all years in the WSRA.

Figure 7-4: Projected Supply Availability as Percent of Demand Served

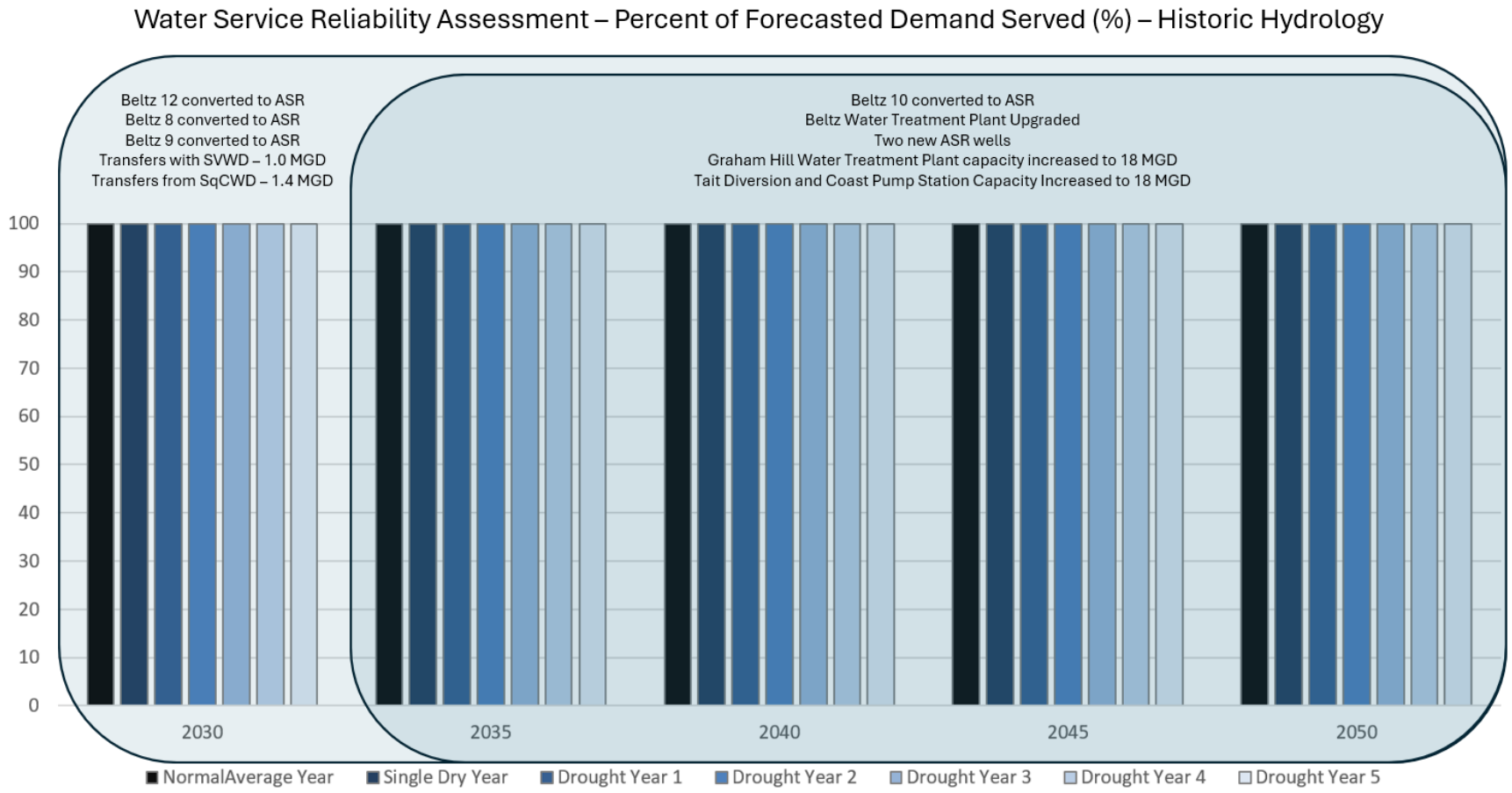
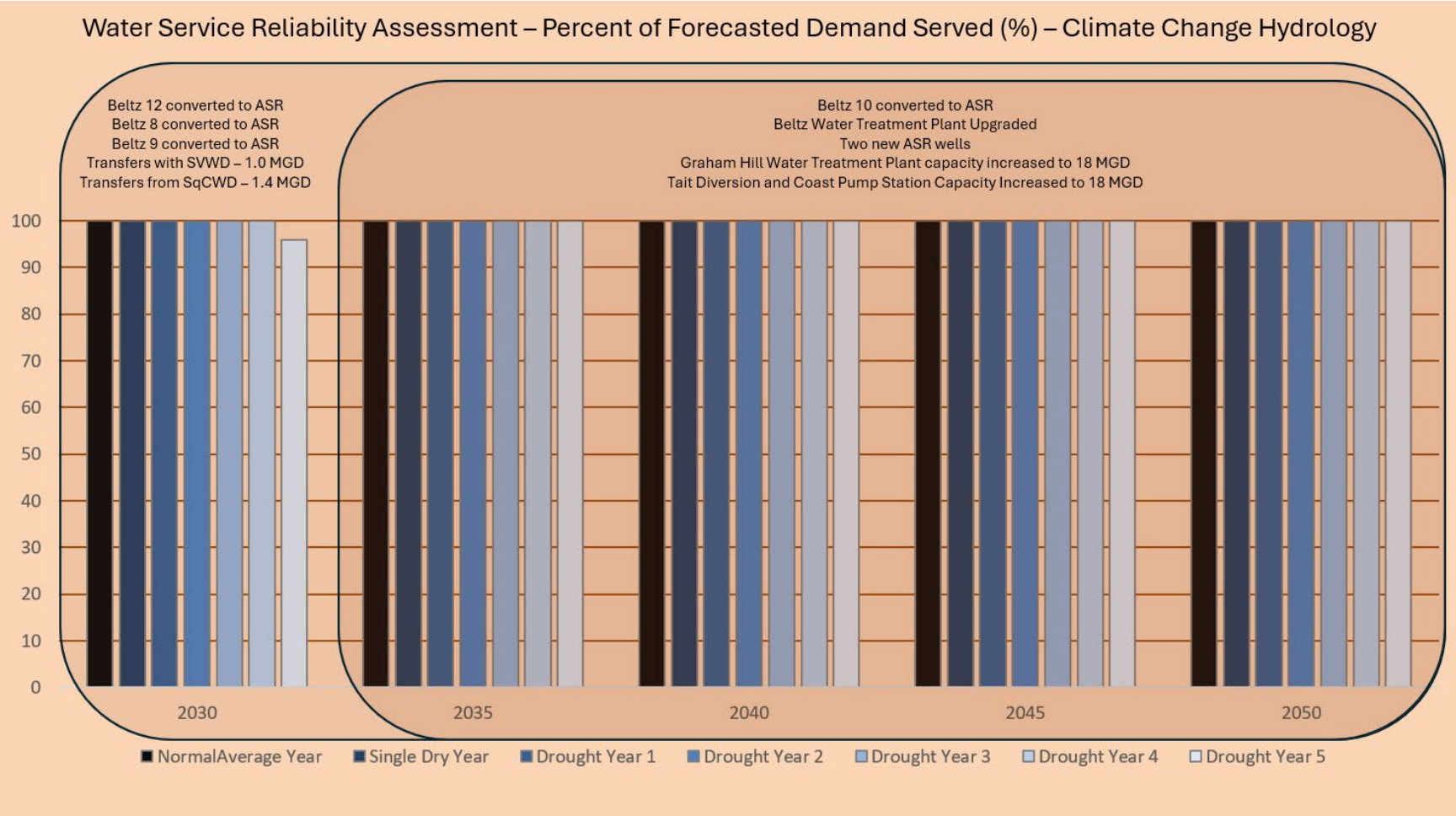


Figure 7-5: Projected Supply Availability as Percent of Demand Served under the Selected Climate Change Scenario



7.4.1 Normal/Average Water Year

After selecting the representative normal/average year (2010) from the period of record, the normal/average conditions were projected for future years in five-year intervals through 2050. The summary results of this WSRA, showing no shortages under the normal/average condition over the planning period with implementation of future water projects, are presented in Table 7-3 below for historic hydrology and Table 7-4 for the selected climate change scenario.

Table 7-3: Normal Year Supply and Use Comparison (submittal table 7-2R)

	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply Totals	2,600	2,700	2,800	2,900	2,900
Use Totals	2,600	2,700	2,800	2,900	2,900
Surplus/(shortfall)	0	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using historic hydrology and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

Table 7-4: Normal Year Supply and Use Comparison Under the Selected Climate Change Scenario

	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply Totals	2,600	2,700	2,800	2,900	2,900
Demand Totals	2,600	2,700	2,800	2,900	2,900
Difference	0	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using the selected climate change scenario and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

7.4.2 Single-Dry Water Year

For the single-dry year condition, this WSRA presents water supply available to the City as reflected in conditions comparable to 1977, which is the driest year in the historical record. As shown in Table 7-5, water supply during the single-dry year condition is sufficient to meet the demand over the planning horizon through 2050 with implementation of future water projects.

The same analysis using the driest year in the selected climate change scenario also indicated that supply is sufficient to meet demand through 2050 with implementation of future water projects, as indicated in Table 7-6.

Table 7-5: Single Dry Year Supply and Use Comparison (submittal table 7-3R)

	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply Totals	2,600	2,700	2,800	2,900	2,900
Use Totals	2,600	2,700	2,800	2,900	2,900
Surplus/(shortfall)	0	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using historic hydrology and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

Table 7-6: Single Dry Year Supply and Use Comparison under the Selected Climate Change Scenario

	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply Totals	2,600	2,700	2,800	2,900	2,900
Use Totals	2,600	2,700	2,800	2,900	2,900
Difference	0	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using the selected climate change scenario and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

7.4.3 Five-Consecutive-Year Dry Period

The results of the five-consecutive-year drought condition supply and demand comparison are provided as totals and overall differences in Table 7-7. In an extreme five-year drought similar to the 1973 to 1977 event, the estimated water supply available to the City would meet projected demand in all years of the five-consecutive-year drought sequence and all timeframes through 2050 with implementation of future water projects.

Under the selected climate change scenario, limited shortages are projected in the near term as compared to the analysis using historic hydrology. Under this scenario, a small four percent shortage would be expected during the fifth year of the five-year drought in the near term, 2034. The results of the five-consecutive-year drought condition supply and demand comparison under the selected climate change scenario are provided as totals and overall differences in in Table 7-8.

Table 7-7: Multiple Dry Year Supply and Use Comparison (submittal table 7-4R)

Year	Supply/Use	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
First year	Supply totals	2,600	2,700	2,800	2,900	2,900
First year	Use totals	2,600	2,700	2,800	2,900	2,900
First year	Surplus/(shortfall)	0	0	0	0	0
Second year	Supply totals	2,600	2,700	2,800	2,900	2,900
Second year	Use totals	2,600	2,700	2,800	2,900	2,900
Second year	Surplus/(shortfall)	0	0	0	0	0
Third year	Supply totals	2,600	2,700	2,800	2,900	2,900
Third year	Use totals	2,600	2,700	2,800	2,900	2,900
Third year	Surplus/(shortfall)	0	0	0	0	0
Fourth year	Supply totals	2,600	2,700	2,800	2,900	2,900
Fourth year	Use totals	2,600	2,700	2,800	2,900	2,900
Fourth year	Surplus/(shortfall)	0	0	0	0	0
Fifth year	Supply totals	2,600	2,700	2,800	2,900	2,900
Fifth year	Use totals	2,600	2,700	2,800	2,900	2,900
Fifth year	Surplus/(shortfall)	0	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using historic hydrology and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

Table 7-8: Multiple Dry Years Supply and Use Comparison under the Selected Climate Change Scenario

Year	Supply/Use	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
First year	Supply totals	2,600	2,700	2,800	2,900	2,900
First year	Use totals	2,600	2,700	2,800	2,900	2,900
First year	Surplus/(shortfall)	0	0	0	0	0
Second year	Supply totals	2,600	2,700	2,800	2,900	2,900
Second year	Use totals	2,600	2,700	2,800	2,900	2,900
Second year	Surplus/(shortfall)	0	0	0	0	0
Third year	Supply totals	2,600	2,700	2,800	2,900	2,900
Third year	Use totals	2,600	2,700	2,800	2,900	2,900
Third year	Surplus/(shortfall)	0	0	0	0	0
Fourth year	Supply totals	2,600	2,700	2,800	2,900	2,900
Fourth year	Use totals	2,600	2,700	2,800	2,900	2,900
Fourth year	Surplus/(shortfall)	0	0	0	0	0
Fifth year	Supply totals	2,508	2,700	2,800	2,900	2,900
Fifth year	Use totals	2,600	2,700	2,800	2,900	2,900
Fifth year	Surplus/(shortfall)	(92)	0	0	0	0

Notes: Projected water supply values shown in this table represent output values from the City's SCWSM model using the selected climate change scenario and projected demand based upon the 2025 Update to the City of Santa Cruz Long-Range Demand Forecast (M.Cubed, 2025) (Appendix D). Assumptions about future water projects are provided in Section 6.9.2.

7.5 Regional Supply Reliability

The City of Santa Cruz continues to focus its water supply planning and reliability efforts on programs and projects that emphasize the maximization of available local resources. The City has not pursued supply planning that includes importing water from outside the Central Coast hydrologic region but rather is focusing on water supply options available within Santa Cruz County.

All of the City's water resources are obtained from local sources. In order to build drought supply reliability, the City continually works to develop partnerships within the region that promote responsible and sustainable water resource management. A known constraint on the regional supply is the overdrafted, threatened, and recovering aquifers. The City's future supply vision includes projects serving to benefit regional aquifer recovery and increased reliability of groundwater sources. Recognizing the path toward regional reliability requires a comprehensive framework that supports dependability of all recognized supplies within the region and the types of tools being proposed and evaluated at present seek to benefit multiple stakeholders. As described in Section 6.8, planned City projects involve partnerships with Scotts Valley Water District and Soquel Creek Water District.

At this point in time, the City is actively participating in regional teams formed to increase coordination of activities among resource agencies. Further, the City's WSAS necessitates collaborative work with regional partners and benefits from participation of stakeholders that include government and non-government resource management agencies. The City is one of four members of the Santa Cruz Mid-County Groundwater Agency, as discussed in Chapter 6, and participates on the Board of Directors for the Santa Margarita Groundwater Agency. The City is also engaged with the Santa Cruz Integrated Regional Water Management Group, an organization made up of nine local agencies.

8 WATER SHORTAGE CONTINGENCY PLAN

This chapter presents information about how the City of Santa Cruz manages the water system during a water shortage emergency that arises as a result of drought. It also describes water supply and demand assessment procedures, actions that would be undertaken in response to a catastrophic interruption of water supplies, including a regional power outage, earthquake, or other emergency situation, legal authority, and other topics.

This Chapter 8, Water Shortage Contingency Planning comprises the City of Santa Cruz's complete Water Shortage Contingency Plan (WSCP), in compliance with the California Water Code section 10632 and incorporated guidance from the California Department of Water Resources (DWR) Urban Water Management Plan (UWMP) Guidebook (DWR, 2026). Background on the development of the WSCP can be found in the 2020 UWMP, Appendix O, Water Shortage Contingency Analysis and Implementation.

8.1 Summary of Water Service Reliability Assessment

As described in Chapter 7 of this UWMP, the City of Santa Cruz faces challenges in meeting its present and future water supply needs that necessitate the ongoing implementation of water supply augmentation projects. The City's primary challenge is the limitation in when and how much water is available to meet the area's water needs, particularly during multi-year droughts when rainfall is below average, and under anticipated climate change conditions. Known constraints to the system include local supply variability and limited storage, anadromous salmonid and water rights constraints, source water quality and treatment capacity, and climate change.

To understand and plan for these risks, the City completed two key analyses, a drought risk assessment (DRA) and a water service reliability assessment (WSRA). Both the DRA and WSRA were performed under a historic hydrology and a selected climate change scenario and assumed implementation of planned projects consistent with the 2015 direction of the Water Supply Advisory Committee, the 2022 Securing Our Water Future Policy, the City's 2025 Capital Investment Program as scheduled and budgeted for, and the recommended water supply alternatives from the final Water Supply Augmentation Implementation Plan.

The DRA looks at what would happen if a very severe five-year drought began in 2026, similar to the historic 1973-1977 drought which would result in greatest water supply shortages of any five-year period in the historical record. The DRA under historic hydrology with assumed implementation of planned projects found that water supply would meet projected demand in all five years. The DRA under the selected climate change scenario with assumed implementation of planned projects found a very small shortage (about two percent) could occur in the fifth year of the drought sequence.

The WSRA looks at long-term reliability in five-year increments from 2030 through 2050 under the following conditions:

- Normal/average year,
- Single-dry year, and
- Five-consecutive-year drought.

The WSRA under historic hydrology found that water supply would meet projected demand under all conditions. The WSRA under the selected climate change condition found that water supply would meet projected demand under normal/average year and single-dry year conditions in all years through 2050. Under the selected climate change condition in the five-consecutive-year drought condition, in 2030 a small shortage (four percent) could occur in the fifth year of the drought sequence, but after 2035, implementation of planned projects would provide adequate supply to meet projected demand through 2050.

The short-term DRA and longer-term WSRA show that while the City remains vulnerable to extreme drought, particularly in the near term, the planned projects that the City is actively pursuing are expected to provide adequate supply to reliably meet projected demand through 2050. In the event that supplies fall short of demand resulting in a water shortage emergency, this WSCP would be implemented.

8.2 Annual Water Supply and Demand Assessment Procedures

Each year, the City undertakes an assessment process to forecast whether anticipated water supplies will be adequate to meet expected customer demand. This section describes the general inputs and processes staff uses annually to evaluate the adequacy of supply to meet demand for the year ahead and, in particular, for the peak season defined as May 1 through October 31.

8.2.1 Decision-Making Process

The formal decision-making process for a declaration of a water shortage involves a determination by the Water Director that a water shortage exists or is imminent and a declaration of a water shortage by the Santa Cruz City Council. Santa Cruz Municipal Code section 16.01.020 includes the following (Appendix O):

> *"The provisions of this chapter shall take effect whenever the director, upon analysis of city water supplies, finds and determines that a water shortage exists or is imminent within the city of Santa Cruz water service area and a declaration of a water shortage is made by a resolution of the city council, and they shall remain in effect for the duration of the peak season through October 31st, unless rescinded earlier or extended by city council."*

In practice, the functional steps to annually determine if a shortage exists or is expected to occur happens from January through spring as described below.

8.2.1.1 Initial Water Supply Outlook

During January each year, staff prepares a summary that describes current water supply conditions and discusses the preliminary water supply outlook for the peak season ahead. This initial water supply outlook is typically provided as a written staff report and presentation to the City Water Commission in early February, which is just after the mid-point of the winter wet season.

8.2.1.2 Interim Water Supply Update When Needed

Staff may elect to prepare an interim water supply update during the month of February if conditions change significantly or in particularly dry years. The interim update is then provided to the Water Commission in early March.

8.2.1.3 Final Water Supply Assessment

Typically during March, a final water supply assessment is prepared based on updated data and completed modeling runs (see Section 8.2.2.2.1 below). This final assessment is provided as a written staff report and presentation to the Water Commission usually in early April, but actual timing of the final water supply assessment can vary based on conditions. For example, in a particularly dry year with low water storage levels, staff could provide the final water supply assessment to the Water Commission in early March if a water supply shortage is anticipated.

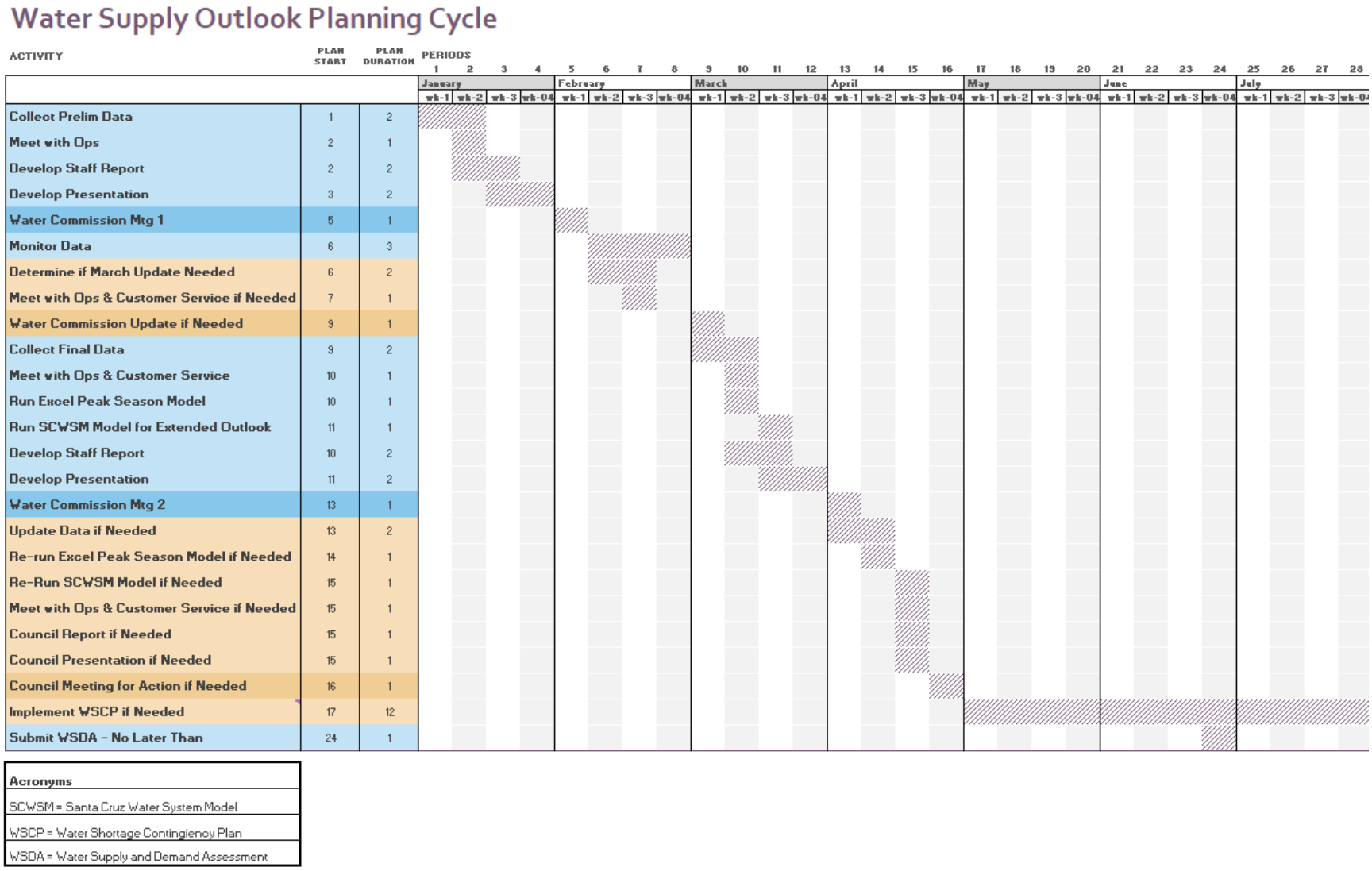
8.2.1.4 City Council Action When Needed

If the final water supply assessment indicates that a local water shortage is expected, the Water Commission would be asked for a recommendation to the Santa Cruz City Council for a water shortage declaration and implementation of a specific shortage level of the WSCP. This information would then be presented by the Water Director to the Santa Cruz City Council, typically in April, which could then formally declare a water shortage and authorize implementation of a specific shortage level of the WSCP beginning in May.

8.2.1.5 Schedule

In order to decide on appropriate actions and to provide adequate notice to the public, the annual assessment must be made before the end of the rainy season each year. There is always the chance that late winter rains will change the water supply assessment; thus, the situation often remains dynamic through April. A typical schedule for the planning cycle is included in Figure 8-1.

Figure 8-1: Water Supply Outlook Planning Cycle



8.2.2 Data and Methodologies

In Santa Cruz, a water shortage could occur when the combination of low surface flows in the North Coast and San Lorenzo River sources and depleted water storage reduces the available supply to a level that cannot adequately support existing demand. Ordinarily, one abnormally dry year would not create a water shortage in Santa Cruz. Even after one dry winter there is typically sufficient water stored in Loch Lomond Reservoir to carry the system through the following summer. Based on past experience, however, a shortage might occur when the central coast region experiences multiple dry winter seasons in a row.

There is no one single criterion, trigger, or definition that is used to determine if a water shortage exists. The determination of a shortfall involves consideration of all the parameters mentioned previously, as well as expected system demand.

8.2.2.1 Key Data and Considerations

The City uses key hydrologic indicators such as rainfall, streamflow (also called discharge or runoff), hydrologic condition type, and water supply storage to evaluate water supply conditions. New water supplies and storage, infrastructure considerations, and customer demand are also considered when assessing annual water supply adequacy.

These factors form the basis of the forecasting process and management considerations used annually to determine whether a water shortage is expected for the year ahead.

8.2.2.1.1 Rainfall

The City of Santa Cruz's water supply originates from precipitation that falls in the form of rain on the Pacific Ocean side of the Santa Cruz Mountains during fall, winter, and early spring. Most rainfall normally occurs in a five-month period between November and March. The amount of precipitation that falls across the wet season is one basic indicator of whether the city is experiencing a wet or dry year. Rainfall amounts on the central coast vary widely from year to year.

Daily rainfall data are collected for water supply purposes at various sites in the Newell Creek watershed, in Ben Lomond, and in the City of Santa Cruz. The Ben Lomond and Santa Cruz DeLaveaga sites are both official National Oceanographic and Atmospheric Administration weather observation stations with extended rainfall records. The Santa Cruz DeLaveaga site is the primary reference used for water supply planning purposes.

The pattern in both timing and distribution of rainfall can be as important in determining water supply availability as the total amount of rainfall received. Years in which most rainfall occurs early in the rainy season or is concentrated in a short time frame tend to produce lower river and stream flows during the peak summer season. Conditions where storms are spread out through the winter season or occur late into spring help sustain higher base flows in the coastal streams and the San Lorenzo River later into the year.

8.2.2.1.2 Streamflow

Under normal operating conditions, the North Coast streams and San Lorenzo River flows provide about 80 percent of the City's total annual water supply. Accordingly, streamflow is a key parameter used to assess the City's water supply condition.

Streamflow in the San Lorenzo River is monitored at two locations using the United States Geological Survey (USGS) gages located at Henry Cowell Redwoods State Park near Felton (Big Trees gage) and downstream next to the City's Tait Diversion (Santa Cruz gage). The Big Trees gage is particularly important for assessing water supply conditions because the river is the City's single largest supply source and because of the long historic record that exists for the site. Real time flow records for the Big Trees gage are available on the USGS website. The USGS also prepares annual summaries that provide a record of mean daily and monthly flows (discharge), expressed in cubic feet per second, and total monthly discharge, expressed in acre-feet. Water Department staff charts these data and compares them with long-term averages and the previous year's hydrograph to assess trends. Stream gages are operated on the North Coast sources by City staff and data are collected for similar analysis.

Runoff in the City's sources fluctuates annually and seasonally, depending on the amount and timing of rainfall and residual baseflows from the previous water year. The majority of runoff typically occurs over a three-month period from January through March, once the watershed becomes saturated. After the rainy season ends, streamflows gradually decline over the course of the summer dry season.

8.2.2.1.3 Hydrologic Condition Type

For water supply outlook planning as of 2025, the City has transitioned from using a four-tiered annual classification system to using a five-tiered monthly classification system. The five-tiered classification system is consistent with the hydrologic condition classifications used to determine bypass requirements in the Anadromous Salmonid Habitat Conservation Plan (ASHCP) and the City's water rights. This system now serves as the primary index of its water supply conditions and as a surface water supply forecasting tool.

Under the current five-tiered classification system, each month of the water year, which runs from October 1 to September 30, is designated as one of five types based on the total cumulative stream discharge from October 1 through the end of the previous month, as measured at the USGS Big Trees gage in Felton. Total annual runoff from October through September is used for the annual water year classification and determines the October hydrologic conditions for the beginning of each new water year. This classification system is shown in Table 8-1 below.

Table 8-1: Hydrologic Condition Type Classification

Month	Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs-days) Using San Lorenzo River End-of-Month Cumulative Daily Flow				
	Hydrologic Condition 5 (driest)	*Hydrologic Condition 4 (dry)*	*Hydrologic Condition 3 (normal)*	*Hydrologic Condition 2 (wet)*	*Hydrologic Condition 1 (very wet)*
October	≤459	460 – 539	540 – 709	710 – 875	>875
November	≤1,186	1,187 – 1,497	1,498 – 1,827	1,828 – 2,485	>2,485
December	≤2,397	2,398 – 3,134	3,135 – 5,642	5,643 – 10,196	>10,196
January	≤4,322	4,323 – 8,456	8,457 – 16,694	16,695 – 28,019	>28,019
February	≤8,442	8,443 – 16,368	16,369 – 29,140	29,141 – 42,995	>42,995
March	≤13,004	13,005 – 22,948	22,949 – 35,371	35,372 – 57,968	>57,968
April	≤14,203	14,204 – 24,491	24,492 – 39,487	39,488 – 67,884	>67,884
May	≤15,448	15,449 – 25,279	25,280 – 41,659	41,660 – 71,412	>71,412
June	≤16,005	16,006 – 26,116	26,117 – 43,123	43,124 – 73,420	>73,420
July	≤16,364	16,365 – 26,819	26,820 – 44,073	44,074 – 74,718	>74,718
August	≤16,653	16,654 – 27,355	27,356 – 44,799	44,800 – 75,591	>75,591
September	≤16,978	16,979 – 27,843	27,844 – 45,398	45,399 – 76,368	>76,368

Notes: cfs = cubic feet per second.

[1] The hydrologic condition types are based on the record of cumulative daily average flow by water year (water years 1937-2015) at the Big Trees gage on the San Lorenzo River.

[2] The hydrologic condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.

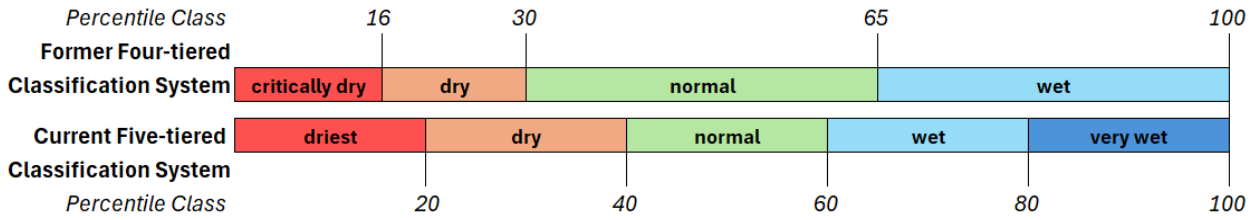
a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees gage, from the first day of the Water Year to the last day of the month.

b. The flow ranges for the month are then reviewed to determine within which hydrologic condition type this end-of-month cumulative daily flow falls.

c. This hydrologic condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

Both the former four-tiered classification system and the current five-tiered classification system are based on cumulative streamflow (runoff) in the San Lorenzo River as measured at the Big Trees gage. Total runoff is ranked from lowest to highest and then classified according to percentile class as shown in Figure 8-2. It is important to note that relatively more years will be classified as Driest (also referred to as Critically Dry) and Dry, and relatively fewer years will be classified as Normal (also referred to as Average) under the five-tiered classification system than under the four-tiered classification system.

Figure 8-2: Hydrologic Condition Classification System Comparison



While the current hydrologic condition type is of primary consideration in assessing and forecasting water conditions, the previous water year classification also has some influence on summer water supply availability. A previous year that is classified as wet will help sustain higher river base flows longer into the year, whereas a previous dry year can cause river flows to decline sooner.

8.2.2.1.4 Water Supply Storage

Loch Lomond Reservoir has long been the City's only source of stored water and has a total storage capacity of 2.8 billion gallons (equivalent to roughly one year of demand). In normal and wet years, reservoir storage typically refills naturally to full capacity with runoff from the Newell Creek watershed, usually by February or March. Storage can also be supplemented in dry years with water pumped up to the reservoir from the Felton Diversion on the San Lorenzo River. In most years, the dry season starts with a full or nearly full reservoir, but during drought, the dry season may start with diminished capacity in the reservoir.

8.2.2.1.5 New Water Supplies and Storage

Over the next five years, the City will have completed construction of new aquifer storage and recovery (ASR) facilities, providing additional storage of diverted surface water in local aquifers. Additionally, new interties with the Scotts Valley Water District and Soquel Creek Water District will provide opportunities for water transfer and exchanges allowing for in lieu aquifer recharge, functionally increasing water storage available during times of drought. These new supplies will be considered in future water supply assessments as they come online.

8.2.2.1.6 Other Infrastructure Considerations

Staff reviews any existing and anticipated infrastructure constraints that could impact water supply availability for the peak season. These considerations typically include a review of planned construction or other potential interruptions at production facilities, wells, or diversion facilities, and across the water distribution system to determine if production or distribution is expected to be impacted.

8.2.2.1.7 Customer Demand

Prior year peak season customer demand is reviewed each year to estimate likely peak season unconstrained customer demand in the year to come. Consideration is given to how wet or dry the previous year was compared to the current year, if shortage declaration and implementation of a specific shortage level of the WSCP occurred, and/or any broad socioeconomic trends.

8.2.2.2 Methodology

To annually assess water supply and demand, Water Department staff follow a two-step process:

1. Annual Peak Season Assessment for May through October: Prepare a forecast of peak season water supplies expected to be available on a monthly timestep from all sources under current conditions and compare with expected water demand to determine if a shortage is anticipated over the peak season.
2. Annual Extended Assessment for November through June: Model expected water supplies from all sources assuming the single dry year hydrologic conditions of 1977,

the year with the lowest San Lorenzo River streamflow on record, and compare with expected water demand to determine if a shortage would be anticipated in the coming year under dry conditions.

8.2.2.2.1 Annual Peak Season Assessment for May through October

The peak season, defined as May 1 through October 31, is considered the critical period for the purpose of assessing water supply adequacy. This is the period when water availability in the City's flowing sources is generally lowest and water demand normally would be at its highest, potentially creating a dry-season water supply shortage. The assessment focuses on the peak season because past experience indicates that, even in dry years, there is generally adequate water in the City's flowing sources to meet system demands during the off-peak months between November and April, and that there is little if any need to reduce water demand this time of year when consumption is low.

The City uses an Excel spreadsheet model to forecast water supply and demand from April through October and assess the adequacy of the peak season water supply. The spreadsheet performs a mass balance analysis on a monthly time step to solve for the end of peak season storage in Loch Lomond Reservoir using a three-step process:

1. Develop a monthly forecast of supply available from flowing sources (San Lorenzo River and North Coast sources), the Beltz Well system, and any new supplies such as ASR or water transfers and exchanges;
2. Compare the forecasted supply available from these sources to the expected unrestricted water demand; and
3. Calculate the monthly change in storage and end of season storage in Loch Lomond Reservoir.

The model inputs are all estimates based on imperfect information that are subject to error and uncertainties. However, some variables are more significant than others in terms of influencing the results.

The model is used to create several different supply and demand scenarios to test the sensitivity of different assumptions and to assist in decision-making. The primary purpose of this model is to help staff determine if a water shortage declaration is appropriate for the year ahead, and if so to help decide the level of curtailment needed.

Of primary importance to the system operation is the ability to forecast at the end of a winter season how the San Lorenzo River, the City's most important water supply source, will flow through the coming summer and early fall season. In driest and dry years, natural flows can drop near or below bypass flow requirements at the Tait Diversion during summer and early fall months, requiring diversions from the San Lorenzo River to be scaled back or stopped altogether. Based on the anticipated water year classification, exceedance probabilities are used to forecast the mean monthly flow in the San Lorenzo River through the remainder of the dry season.

Because forecasting available North Coast source supplies involves less certainty due to the relatively short period of historic streamflow records, staff may take a simplified conservative approach to the assessment and assume that no North Coast sources will be available during the peak season. In years where San Lorenzo River and storage supplies alone indicate a potential shortage, North Coast sources may be forecast using a comparison of current year

conditions to historic water years with similar conditions. The production records from those years are examined to assess the likely yield of North Coast sources for the coming season, while taking into account any operational rules, capacity constraints, or instream flow releases that may have changed from those historic years.

Water production from the City's Beltz Well system is projected as a function of the production capacity for any wells in operation and duration that the wells are anticipated to be operated. Production from new water supplies such as ASR or transfers and exchanges will be similarly estimated. Other factors considered include infrastructure constraints such as limitations due to planned construction or from other planned or expected facility outages.

To forecast available reservoir storage, start of peak season reservoir capacity in Loch Lomond is estimated based on carryover storage, water loss from evaporation, and drawdown due to bypass requirements and operational needs.

The City uses a conservative estimate of yield to ensure the supply forecast for flowing sources and groundwater production is reliable. Once the forecast of supply availability from surface diversions, wells, and other sources is made, supplies are compared with expected water demand to determine how much water from Loch Lomond Reservoir would be needed to meet unrestricted system demand. From this analysis, a projection can be made for the expected rate of drawdown of the reservoir over the dry season, the expected lake level at the end of October, and the expected carryover storage for the following year.

8.2.2.2.2 Annual Extended Assessment for November through June

The City uses its Santa Cruz Water System Model (SCWSM) to provide an extended assessment of supply reliability that extends from the end of the peak season through June of the following year, assuming extremely dry conditions. The SCWSM is a sophisticated model of the City's water supply system developed by the University of Massachusetts Amherst that can simulate water supply conditions under scenarios for historic hydrology and expected climate change hydrology. For the annual assessment, a graphical user interface (GUI) has been developed to simplify operation of the model using the single dry year hydrology of 1977, the driest year on record.

Custom annual inputs into the GUI include existing Loch Lomond Reservoir storage level, the customer demand scenario, and options to toggle on/off new supply projects. The anticipated storage level in Loch Lomond Reservoir on October 31 is a direct output of the annual peak season assessment that is entered into the GUI to serve as a starting point of the assessment model run. The customer demand scenario is entered as a data file on a monthly timestep and can be custom built based on previous year demand adjusted as needed based on current and expected conditions. Finally, the GUI includes options to toggle on and off water supply augmentation projects such as ASR and transfers and exchanges that are built into the SCWSM.

The GUI output includes monthly timestep supply availability by water supply source and identification of any projected shortages. While the required assessment period for DWR's Annual Water Supply and Demand Assessment extends through June of the coming year, the GUI output extends through October of the coming year to allow internal evaluation of the subsequent full peak season under extremely dry conditions.

8.2.2.2.3 Evaluation Criteria

The determination of whether a shortage is forecast is essentially a risk assessment. The City's main considerations in undertaking this assessment include the following:

- Would allowing unrestricted water use in the current year result in an imminent water shortage?
- Would allowing unrestricted water use in the current year result in a water shortage in the coming year assuming it is as dry as 1977, the driest year on record?
- If a shortage can be expected, how much water should be withheld in storage for the future to be prudent?

In the real world, with a water system largely dependent on surface water sources and no reliable ability to predict when a drought may occur and for how long it may persist, prudent management dictates a conservative approach to shortage declarations to maintain as much water storage in the system as possible. This means generally favoring implementation of the WSCP during single dry years so that the carryover storage amount would be sufficient, along with other sources, to meet essential health and safety needs if the subsequent winter is as dry as the driest year on record. According to the literature, the main lesson from other utilities that have been through droughts is that they would have acted earlier to save more water, in retrospect, to lessen the impact of implementing more severe cutbacks later.

The ultimate decision about whether supplies are adequate in Santa Cruz for a given dry year is thus dependent not only on how much water is available in that year from the City's sources of supply, but also on customer demand and management's comfort level with predicted carryover storage supplies.

With the City's current low levels of customer water demand, the water system will be able to better withstand dry conditions. The one caveat is that because present use is already so conservative, there is a declining ability for increased conservation when the next shortage arises.

8.3 Six Standard Water Shortage Levels

If curtailments are required due to a current, imminent, or anticipated shortage, the City uses six standard water shortage levels in this WSCP. In Santa Cruz, it is typically the peak summer season during which water supplies are limited because the system's flowing surface water sources, North Coast streams and San Lorenzo River which together represent about 80 percent of total system supply, are less available during the peak season than they are in the wet season, and because stored water is very limited. If winter rains have not replenished Loch Lomond's storage in a given year, peak season usage reductions may be applied to ensure that water for essential uses will continue to be available throughout the peak season and into the following water year as well. Until full implementation of the City's Water Supply Augmentation Strategy (WSAS), demand management through restrictions is the only real tool the City has to manage this risk.

The peak season is defined to include the six-month period from May 1 to October 31, which is reflected in the consumption shown on the June through November utility bills. The peak season is defined within this range because water supplies are historically adequate to meet demand in

November through April. In addition, water shortage regulations usually are not put into effect until May 1st or June 1st during a shortage year.

Shortage levels in this WSCP are based on peak season demand and correspond to the six standard shortage levels defined in Water Code of up to ten, twenty, thirty, forty, fifty, and greater than fifty percent shortage, as shown in Table 8-2.

Table 8-2: Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	**Water Shortage Warning.** Stage 1 applies to a relatively minor water shortage that requires up to a 10% level of demand reduction. The allocation system applies to all stages. At Stage 1, allocations are provided to customers, but excess use penalties are not yet implemented.
2	Up to 20%	**Water Shortage Alarm.** Stage 2 applies to moderate water shortages with a demand reduction requirement of up to 20%. This condition requires more vigorous public information and outreach. The primary demand reduction measure that will be implemented at this stage and all stages going forward is the use of excess use penalties for water use above customer allocations.
3	Up to 30%	**Water Shortage Emergency.** Stage 3 applies to a serious water shortage with a demand reduction requirement of up to 30%. This condition is a serious situation that will require significant reductions by each customer class. Allocations will be reduced to Stage 3 levels.
4	Up to 40%	**Severe Water Shortage.** Stage 4 applies to a serious water shortage with a demand reduction requirement of up to 40%. This condition is a serious situation that will require significant reductions by each customer class. Allocations will be reduced to Stage 4 levels. Under this scenario, virtually all available water must be reserved either for health and safety purposes or to sustain local business.
5	Up to 50%	**Critical Water Shortage.** Stage 5 represents an imminent and extraordinary crisis threatening health, safety, and security of the entire community. Under this dire situation, extreme measures are necessary to cut back water use by up to half the normal amount. Not enough water would exist even to meet the community's full health and safety needs, the top priority. All water should be reserved for human consumption, sanitation, and fire protection purposes and any remaining amount allocated to minimize economic harm. A shortage of this severity could be expected to generate stress and confusion, much the same as any major emergency and at some point, could transform into a full-blown natural disaster that can no longer be governed by local ordinance and may need to be managed by the basic principles and command structures of the state Standardized Emergency Management System. The City has experienced water shortages in the past but never one of such large proportion.
6	>50%	**Catastrophic Water Shortage.** For Stage 6, Santa Cruz takes the position that this level of shortage would most likely only occur due to a major disaster that caused significant damage to our water treatment and/or distribution infrastructure. In such a disaster, such as a large earthquake, the Santa Cruz response would not come from this WSCP, but rather from the Santa Cruz Water Department's Emergency Response Plan.

8.4 Shortage Response Actions

The City of Santa Cruz used a core set of principles to guide the WSCP planning process. The principles are as follows:

- **Shared Contribution:** All customers will be asked to save their share in order to meet necessary reduction goals during water shortages.
- **Reduce non-essential uses first:** The plan gives priority to health and safety uses of water and targets non-essential uses for reductions first. However, even some essential uses are required to be reduced at higher shortage level due to the overall low levels of demand.
- **Preserve jobs and the local economy to the extent possible:** While the business customer class will be subject to the allocation system at each shortage level, the amount of water the business customer class will need to reduce at each shortage level is relatively low given the inherent amount of health and safety use by many business customers.
- **Existing conservation measures recognized:** Customers who have already been conserving will have an easier time meeting their allocation levels as set out in the plan. This will be especially true in earlier shortage levels. Customers who have not conserved as much will need to reduce consumption more to stay within their allocation level.
- **Communication at every shortage level:** A public information campaign at every level of shortage will prepare customers and encourage confidence in the City's ability to respond to water shortages.
- **Flexibility:** The Department will gauge the necessity of implementing actions at each shortage level based on current circumstances. Not all actions must be implemented simply by virtue of being listed in the plan at a given shortage level.
- **Even-handedness:** The policies and rules developed under this plan to manage a shortage will be applied to all customer groups in a consistent, even-handed manner.

In a serious shortage, it will be critical to have a system in place that not only is fair to all customer groups but is also likely to succeed. A fundamental issue any water supplier faces in managing a water shortage involves the allocation of water and how to distribute the available supply among customer categories when supplies fall short. As described in Chapter 4 of this UWMP, current and forecasted levels of customer demand indicate that the Santa Cruz community has achieved ongoing high levels of water conservation. This very low system-wide water use is beneficial from the perspective of meeting demands and preserving water resources, but it also represents a "hardened demand" that results in limited opportunity for further per capita demand reductions. These demand characteristics mean that reductions at higher shortage levels will be more difficult to achieve. Due to the degree of ongoing water use efficiency practices already adopted by Santa Cruz consumers, staff determined that the more typical strategies for curtailing water use that target specific behavioral changes would be unlikely to produce the demand reductions needed at each shortage level. Because of this, the City has adopted a water allocation approach during all shortage levels.

The allocation system in this WSCP requires specific demand reduction/delivery goals for each customer class at each shortage level[14] as detailed in Table 8-3 below. The demand reduction requirements are based on the specific usage characteristics of each customer class.

To determine the level of curtailment necessary by each customer class in order to meet demand reduction goals during a water shortage, the following general methodology was utilized.

1. Examine the seasonality of water use in each customer class to break down water use into indoor and outdoor seasonal (irrigation) use.
2. Divide the peak season use in each customer class into three usage priorities: 1) health and safety, 2) commerce, and 3) irrigation. These usage priorities are listed in descending order of importance, with health and safety being most important and irrigation being least important.
3. Determine, based on usage priority importance, the delivery percentage each usage priority can maintain while meeting the required curtailments at each overall shortage level.
4. Apply the delivery percentages to develop a specific delivery goal for each customer class at each shortage level.

Example allocations are provided in Appendix P. A detailed description of the methodology used to develop the specific curtailment levels is described in detail in the 2020 UWMP Appendix O.

Table 8-3: Allocations by WSCP Shortage Level (Stage)

Customer Class	Stage 1 Allocation (%)	Stage 2 Allocation (%)	Stage 3 Allocation (%)	Stage 4 Allocation (%)	Stage 5 Allocation (%)
Single-family Residential	89%	79%	68%	58%	51%
Multi-family Residential	92%	84%	76%	68%	59%
Business	95%	90%	85%	79%	60%
UCSC	91%	81%	72%	62%	55%
Municipal	79%	58%	38%	17%	15%
Irrigation	75%	50%	25%	0%	0%
Golf Course Irrigation	82%	64%	45%	26%	10%
North Coast Agriculture	95%	90%	85%	75%	30%
Other	95%	90%	100%	100%	100%
All Classes Combined	**90%**	**80%**	**70%**	**60%**	**50%**

These demand reduction allocations and other demand reduction actions to be implemented in parallel are documented in Table 8-4 below.

[14] Curtailments were not developed for Level 6. For Level 6, Catastrophic Water Shortage, this would most likely only occur due to a major disaster causing significant damage to the water treatment and/or distribution system. In such a disaster, such as a large earthquake, the Santa Cruz response would be guided by the Water Department's Emergency Response Plan rather than this WSCP.

8.4.1 Demand Reduction Actions

The approach to demand reduction in this WSCP is to provide customer allocations for all shortage levels, with smaller allocations at each successive shortage level. This allocation approach gives every customer a set amount of water to use each month and allows them to use that water as they see fit to meet their needs. The allocation approach is designed to maximize the probability that the demand reductions required at each shortage level will be achieved.

Curtailments beyond Stage 2 of this plan are not feasible to implement without significant impacts to public health and safety and the Santa Cruz economy. The City's Water Supply Augmentation Implementation Plan (Appendix I, see WSAIP Appendix F) provides a summary of the findings of a "regional economic impact analysis" of implementation of the curtailment in this WSCP. It analyzed the projected adverse economic impacts arising from a potential need to implement Stages 3, 4, and 5 (with 30%, 40%, and 50% reductions in overall peak season water use, respectively). For example, at Stage 3, City-wide economic output (i.e., the value of industry production within the region) is projected to decline by $114 million to $243 million per year, reflecting a decline of 1.1% to 2.4% of total City economic output in a normal year. Also, between 1,146 and 2,428 jobs are estimated to be lost (a loss of approximately 2% to 4% of in-City jobs), and annual City tax revenues decline by an estimated $2.1 million to $5.4 million.

The City is actively implementing its WSAS as the solution to address potential shortages through water supply augmentation.

Table 8-4: Demand Reduction Actions (submittal table 8-3R)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 1 - Water Shortage Warning	Implement or Modify Drought Rate Structure or Surcharge	10 percent demand reduction	• Implement water allocations for all customers at the Stage 1 allocation level	No
Stage 1 - 5	Expand Public Information Campaign	Supports demand reduction to be achieved through implementation of water allocations	• Create communication pieces including social media posts, direct mail, paid advertising, and signage • Create dedicated webpage • Dedicate monthly Santa Cruz Municipal Utilities email newsletters to disseminating water shortage information • Utilize bi-annual utility newsletter • Inform large landscape/property manager/green industry of irrigation restrictions • Disseminate information for customers to learn how to read their meters and set up leak alerts	No
Stage 1 - 5	Increase Water Waste Patrols	Supports demand reduction to be achieved through implementation of water allocations	• Delegate water waste patrol duties to all field personnel	No
Stage 1 - 5	Commercial, Industrial, and Institutional (CII) - Restaurants may only serve water upon request	Supports demand reduction to be achieved through implementation of water allocations	• Prohibit serving drinking water by restaurant or food service establishments except upon request	No
Stage 1 - 5	CII - Lodging establishment must offer opt out of linen service	Supports demand reduction to be achieved through implementation of water allocations	• Require hotel, motel, and other commercial lodging establishments to offer option of not laundering towels and linen daily	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 1 - 5	Other - Prohibit use of potable water for washing hard surfaces	Supports demand reduction to be achieved through implementation of water allocations	• Prohibit use of potable water for washing driveways, patios, parking lots or other paved surfaces	No
Stage 1 - 5	Other - Require automatic shut of hoses	Supports demand reduction to be achieved through implementation of water allocations	• Require hoses used for any purpose to have shut off nozzles	No
Stage 1 - 5	Other	Supports demand reduction to be achieved through implementation of water allocations	• Step up enforcement of water waste ordinance, including ban on irrigation of non-functional turf by commercial, institutional, industrial and homeowner association customers • Undertake contingency planning for continuing/escalating shortage • Coordinate water conservation actions with other City departments and public agencies • Adopt water shortage ordinance prohibiting non-essential water use • Eliminate system water uses deemed non-essential	No
Stage 2 - Water Shortage Alarm	Implement or Modify Drought Rate Structure or Surcharge	20 percent demand reduction	• Implement mandatory water allocations for all customers at the Stage 2 allocation levels • Implement excess use penalties for use over allocation	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 2 - 5	Expand Public Information Campaign	Supports demand reduction to be achieved through implementation of water allocations	• Disseminate Public Service Announcements to targeted local radio and television stations • Regularly update the public on consumption and supply numbers • Include information in City Manager's monthly email newsletter • Initiate presentations to local Chambers of Commerce, business associations, board of realtors, etc. • Inform large landscape/property managers/green industry of water budget reductions • Consult with major customers to develop conservation plans • Conduct workshops on large landscape requirements for property owners, contractors, and maintenance personnel	No
Stage 2 - 5	Increase Water Waste Patrols	Supports demand reduction to be achieved through implementation of water allocations	• Hire, train dispatch water waste patrol	No
Stage 2 - 5	Decrease Line Flushing	Supports demand reduction to be achieved through implementation of water allocations	• Suspend main flushing except as required for emergency and essential operations	No
Stage 2 - 5	Reduce System Water Loss	Supports demand reduction to be achieved through implementation of water allocations	• Intensify distribution system leak detection and repair	No
Stage 2 - 5	Other	Supports demand reduction to be achieved through implementation of water allocations	• Develop strategy to mitigate revenue losses • Stop issuing bulk water permits • Scale up administrative appeals staff to support hearing officer(s)	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 3 - Water Shortage Emergency	Implement or Modify Drought Rate Structure or Surcharge	30 percent demand reduction	• Implement mandatory water allocations for all customers at the Stage 3 allocation level • Continue to implement excess use penalties for use over allocation	Yes
Stage 3 - 5	Expand Public Information Campaign	Supports demand reduction to be achieved through implementation of water allocations	• Provide regular, prescriptive media briefings • Provide regular and ongoing briefings to Water Commission, City Council, and other key stakeholders • Prepare communication pieces for possible future service connection moratorium	No
Stage 3 - 5	Increase Water Waste Patrols	Supports demand reduction to be achieved through implementation of water allocations	• Expand size and coverage of water waste patrol	No
Stage 3 - 5	Moratorium or Net Zero Demand Increase on New Connections	Supports demand reduction to be achieved through implementation of water allocations	• Institute a temporary water service connection ban	No
Stage 3 - 5	Reduce System Water Loss	Supports demand reduction to be achieved through implementation of water allocations	• Increase monitoring of unauthorized use from hydrants and other sources.	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 3 - 5	Other	Supports demand reduction to be achieved through implementation of water allocations	• Further increase of water waste enforcement • Require all commercial customers to prominently display “save water” signage with specified language at specified location • Increase customer service training to address high bills and irate customers • Expand, strengthen water conservation education, activities, and program • Increase frequency of monitoring and reporting of water production and consumption • Undertake contingency planning for continuing/escalating shortage • Shut down all bulk water stations • Stop issuing construction hydrant meters	No
Stage 4 - Severe Water Shortage	Implement or Modify Drought Rate Structure or Surcharge	40 percent demand reduction	• Reduce water allocations for all customer classes to Stage 4 levels • Continue to implement excess use penalties for use over allocation	Yes
Stage 4 - 5	Expand Public Information Campaign	Supports demand reduction to be achieved through implementation of water allocations	• Contract with outside public relations agency to manage comprehensive public awareness campaign, including paid ads, earned media, direct mail, etc. • Prepare emergency messaging for possible critical water shortage utilizing CruzAware, Nixle, CodeRed, reverse 911	No
Stage 4 – 5	Increase Water Waste Patrols	Supports demand reduction to be achieved through implementation of water allocations	• Further expand size and coverage of water waste patrol	No
Stage 4 - 5	Other - Prohibit use of potable water for construction and dust control	Supports demand reduction to be achieved through implementation of water allocations	• Rescind hydrant and bulk water permits, prohibit use except by special permission	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 4 – 5	Landscape – prohibit all landscape irrigation	Supports demand reduction to be achieved through implementation of water allocations	• Prohibit all outdoor irrigation	No
Stage 5 - Critical Water Shortage	Implement or Modify Drought Rate Structure or Surcharge	50 percent demand reduction	• Further reduce allocations for all customer classes • Continue to implement excess use penalties for use over allocation	Yes
Stage 5	Expand Public Information Campaign	Supports demand reduction to be achieved through implementation of water allocations	• Implement crisis/emergency communications including establishment of a Joint Information Center • Deploy prepared emergency messaging on CruzAware, Nixle, CodeRed, reverse 911	No
Stage 5	Other water feature or swimming pool restriction	Supports demand reduction to be achieved through implementation of water allocations	• No water for outdoor washing or recreational purposes; close pools, public showers	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
Stage 5	Other	Supports demand reduction to be achieved through implementation of water allocations	• Consider shifting to Emergency Operations Center model of command management for overall policy guidance and coordination • Coordinate with CA Division of Drinking Water, District Engineer and other emergency response agencies regarding water quality, public health issues • Coordinate with law enforcement agencies to address enforcement challenges • Delegate field staff to assist in enforcement (shut offs, flow restrictors) • Continue close monitoring and reporting of water production and consumption • Coordinate with local sanitation agencies regarding sewer line maintenance • Investigate potential for reduced instream release • Procure resources to utilize dead storage, if needed • Undertake emergency planning for continuing/escalating shortage	No
Stage 6 - Catastrophic Water Shortage	Other	Greater than 50 percent demand reduction	• Activate the Santa Cruz Water Department Emergency Response Plan	No

Notes:
The City of Santa Cruz is utilizing an allocation system as the primary means to reduce demand at all shortage levels. Excess use penalties for exceeding allocations are applied at Level 2 and higher. The allocation approach is designed to maximize the probability that demand reductions will be achieved.

8.4.2 Other Actions to Address Shortages

As described in Chapter 6, Section 6.8, the City is actively pursuing water supply augmentation to improve long-term reliability through implementation of its WSAS, including implementation of ASR, transfers and exchanges, and planned infrastructure projects such as upgrades to the Graham Hill Water Treatment Plant. Because these efforts are well underway, they are considered as future water projects and are incorporated into the reliability assessments included in Chapter 7 of this UWMP rather than as elements of this WSCP. With implementation of the WSAS, water supply reliability will be significantly improved by 2030 to 2035, eliminating projected shortages that would require implementation of this WSCP. However, in the event of projected near-term shortages before the WSAS components are fully realized, the City would pursue early implementation of strategies included in the WSAS, such as ASR and exchanges, to the extent feasible.

Table 8-5: Supply Augmentation and Other Actions (submittal table 8-2R)

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
Any (as needed)	Transfers	To be determined	Per 2025 Mutual Aid Agreement Between City of Santa Cruz and Soquel Creek Water District

Notes: City of Santa Cruz is actively pursuing its WSAS to alleviate the City's projected water supply gap, reduce the frequency and severity of shortage experienced, and limit the need to implement this WSCP. These activities are underway and ongoing, and as such, are not included as actions within this WSCP.

When implementing this WSCP, the City will rely primarily on demand reduction through the implementation of allocations to address shortages at each level. Proposed operational changes and mandatory restrictions to be implemented at each WSCP shortage levels are embedded in Table 8-4 above. Other actions triggered by WSCP levels are described below.

8.4.3 Emergency Response Plans

The City of Santa Cruz maintains a confidential Emergency Response Plan per the requirements of the America's Water Infrastructure Act of 2018 that includes response plans to a wide range of emergency conditions including earthquake, flood/atmospheric river, landslide, and human-caused catastrophes. The procedures in this plan would be followed in the event of a catastrophic water shortage or other emergency. To comply with Water Code requirements regarding seismic risk assessment, this UWMP includes as appendices following the Local Hazard Mitigation Plans as Appendix Q:

- City of Santa Cruz 2025 – 2030 Local Hazard Mitigation Plan – Climate Adaptation Plan, Final Draft, January 2025
- Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency Draft Submittal, March 2026

8.5 Communications Protocols

After decades of frequent water supply shortages, Santa Cruz Water Department customers are predisposed to use water wisely. With that said, the community's ongoing commitment to water use efficiency means that it is much more difficult for customers to further cut their already slim household daily water use. Therefore, a robust communications plan using many communications tools and platforms would be necessary to ensure that customers understand the seriousness of additional calls for conservation. In addition, given that this shortage plan relies on allocations at all stages of shortage, it is crucial that all communications explain the basic concepts regarding the allocation system and point the customers to various resources that will be available to help them both understand and adapt to the allocation system.

Timely and effective communication is a key element of the City of Santa Cruz WSCP. Specific communications protocols are documented in Table 8-4, above. The City would inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant information.

Drawing from past experiences with supply shortages as well as mandatory water rationing, the Water Department will use two sets of communication protocols: general messaging, focusing on the broad public including residents and visitors; and specific messaging, focusing on individual customers. All messaging will be shared in both English and Spanish languages.

The general structure of the communications protocol is as follows:

1. General Messaging: This section of communication will be broad in nature and be directed to all customer groups, visitors, and water users. General messaging will be akin to an awareness campaign to inform water users about the nature of the water shortage and the implementation of the water shortage plan including the new allocation system. The tools or means of communication for the general messaging will include, but not be limited to: social media channels, email and print newsletters as well as paid and earned media.

2. Specific/Targeted Messaging: This section of communication will be a second element in the overall communication strategy. Specific messaging is designed for informing individual customers of their allocation and primarily for those customers who, based on their recent usage history, are expected to exceed their allocation. The specific messaging will come in the form of personalized direct print or email letters. Examples of these specific customer letters are included in Appendix P. These two letters were used in the past and similar letters will be used again under this plan.

   The first letter is an example of an initial notification to let customers know, based on their average use in the peak season, that their usage is above the allocation that has been set for the given stage of shortage. The example of a second letter, the so called "last chance" letter, is to inform customers that the allocation system is about to begin and they may be subject to the excess use penalties if their high usage continues. In addition to the letters mentioned above, customers will be referred to the Department's new WaterSmart customer web portal. This is a web resource where customers will be able to view their water use and how it compares to their

allocation. Customers can also use this resource to find customized water conservation tips for their particular property.

3. Customer Resources: In addition to the two communication strategies (general messaging and specific messaging) described above, a third and important communication element is that of customer resources. These resources, primarily in the form of various customer web pages, forms, and online tools, are available in order to provide a wide variety of information to help customers during a shortage. These resources include, among others, information about the allocation exception process. For example, these web pages provide information about the health and safety exception and the exception process to increase a customer allocation based on additional occupancy. The web pages will also explain the allocation system for business and other customer classes and provide example allocations for informational purposes. In addition to web resources about the allocation system, a complementary set of resources will be available on conservation topics, providing a suite of advice for customers to assist them in assessing their water use and identifying strategies to lower their usage to stay within the allocations.

Examples of each of the communication elements are shown below in Table 8-6.

Table 8-6: Communication Element Examples

Communication Element	Tools/ Methodology	Concept	Example Text
(1) General	Social media, paid and earned media, newsletters, bill inserts	Broad messages regarding nature of water shortage and shortage stage, need for allocations and basic structure of allocation	“The Water Department has evaluated water supply conditions and has determined that a Stage 2 shortage declaration is warranted. Due to the low water demand characteristics in recent years, the Department has developed a shortage response plan that is based on customer allocations at all stages of shortage. Please refer to the customer resource web pages on the Department website for information about the allocation system."
(2) Specific	Personalized customer letter/email communications	Individual personalized letters for customers who the Department expects to exceed their allocation, based on historical usage patterns	“Based on your recent usage patterns, it appears that typical usage for your household is 7 CCF. Given that the new customer allocation for single-family residential homes is 5 CCF, if your normal usage continues you will be over allocation by 2 CCF. Please refer to the Department's web resources for information on how you can reduce your usage and stay within your allocation."
(3) Resources	Water Department web pages, WaterSmart software customer portal information	Customer service-related web pages that explain allocation system and provide information about the exception process	"The Water Shortage Contingency Plan has a process for exceptions to the allocation system. Exceptions are made for only two types of reasons: 1) Health and safety issues and 2) Additional household occupancy. The following sections explain each of these exception categories and provide the corresponding forms to applying for an exception."

8.6 Compliance and Enforcement

The City of Santa Cruz uses a variety of compliance and enforcement strategies to facilitate compliance with the requirements of the WSCP as described below.

8.6.1 Excess Use Penalties

The foundation of the demand reduction measures in this plan is the water allocation system. In order for an allocation system to work, a financial disincentive is required for customers to stay within their allocation. This is achieved through Excessive Use Penalty fees for use above customer allocations. These penalties are applied to a customer's water bill when the billing system detects that usage in a month exceeds the customer's allocation. The excess use penalties begin at Stage 2 and continue with higher shortage levels.

Administrative enforcement of excessive use penalties is codified in Santa Cruz Municipal Code, Chapter 16.01 (Appendix O). Specifically, section 16.01.110 states:

> *"Penalties. The purpose of the administrative penalties assessed pursuant to this section is to assure future chapter compliance by the cited customer through the imposition of increasingly significant penalties so as to create a meaningful disincentive to commit future chapter violations. In acknowledgment of the fact that the city's water is a scarce and irreplaceable commodity and that this chapter is intended to equitably distribute that commodity among water department customers and to assure that, to the extent feasible, city water is conserved and used only for purposes deemed necessary for public health and safety, the penalty schedule herein prescribed is not to be construed as creating a "water pricing" structure pursuant to which customers may elect to pay for additional water at significantly higher rates. To this end, a customer's repeated violation of this chapter shall result in either the installation of a flow restriction device or disconnection of the customer's property from the city's water service system at the customer's cost."*

The schedule for the administrative penalties is a two-tiered system as shown below in Table 8-7.

Table 8-7: Administrative Penalties

Excess Use Range	Water Use in Excess of Allocation	Excessive Use Penalty Fee
A	100 cubic feet (1 CCF) over allocation up to 10%	$25
B	Greater than 10% over allocation	$50

Note: Fee is per 1 CCF of water used in excess of allocation, in addition to all regular water consumption charges

The purpose of a two-tier excess use structure is to avoid very large penalties for households that make a good faith effort to stay within their allocation but wind up going over a little. If a customer's water use exceeds one's allocation by a large amount, though, the penalty is designed to be very steep.

8.6.2 Water School

During the drought of 2014 and 2015, the City of Santa Cruz Water Department implemented an educational tool called "Water School," based on the concept of traffic school. At that time,

water rationing and curtailment were in place due to a declared water shortage. Residential customers were required to stay within their assigned allotment or pay an excessive use penalty for each additional unit of water used over their allotment. Water School served as a one-time opportunity for customers who exceeded their monthly allotment to dismiss their penalty by attending a two-hour class. The curriculum included the City water system, statewide and local drought conditions, Santa Cruz Municipal Utility services, water use regulations and restrictions, and water conservation strategies to practice at home and outside. The purpose of water school was to educate customers about the water shortage and local impacts, show customers support, empower customers to conserve and think critically about their own usage, and prevent customers from exceeding their allotment in the future. The City of Santa Cruz also offered a separate Water School for large landscape accounts that exceeded their water budgets created from the landscape water budget software.

Water School has not been implemented since 2015. The Water Department may reinstate Water School in the future if conditions warrant. If so, Water School curriculum would be updated, and the course structure could be updated to be offered online. The purpose of Water School would remain the same in that it would continue to educate customers about where their water comes from, help customers stay within their allotments, and provide relief for penalties incurred for exceeding their allotment.

8.6.3 Flow Restriction

Some customers will continue to exceed their allocation regardless of the amount of their water bill. In such instances, the City is authorized to install a flow restricting device to provide minimal water flow, just enough for health and safety purposes. In these cases, the customer is charged a fee to cover the staff time needed to install the flow restrictor and another fee for its removal. The City would not use this method where fire suppression sprinklers are on the same supply line as domestic water.

8.6.4 Disconnection and Reconnection Fees

Water suppliers have the legal authority to enforce water shortage regulations by terminating service for egregious violations. In such cases, the customer would be charged for both disconnection and reconnection.

8.6.5 Enforcement of Water Waste Prohibitions

During a water shortage, in addition to complying with water allocations, customers will also need to comply with existing requirements related to water waste. In cases such as a report of water waste, City staff will take steps to communicate with the customer by telephone, letter, door tag, or by making personal contact in the field to provide information about water waste regulations. Many times, this contact is all that is required to resolve the problem. If not, enforcement progresses to a written notice of violation. Beyond this, there are several methods in the City's existing water conservation and water shortage ordinances that can be used to enforce water waste restrictions and regulations. These methods are described below.

Penalty fees for Water Waste: For repeated violations of the City's water waste ordinance, a penalty fee may be issued to a customer's utility bill. This would occur after a written notice has been sent to the customer in advance. The penalty fee would increase with subsequent violations as follows:

- 1st Violation $100
- 2nd Violation $250
- 3rd Violation $500
- 4th Violation $1,000

Should a customer's violations persist, enforcement could also include placement of a flow restrictor (as discussed in Section 8.6.3) or disconnection of service (as discussed in Section 8.6.4).

8.6.6 Exceptions

No water shortage plan can account for all situations. The exception procedure allows the City to provide for special or exceptional circumstances that otherwise would create undue hardship for an individual customer or class of customers.

An exception allows a customer to be relieved of a particular regulation or receive an increased allocation for the duration of the shortage. Therefore, it should be granted only when justified on specific grounds that warrant allocating more water than is allocated to other similarly situated customers and when consistent with the intent of the water shortage regulations, while providing equal treatment of all customers.

As stated in prior sections, the allocations assume a household or dwelling unit with three-person occupancy. A customer may request more water based on having additional occupancy beyond the base three people per household or dwelling unit. Exceptions for more water will be processed on a case-by-case basis. Exceptions will be evaluated by the Department and if granted, additional water will be granted at the number of residents greater than three times 1.67 (rounded up). 1.67 is the product of five CCF divided by three people.

Additional water allocation will only be granted for the following reasons:

- Additional occupancy beyond three people per household
- Requests specifically related to health and safety purposes including:
    - Operating a home day care facility or providing in-home medical care for an individual with serious medical issues.
    - Operation of a sober living home.
    - Specific medical conditions that require an individual to use more water at home to treat or maintain quality of life related to that medical condition.

The following situations are common inquiries made by customers asking for additional water allocation; however, these situations do not qualify for an exception.

- Water for growing edible food, vegetable gardens, fruit trees
- Water for maintaining common area landscaping that is served by the water meter of an individual residence
- Water for overnight visitors/guests or for hosting large events/parties
- Water for livestock, pets, horses
- Water to maintain pools, spas, ponds or other water features
- Water to maintain landscape areas for fire protection purposes or erosion control
- Water for in-home businesses such as hair or nail salons, cottage industry production, or any other in-home business (with the exception of child-care centers and sober living homes)

Another situation that is a common topic of an exception request by customers is that of water for short-term vacation rental (STVR) properties. Both the City and the County of Santa Cruz issue STVR permits of two types: 1) Hosted STVR permits, and 2) Non-hosted STVR permits. Hosted STVR permits indicate that the residents live at the property as well as rent out a portion of the property.

Non-hosted STVR permits indicate that the entire property is rented out and that the account holder does not live at the property. Additional water allocations may be granted only for the permanent residents living at hosted STVR properties and not for the vacationers. Conversely, no additional water allocation may be granted for non-hosted STVR properties.

The Department's customer resources will include web pages dedicated to explaining the customer allocations and the exception process. The forms to apply for an exception will be posted on the forms section of the WaterSmart customer web portal. Customers will need to complete and submit an exception form certifying that they have a health and safety related reason for applying for the exception. Such requests for additional allocation due to a medical condition will require the provision of a signed note from the individual's doctor in order to substantiate the request. For exceptions related to occupancy, specifically for households that have more than three residents, customers are directed to use the WaterSmart portal to change their household occupancy, which will then result in the Department updating the customer's water allocation.

To ensure fairness and due process, customers can appeal a denial by the Water Director of such an exception request to the hearing officer. Section 16.01.130 of the City's Municipal Code (Water Shortage Appeals) allows any water service customer who considers an enforcement action to have been erroneously undertaken to appeal their case before a City-appointed administrative hearing officer. The independent hearing officer is usually a local attorney, chosen from a hearing officer panel that is updated periodically by the City Attorney's Office. The officer would consider the evidence presented by the customer and the Department and decide whether to uphold the enforcement action or to provide relief

8.7 Legal Authority

The City of Santa Cruz is legally authorized to implement this WSCP pursuant to California Water Code section 10632, Santa Cruz Municipal Code Chapter 16.01 (attached as Appendix O to the UWMP), and pursuant to the provisions of the WSCP itself which is adopted pursuant to City Council resolution. In the event of a water shortage, the City Council shall declare a water shortage emergency, the City shall thereupon activate and implement the WSCP, and in doing so, shall coordinate with the City of Capitola and the County of Santa Cruz for their respective local water shortage proclamations.

8.8 Financial Consequences of the Water Shortage Contingency Plan

Water shortages and implementation of a WSCP have the potential to impact both expenditures and revenues of a water supplier. Expenditures can be increased due to the time and materials necessary to implement demand reduction measures, other actions necessary to address shortages, and for compliance and enforcement activities to discourage excessive water use. These expenditures can range from additional staff with associated salary, benefits, office

space, computer, and vehicle needs, to increased public information costs including postage, additional printed materials, new advertising on various media, and other outreach expenses. At the same time, revenues can be impacted by reduced water sales due to successful water conservation and demand reduction actions, with impacts varying depending on the water supplier's rate structure.

The City has estimated costs for implementing staffing changes associated with implementation of Stage 1 and Stage 2 shortage levels. At Stage 1, three additional temporary staff are anticipated to be needed to implement the WSCP measures. These staff and other associated expenses are estimated to be approximately $400,000 per year in 2020 dollars. At Stage 2, fourteen temporary staff in addition to the temporary staff needed at Stage 1 are anticipated to be needed to implement plan measures. Costs for these additional staff and other associated expenses are estimated to be approximately $670,000 in 2020 dollars per implementation cycle, with the assumption that all additional staff can be accommodated within existing office space. Implementation of higher plan shortage levels, Stage 3 and above, if needed would be challenging for the community to carry out due to hardened local demand and City implementation would be expected to be even more expensive to implement.

The City of Santa Cruz mitigates for the financial consequences of implementation of the WSCP primarily through a Drought Cost Recovery Fee structure that is developed as part of its Proposition 218-compliant water rate schedule. Drought Cost Recovery Fees are shortage level specific and designed to recover the lost revenues associated with lowered water consumption that results from implementation of curtailments. These fees are collected as a fixed charge based on meter size and are collected over a full 12-month period to mitigate the impacts to monthly bills. Refer to Section 9.2.3 for detailed discussion of the City's water rates.

8.9 Monitoring and Reporting

There are two general components to monitoring and reporting. One is the City's ongoing monitoring and subsequent reporting to the State. The Water Department tracks production through the water supply and distribution system on a daily, monthly, and annual time step. Water use is tracked through the Advanced Metering Infrastructure data and the customer billing system and water loss is audited on an annual basis.

The City compiles, analyzes, and submits monthly production reporting to the State Water Resources Control Board covering both overall production as well as a calculation of water use in gallons per capita per day. This reporting would continue throughout any water shortage that may occur. This data is publicly available and accessible online.

Monitoring and reporting used specifically during a shortage includes online month-by-month presentation of usage data to customers. During a shortage of Stage 2 or higher, a dedicated drought webpage would be created to display usage data and progress on meeting reduction goals. This would be in addition to the communications protocols that would be implemented during the activation of any WSCP shortage level as described in Section 8.4.

8.10 Termination and Refinement Procedures

A water shortage ends when local rainfall, runoff, and reservoir storage levels improve to the point where the water system is once again capable of supporting unrestricted water demand.

Any water use rules and regulations in effect at the time are officially rescinded by City Council and public notice is given that the water shortage is over. The Water Director would then oversee any remaining termination and plan review activities. These activities could include:

- Publicize gratitude for the community's cooperation
- Restore water utility operations, organization, and services to pre-event levels
- Document the event and response and compile applicable records for future reference
- Continue to maintain liaison as needed with external agencies
- Collect cost accounting information, assess revenue losses and financial impact, and review deferred projects or programs
- Debrief staff to review effectiveness of actions, to identify the lessons learned, and to enhance response and recovery efforts in the future

The City of Santa Cruz will review its WSCP after each year that a shortage level is implemented and as necessary based on any identified needs for refinement. This review will focus on areas of the plan that require refinement or adaptation to existing circumstances or otherwise need to be adjusted. Upon completion of such a review, staff will determine if an update to the WSCP is needed. If so, a new draft WSCP will be developed and circulated for public review as required by law before any public hearings or consideration of adoption by the Santa Cruz City Council.

8.11 Special Water Features Distinction

Water Code section 20632 requires a separate evaluation of special water features separately from pools and spas. The City of Santa Cruz WSCP demand reduction actions rely primarily on an allocation system that requires water customers to maintain water use within a given allocation rather than providing prescriptive use restrictions. Special water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains are not specifically restricted at any WSCP shortage level if they are maintained with a given customer allocation. Similarly, pools and spas are not restricted at any WSCP shortage level if they are maintained with a given customer allocation, although public pools and showers would be closed at Stage 5.

8.12 Plan Adoption, Submittal, and Availability

This WSCP is comprised of this Chapter 8 of the 2025 UWMP. It is currently being made available for public review in conjunction with the public review of this UWMP. Details on the public hearing, adoption, public availability, and submittal to the DWR will be added to this UWMP upon completion of these processes.

9 DEMAND MANAGEMENT MEASURES

The City of Santa Cruz has long recognized the importance of conserving water as a responsible demand management strategy to help protect the area's natural resources, to stretch existing water supplies, to help downsize and/or delay the need for costly additional water supply, treatment, and distribution upgrades, and to fulfill the City's overall goal of ensuring a safe, reliable, and adequate water supply. The City's very low system-wide water use is highly beneficial from the perspective of meeting demands and preserving water resources. However, having a very low system-wide water demand represents a "hardened demand" that presents limited opportunity for further per capita demand reductions moving forward. This section describes the City's current water demand management measures.

9.1 Demand Management Measures for Wholesale Agencies

The City of Santa Cruz currently is not a wholesale water supplier nor does it receive water from a wholesale agency. This requirement does not apply to the City.

9.2 Demand Management Measures for Retail Agencies

This section presents the City of Santa Cruz demand management measures, including water waste prevention ordinances, metering, conservation pricing, public outreach and education, programs to assess and manage distribution system losses coordination and staffing support, and other measures.

9.2.1 Water Waste Prevention Ordinances

The City's water conservation ordinance (Santa Cruz Municipal Code 16.02) has been in effect since 1981 and was updated last in 2026 (Appendix O). Under the ordinance it is unlawful for any person to use water for any of the following:

- unauthorized use of water from a fire hydrant,
- watering of landscaping in a manner or to an extent that allows excess water running off the property,
- allowing plumbing leaks to go unrepaired,
- outdoor washing of structures, vehicles, or surfaces without the use of an automatic shut-off nozzle,
- operation of a fountain unless water is recycled, and
- irrigating non-functional turf with potable water.

Provisions of the ordinance regulating new development include prohibitions on:

- use of water in new ice-making machines and any other new mechanical equipment that utilizes a single pass cooling system to remove and discharge heat to the sanitary sewer,
- washing of vehicles at a commercial car wash unless the facility utilizes water recycling equipment,
- use of water for new non-recirculating industrial clothes wash systems, and

- use of potable water for dust control or soil compaction purposes in construction activities where there is a reasonably available source of reclaimed water appropriate for such use.

The ordinance is in effect at all times and is upheld mainly through communication with the responsible customer.

During declared water shortages, the City's Water Shortage Contingency Plan takes effect as codified in Santa Cruz Municipal Code 16.01 (Appendix O). The aforementioned restrictions are repeated in 16.01, and are enforceable by a first warning, followed by a progressive series of fines from $100 to $500.

The public is also encouraged to report water waste by calling the Santa Cruz Water Department Customer Service phone line. When water waste is observed, site visits, in-person customer contact, phone, and/or mail correspondence is used to resolve the issue. Field staff will increase drive-by checks of sites receiving water waste complaints to help ensure the issue is resolved.

Water waste prevention is also implemented through the City's Water-Efficient Landscaping Ordinance as codified in Santa Cruz Municipal Code Chapter 16.16 to ensure landscapes and irrigation systems in new and renovated development are designed to avoid runoff, overspray, low-head drainage and other similar conditions where water flows off site onto adjacent property (Appendix O). Further description of this ordinance can be found in Section 9.3.1.3 of this plan.

9.2.2 Metering

All the City's water connections are fully metered, and all meters are read and billed monthly according to the volume of water consumed. The City began a system-wide replacement of the metering system in fall 2021, replacing all meters older than three years, and outfitting all meters with an Advanced Metering Infrastructure (AMI) radio. As of 2026, all City water meters are now connected with AMI technology, allowing access to hourly meter reads. Water meters are required for all new service connections. In addition, a separate, dedicated irrigation meter equipped with AMI is required for all new and renovated multi-family and commercial landscape projects with over 5,000 square feet of landscaped area.

Qualitative benefits of AMI for customers and staff include improved understanding of water use and related charges, reduced carbon footprint from drive-by meter reading, improved drought response, and standardization of metering equipment and software. Additionally, since 2024 the City has leveraged AMI to offer an online customer portal which can provide customized leak alerts, budget-based alerts, or—during declared water shortages—over-allotment alerts. With AMI installation complete, the City will begin work on incorporating additional benefits of interval meter read data, including optimization of the meter-to-cash operation, further calibration of the hydraulic model, and expansion of distribution water loss analysis.

With the completion of the AMI installation, the City's meter stock has all been recently replaced. Meters are tested depending on size: twenty large meters are selected on a revenue-based methodology and tested annually, and small meters are tested when unusual consumption is flagged in the billing system or upon customer request. Ongoing meter replacements occur on an annual basis and are prioritized based on age and size.

9.2.3 Conservation Pricing

The Santa Cruz Customer Service section, also referred to as “Santa Cruz Municipal Utilities,” provides customer service and handles utility billing for water, sewer, refuse, and recycling services to the residents and businesses of the City of Santa Cruz, and services for water only to the unincorporated surrounding areas and part of the City of Capitola.

Since 2016, the City has used a rate structure that collects about 90 percent of revenues from volume charges. The water portion of the City’s utility bill consists of six components: 1) a fixed, monthly “Ready-to-Serve” charge, 2) a fixed, monthly Ready-to-Serve charge for customers with private fire service connections 3) a volumetric charge, 4) an infrastructure reinvestment fee, 5) for customers residing in elevated pressure zones, an elevation charge applies, and 6) a rate stabilization fee.

The 2025 Readiness-to-serve charge varies by meter size (see Table 9-1).

Table 9-1: 2025 Readiness to Serve Charges

Meter Size	Monthly Charge
5/8	$17.89
3/4"	$18.22
1”	$19.16
1.5”	$20.44
2”	$23.91
3”	$49.57
4”	$59.07
6”	$81.23
8”	$106.55
10”	$135.07

For the volumetric charges, the City has an inclining rate structure in place for residential and irrigation customers. Residential tiers are based on volume used (measured in hundred cubic feet, CCF), and irrigation tiers are based on assigned budgets. The Infrastructure Reinvestment Fees (IRFs) for these customer classes follows the same tiered structure. The current residential rates and fees as of July 1, 2025 are listed in Table 9-2, and irrigation rates and fees are listed in Table 9-3. For all other customers, including business, industrial, municipal, and golf customers, water is billed at a uniform rate of $12.33/CCF. These customer classes are billed an Infrastructure Reinvestment Fee of $4.12/CCF.

Table 9-2: Fiscal Year 2026 Residential Water Rate Structure

Tier	Volumetric Charge	IRF
1 (0-5 CCF)	$11.01	$2.99
2 (6-9 CCF)	$14.98	$5.59
3 (10+ CCF)	$18.21	$8.89

Table 9-3: Fiscal Year 2026 Landscape/Irrigation Water Rate Structure

Tier	Volumetric Charge	IRF
1 (<100% of budget)	$16.62	$13.06
2 (101%-150%)	$24.36	$16.95
3 (150% and above)	$31.94	$20.53

All customers are charged a rate stabilization fee of $1.00/CCF to help ensure stable and predictable revenues. Because the fixed portion of City's water rates is set very low, most revenue depends on how much water customers use. This creates volatility, especially when conservation reduces consumption, so the stabilization fee helps balance revenues and maintain the financial reliability of the water system. Customers in elevated pressure zones also pay an elevation surcharge for the cost of pumping water to an elevated storage reservoir ($0.29/CCF in Lift Zone 1, $0.57/CCF in Lift Zone 2, and $1.02/CCF in Lift Zone 3).

On September 21, 2021, the City Council took action to adopt the 2021 Water Department Long Range Financial Plan, to accept the recommended proposed schedule of water rate increases for Fiscal Year (FY) 2023 through FY 2027 and the recommended proposed FY 2022 through FY 2027 Drought Cost Recovery Fee schedule, and to authorize the Water Department to issue a Proposition 218 compliant public notice of the 45-day protest period and November 23, 2021 public hearing. The 2021 Water Department Long Range Financial Plan is included as Appendix R and the Proposition 218 Notice to the public about the proposed rates in included as Appendix S. The financial plan and associated rates were designed to ensure the long-term financial health of the utility by enabling the Water Department to support ongoing operations and maintenance of the water system and to make the capital investments required to comply with regulations, ensure adequate water supply, and rehabilitate and replace aging infrastructure. Table 9-4 and Table 9-5 include adopted water rates for FY 2023 through FY 2027.

As of spring 2026, the Water Department has initiated work on an updated Long Range Financial Plan and a new rate study to inform water rates for calendar year 2027 to 2031. Key revenue challenges have been identified including lower-than-projected demand resulting from broad efficiency trends, such as turf replacement, increased use of WaterSmart usage data, and the continued adoption of high-efficiency appliances and fixtures. Combined with rising construction and financing costs, these trends reinforce the need to review and modify the Long Range Financial Plan assumptions. A primary focus of this rate-setting cycle is the need for continued investment in critical infrastructure and maintenance of long-term financial sustainability. The current rate study project schedule anticipates the Water Commission taking action in August to recommend a Long Range Financial Plan and rate schedule to the City Council, with new rates implemented in January 2027.

Table 9-4: Adopted Water Rates Fiscal Year 2023-2027: Consumption Charge and Infrastructure Reinvestment Fee

Customer Class	As of 7/1/22	As of 7/1/23	As of 7/1/24	As of 7/1/25	As of 7/1/26
Residential [1]					
Tier 1	$9.74	$11.33	$13.17	$14.09	$15.07
Tier 2	$14.23	$16.54	$19.23	$20.57	$22.00
Tier 3	$18.75	$21.80	$25.34	$27.10	$28.98
Commercial [2]					
Uniform	$11.37	$13.23	$15.38	$16.45	$17.60
UCSC					
Uniform	$12.07	$14.04	$16.33	$17.46	$18.67
Landscape Irrigation [3]					
Tier 1	$20.53	$23.87	$27.75	$29.68	$31.74
Tier 2	$28.59	$33.24	$38.63	$41.31	$44.17
Tier 3	$36.32	$42.22	$49.07	$52.47	$56.10
North Coast Agriculture					
Maintain Reliability	$6.45	$7.51	$8.74	$9.35	$10.00
Decrease Reliability	$2.88	$3.36	$3.92	$4.20	$4.50

Notes:
1. Includes Single-Family and Multi-Family, tier width is per dwelling unit
2. Includes Business, Industrial, Restaurant, Hotel, Golf, Municipal, Bulk, Fire Service Leaks, and Temporary
3. Tiers based on percent of water budget for each customer

Table 9-5: Adopted Water Rates Fiscal Year 2023-2027: Rate Stabilization Fee

	As of 7/1/22	As of 7/1/23	As of 7/1/24	As of 7/1/25	As of 7/1/26
Rate Stabilization Fee (dollars per CCF)	$1.00	$1.00	$1.00	$1.00	$1.00

9.2.4 Public Education and Outreach

The City of Santa Cruz Water Department values and actively promotes public awareness and education about the City's water resources and the importance of water conservation. The City of Santa Cruz disseminates information to the public in different forms including: 1) media, 2) workshops and community events, and 3) billing and customer service.

The City currently uses media coverage to broadly share information and updates on events, programs, and news to the public in the following ways:

- “SCMU Review”, utility newsletter which includes news and information on water conservation topics;
- City of Santa Cruz Water Efficiency website;
- Formal annual water supply outlook presented to the Water Commission that shares the water conditions and anticipated dry season supply availability;

- Weekly water conditions webpage;
- Social media; and
- Television and radio news interviews and community television programs.

In addition, the City currently uses workshops and community events to engage and interact with the public by the following:

- Tabling at regional events;
- Participation in regional water forums;
- Participation with other local water agencies in local events and sponsorships of water conservation-related activities;
- Free workshops on irrigation efficiency, new irrigation technologies, and water conservation strategies for the landscape; and

The City of Santa Cruz also uses a personable approach to public education and outreach through billing and customer service, which currently includes the following:

- Marketing and distribution of free water conservation devices and literature;
- Bill inserts;
- Field representatives showing customers how to read their meter and how to check for leaks at their properties;
- Messages and information on customers' bills showing a graph charting monthly consumption for the entire year;
- A web portal for customers to view and track their water use (including hourly and daily data provided by the AMI system), receive custom conservation recommendations, and ask questions; and
- Water system tours.

The City offers school education activities for students ranging from upper elementary age children up to the University level. The program gives students an opportunity to learn about the City's water supply system and water conservation. A summary of 2025 school education activities is provided in Appendix T. School educational activities include:

- Field trips and presentations at Loch Lomond Reservoir and San Lorenzo River;
- Trout in the Classroom fish release at Loch Lomond field trip;
- Distribution of age and grade level appropriate curriculum and educational materials, including a water education booklet specially developed for Santa Cruz County students;
- High School Watershed Academy program.

The City ramps up its outreach and public education efforts as needed, such as during drought or when rolling out new programs. In addition to the ongoing education and outreach activities listed above, the City has used the following methods in the past, and may do so again in the future:

- Media: Paid advertising in local media, opinion page coverage, marketing of state and federal conservation and efficiency campaigns such as U.S. Environmental Protection Agency WaterSense program's "Fix a Leak Week."
- Workshops and community events: Tabling at local fairs and farmers' market, financial support for local water conservation organizations and events.
- Billing and customer service: Marketing of rebates and distribution of rebate applications.

9.2.4.1 Water School

An additional education tool that the City of Santa Cruz Water Department has used in the past (2014 and 2015), called “Water School” is described in detail in Section 8.6.2.

9.2.5 Programs to Assess and Manage Distribution System Losses

As mentioned in Chapter 4, Section 4.7, the City has conducted an annual water loss audit of the City’s water distribution system since 1997 to quantify how much water and revenue is lost through physical leaks and apparent losses and to identify steps to minimize system losses and improve the operational efficiency of the water system. The City uses American Water Works Association water balance software to help quantify and track water losses associated with the water distribution system and identify areas for improved efficiency and cost recovery.

Water audit results indicate average annual system water loss from 2020 to 2024 is 232 million gallons per year (MGY). Of this amount, it is estimated that an average of 183 MGY is lost due to physical leakage in the distribution system, also referred to as “real” losses, including leaking service lines, valves, fittings, and water mains. On average, it is estimated that another 49 MGY is not physically lost but goes unreported on the billing system primarily due to sales meter inaccuracies, billing and accounting errors, and other factors. This second category of losses, labeled “apparent” losses, has a negative impact on both utility revenue and on consumption data accuracy.

Currently, the City addresses physical leakage by expediting leak repairs on service connections and mains, and by performing service line and water main replacements on an ongoing basis. The Department spent on average a total of about $830,000 annually between 2021 and 2025 in its capital investment program for water main replacement projects. Projected annual spending (in 2026 dollars) on water main replacements for FY 2027 through FY 2033 is $2.75 million and increasing to $6.75 million starting in FY 2034. Although a formal leak detection program is currently not in place, the Water Department uses sonic leak detection equipment to locate and repair leaks in the water system. The Water Department is beginning to plan for a future leak detection program that fits existing infrastructure and resources. In addition, the Department monitors for leaks on the customer’s side of the meter using the AMI system, which allows customers to view hourly and daily water use and provides timely leak alerts for customers enrolled in the web portal. The Department also reviews exception reports for high meter readings. Both of these systems notify customers so they can take appropriate action to repair leaks, even before they receive their water bills.

9.2.6 Water Conservation Program Coordination and Staffing Support

The Water Department has restructured its approach to water conservation program coordination, shifting from a standalone Water Conservation section to a distributed approach that embeds these responsibilities across the organization. The department no longer employs a dedicated Conservation Coordinator. Instead, primary responsibilities for water efficiency programs and related outreach are handled by the Customer Assistance section, which includes a Management Analyst and two Program Analysts. Additional conservation-related work is carried out across other sections including Engineering, Production, Administration, and Customer Service.

Before 2022, a dedicated Water Conservation section was responsible for promoting efficient water use, administering conservation programs, and implementing drought response measures. These programs, along with the department's water rate structure, were so effective at reducing customer demand that the Water Conservation section was ultimately sunset. Its duties were redistributed across the department, with many assigned to newly created Customer Assistance section, which also manages the department's affordability programs. This section now carries a central role in both conservation and affordability initiatives, demonstrating the department's commitment to equitable and sustainable water management.

9.2.6.1 Water Conservation Activities

The Water Department's responsibilities and major activities related to water conservation fall into the following four general categories:

Public Awareness and Education: to promote public awareness and education about the City's water resources and the importance of water conservation; and to provide timely and accurate information to utility customers and the public about conservation practices and technologies, as well as the City's conservation programs and policies. The Customer Assistance section is responsible for these activities.

Water Demand Monitoring: to monitor water production, consumption, and system water losses; to track weather and population data; to evaluate trends in per capita water use; to track demand associated with new service connections; to compare actual water demand with projected use by customer category; and to develop and support water demand forecasts for the water area served for use in supply planning. The Engineering section is responsible for these activities.

Long-Term Water Conservation Programs: to develop and implement various conservation projects and programs that result in a sustained reduction in customer water demand; to track water savings from ongoing conservation programs; and to evaluate the need for program modifications to improve efficiency, customer service, and water savings in keeping with conservation goals. The Customer Assistance section is responsible for these activities.

Planning and Emergency Management: to periodically update and implement the City's Water Shortage Contingency Plan and the Urban Water Management Plan, and to assist in Departmental and City-wide emergency planning and management activities. The Engineering and Operations sections are responsible for these activities.

During periods of drought or water supply shortages, drought management becomes a primary function of the Customer Service and Customer Assistance sections, accelerating public education and outreach activities as well as addressing increased public interest and participation in long-term conservation programs.

Figure 9-1: Public Awareness Signage at Water Department Headquarters

9.2.6.2 Program Funding

The City's water conservation activities are funded by a combination of water rates, system development charges, and miscellaneous service fees. The Customer Assistance section budget in FY 2026 is $552,000.These funds include personnel, the annual costs of several softwares including a leak management software and an online customer portal for customers to view their water use, set up leak alerts, and receive water conservation information, as well as for complimentary water conservation devices, such as showerheads, aerators, toilet leak detecting dye tablets, and hose nozzles available to all customers.

9.2.7 Other Demand Management Practices

The City offers a suite of programs to residential, commercial, and irrigation customers to help and encourage them to manage their water consumption. Figure 9-2 below provides a summary and timeline of past and current water conservation activities. The following is a list of programs that were active during some portion or all of the 2021 to 2025 timeframe. The nature and extent of these measures are described in Section 9.3.

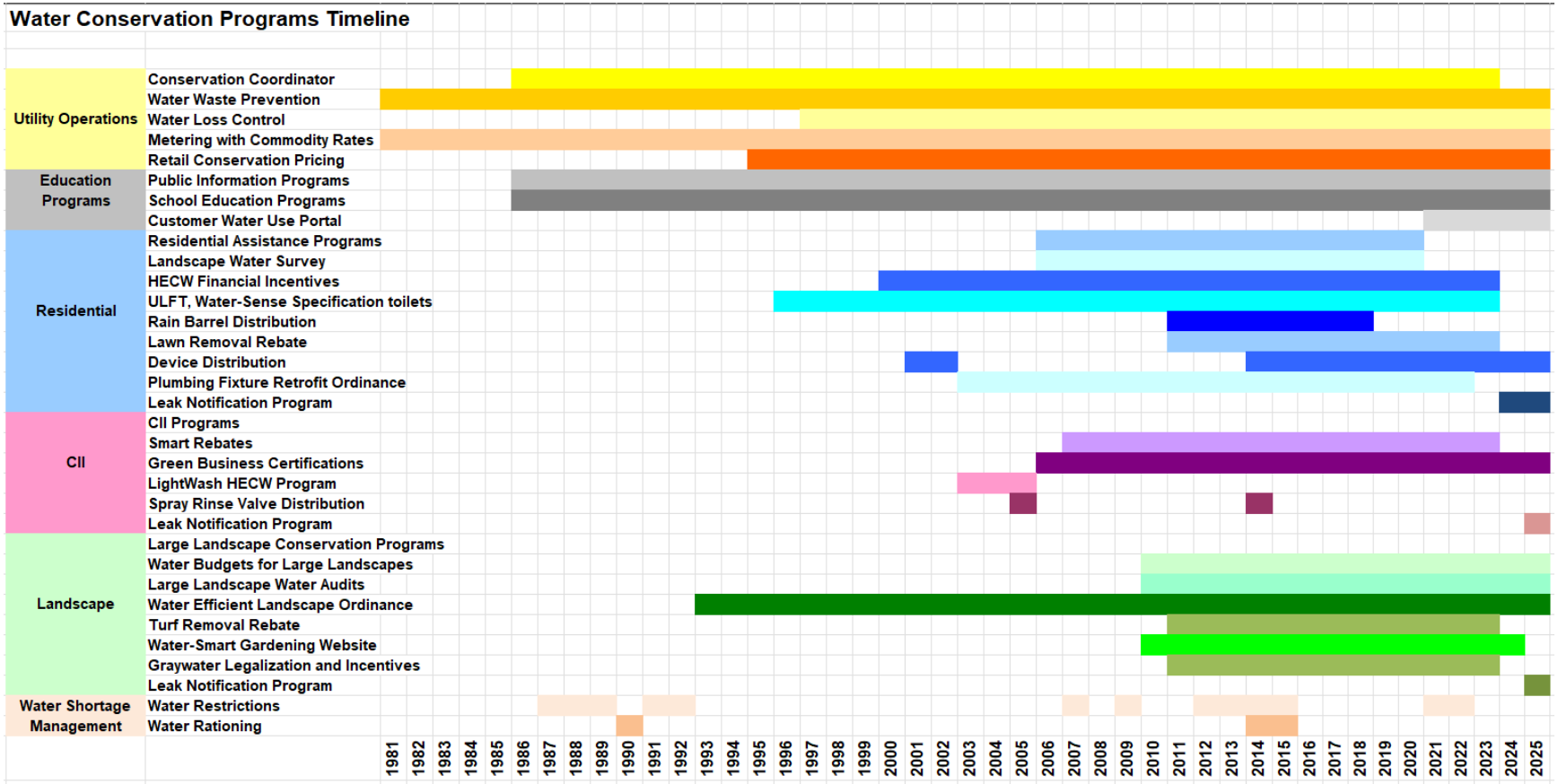
- Residential
    - Toilet, dishwasher, clothes washer, hot water recirculation pump, turf removal, and graywater rebate programs
    - Rain Barrel distribution program
    - Free water saving device distribution, including showerheads, aerators, hose timers, and automatic shutoff nozzles for hoses
    - Energy and Savings Assistance program, offering free toilet replacements to low-income qualifying customers

    - Plumbing fixture retrofit ordinance, requiring the replacement of inefficient toilets and showerheads
    - Home water surveys and home water use reports
    - Leak notification program
- Commercial, Industrial, and Institutional
    - Smart business rebates for toilets, clothes washer, and urinals
    - Green business certification
    - Leak notification program
- Irrigation
    - Water budgets for large landscapes
    - Water Efficient Landscape Ordinance
    - Turf removal rebates
    - Water-smart gardening website
    - Greywater rebates
    - Leak notification program

The following is a list of active programs in 2026:

- Residential
    - Free water saving device distribution, including showerheads, aerators, hose timers, and automatic shutoff nozzles for hoses
    - Leak notification program
- Commercial, Industrial, and Institutional
    - Green business certification
    - Leak notification program
- Irrigation
    - Water budgets for large landscapes
    - Large landscape water audits
    - Water Efficient Landscape Ordinance
    - Leak notification program

Figure 9-2: Timeline of Past and Current Water Conservation Activities



9.3 Reporting Implementation

Demand management program implementation is described in the section below including implementation over the past five years and implementation to achieve water use targets.

9.3.1 Implementation over the Past Five Years

Implementation over the past five years of the City of Santa Cruz residential, commercial and landscape programs are described in the subsequent sections.

9.3.1.1 Residential Programs

Residential water use constitutes almost two thirds of system consumption and therefore has been a main focal point of the City's water conservation efforts. Residential water conservation programs implemented between 2021 and 2025 consisted of the following: 1) High Efficiency Clothes Washer Rebate Program, 2) Toilet Rebate Program, 3) Dishwasher rebates 4) Hot Water Recirculation Pump rebates, 5) Laundry to Landscape Rebate Programs, 6) Plumbing Fixture Retrofit Ordinance, and 7) Energy and Water Savings Assistance Program. 8) Leak Notification Program 9) Customer Portal

The High Efficiency Clothes Washer Rebate program offered $100 for the purchase and installation of an Energy Star clothes washer to single and multi-family (non-communal laundry) residences, and $200 for Energy Star Most Efficient Models. The Energy Star Most Efficient models have the lowest water factor and energy factor of all clothes washers. By increasing the rebate amount for these specific models, the City aimed to encourage customers to use clothes washers that have the lowest water factors. Between 2021 and 2023 (when the program ended), the City approved rebates for over 400 water efficient clothes washers, with 56 percent of those being Most Efficient models. This program ended on December 31, 2023.

Between 1995 and 2023, the City operated a rebate program to promote the installation of ultra-high-efficiency or high-efficiency toilets in residential accounts. Through 2021 the toilet rebate program offered $150 rebate for toilets meeting WaterSense[15] criteria of 1.28 gallon per flush maximum. Eligibility requirements depended on the flush volume of the toilet that customers replaced. Older, higher usage toilets of 3.5+ gallons per flush were eligible with the replacement of a high efficiency toilet of 1.28 gallons per flush (GPF) or lower. Customers with toilets less using than 3.5 gallons per flush needed to install ultra-high efficiency toilets of 1.0 gallons per flush or less to be eligible. In 2022, the eligibility requirements were changed to only rebate for ultra-high efficiency toilets of 1.0 gallon per flush or less, regardless of the efficiency of the toilet being replaced. The rebate amount was also increased to $200. Between 2021 and 2023, 187 water efficient toilets were installed under the program.

Through 2023, The City also offered a Laundry to Landscape rebate of $150 to customers who installed a Laundry to Landscape greywater system and attended a workshop offered by Central Coast Greywater Alliance. The requirement to attend a workshop was intended to ensure systems are installed in accordance with the guidelines listed in the California plumbing code.

[15] WaterSense is a voluntary partnership program sponsored by the U.S. Environmental Protection Agency, is both label for water-efficient products and a resource to help consumers save water.

The program attracted only very sporadic participation. From 2021 to the program end in 2023 there was one greywater system installed under the program.

In 2003, the City adopted a plumbing fixture retrofit ordinance, codified as Santa Cruz Municipal Code Chapter 16.03. Originally intended to sunset in 2020, COVID-related impacts delayed action to do so, and the program officially ended in March 2022 after nearly 20 years. This regulation required that all residential, commercial, and industrial properties be retrofitted with low consumption showerheads, toilets, and urinals when real estate was sold. As part of the initial program implementation, the City worked closely with the County of Santa Cruz and the City of Capitola to have similar ordinances passed in these other jurisdictions. Under the law, the seller of the property was responsible for retrofitting any older toilets, urinals, and showerheads on the property with low consumption fixtures, and for obtaining a water conservation certificate from the Water Department. There was an option in the ordinance that allowed the responsibility for retrofitting to be transferred from the seller to the buyer, if both parties agree. In either case, the City tracked real estate sales and required every property to be inspected to verify that the plumbing fixtures on the property being sold meet the low consumption standards, except for already existing 1.6 gallon per flush toilets. A custom database program was developed by a consultant to manage property sales data on local properties and retrofitting records, as well as follow-up enforcement of the ordinance. From January 2021 to March 2022, 211 properties were certified under the program. The program achieved a high level of saturation of efficient fixtures in residential properties.

From 2018 to 2023, the City offered a $50 rebate to customers for the purchase and installation of a new Energy Star rated dishwasher. An Energy Star rated dishwasher uses equal to or less than 3.5 gallons per cycle. Between 2021 and 2023, 193 dishwashers that received rebates were installed.

From 2019 to 2022, the City partnered with the Pacific Gas and Electric Energy Savings Assistance Program to offer free water saving assistance to qualifying low-income customers. Through this program, customers received literature, toilet assessments, and toilet replacements for toilets that used 1.6 gallons per flush or greater with Niagara Stealth 0.8 gallon per flush models. The water-saving measures of this program were funded by the Water Department, and Pacific Gas and Electric contractors were responsible for the administration of the program. between 2021 and 2022, 83 toilets have been replaced.

Lastly, the Customer Assistance section launched a new leak notification program in May 2024 that leverages the online customer portal and AMI interval data to detect potential leaks, notify account holders, and provide guidance for finding and fixing leaks. The initial launch of this program was for single-family residential customers only. The program was expanded to multi-family customers with up to 12 dwelling units, commercial customers, and irrigation-only customers in June 2025. Customers receive auto-generated email, staff generated emails and letters, phone calls, door hangers, or on-site assistance from field technicians based on the duration and severity of their leak. Customers are provided with access to their interval data through an online customer portal, where they can also find leak detection and repair guides, and contact staff for further assistance. This program has seen the resolution of over 8,000 customer leaks across the served customer types.

9.3.1.2 Commercial Programs

The City provides water to about 1,900 commercial and industrial accounts within the area served, which together represents about 20 percent of total system water use. Through 2023, the City offered a Smart Business Rebate program to encourage commercial customers to become more water efficient by using water-saving technology.

The Smart Business Rebate Program was offered to extend similar services after conclusion of the statewide Smart Rebate program in 2013. The City's Smart Business Rebate Program mirrored the old statewide program by offering businesses rebates for installing water efficient fixtures including:

- High-Efficiency (1.28 GPF) or Ultra-High-Efficiency (1.0 GPF) toilets - $200
- High-Efficiency Urinals (0.125 GPF) - $300
- High-Efficiency Clothes Washer - $400

The eligibility requirements for these rebates were the same for the other programs. Clothes washers were required to be Energy Star certified and inspected if five or more are installed. Toilet rebate eligibility depended on what is currently being replaced, like the residential program, until 2022 when only 1.0 gpf toilets were rebated regardless of what was being replaced. Participation from 2021 until its end in December 2023 was low, with only one application.

9.3.1.3 Landscape Programs

The City of Santa Cruz has also offered rebates and programs for outdoor water use and landscapes which include: 1) Lawn Removal Rebate Program, 2) Large Landscape Water Budgets, and 3) Water Efficient Landscape Ordinance.

The Lawn Removal Rebate Program, in place through 2023, offered $1.00 per square foot of lawn removed for single-family, multi-family, and commercial customers. Single-family residences were eligible to receive up to $1,000 (1,000 square feet) and multi-family or commercial are eligible for up to $5,000 (5,000 square feet). The general requirements were:

- Lawn that is maintained or previously maintained prior to drought,
- Lawn must be watered by an in-ground irrigation system,
- Removal or capping of the overhead spray system in the area to be converted,
- Replacement of lawn with very low or low water use plants and mulch (with or without low volume drip irrigation) or install no water use permeable hardscape options,
- Agreement to pre- and post- inspections to take measurements and ensure eligibility requirements have been met,
- Completion of landscape conversion within a year, and
- One rebate per customer per year.

Between 2021 and 2023, this program resulted in a total of 109,370 square feet of turf removed.

Since 2010, the City has used a system called Waterfluence to map landscape areas using aerial imagery and develop irrigation budgets for the City's largest irrigation customers. Currently, participation in the Waterfluence program includes 412 sites representing 410 acres or 18 million square feet of irrigated area. For each site, Waterfluence provides a site-specific irrigation budget based on landscape size and plantings, type of irrigation, and real-time local

weather conditions that is obtained from the California Irrigation Management Information System (CIMIS) station located at the DeLaveaga Golf Course (CIMIS Station 104). Site users also receive automated leak alerts when continuous consumption above a specified threshold is detected in the hourly interval data. Because City irrigation customers have experienced numerous interventions at the same time as Waterfluence (such as drought, AMI, and water rate increases), the effects from Waterfluence program alone cannot be isolated.

In addition to receiving monthly reports, participants in the program are also eligible for a professional irrigation audit performed by Waterfluence. The audits include an assessment of irrigation efficiency, notation of irrigation issues (scheduling, tilted nozzles, leaks, breaks, pressure, overspray etc.), and confirmation of the landscape area measurements. Customers receive a detailed report with site photos noting irrigation problems, a sprinkler condition analysis, cost-effective recommendations, scheduling suggestions, and a list of water management essentials.

The City's Water Efficient Landscape Ordinance was first adopted to establish landscape water conservation regulations for major development projects situated in the City's area served in 1993. Since then, it has been rewritten and revised in 2001, 2010, 2016, and 2022. It is codified in Santa Cruz Municipal Code Chapter 16.16 (Appendix O). The overall purpose of the ordinance is to ensure that the City's limited water supply is used efficiently and effectively in new landscapes within the City's water area served and to avoid certain landscape and irrigation design aspects that have the potential to result in water waste.

The City's ordinance applies throughout the entire water area served as a condition of receiving water service. The ordinance covers all new and renovated, commercial, industrial and public projects, and new single-family and multifamily development projects resulting in three or more dwelling units where: 1) the landscape is installed by the developer, and 2) the total landscape area of the project is 500 square feet or more, and new single-family and two-unit residential development projects on properties equal to or larger than 10,000 square feet. Certain provisions also apply to pre-existing landscapes over one acre in size. The ordinance contains provisions for the following:

- Dedicated irrigation meters for new landscapes or expansion of existing landscapes over 5,000 square feet in area;
- Landscape water budgets based on 55 percent (residential) and 45 percent (non-residential) of reference evapotranspiration;
- Turf is limited to 25 percent on residential projects (turf not permitted for non-residential);
- Requiring very low to moderate water using plant materials, grouping plants with similar water needs;
- Irrigation design to avoid conditions that lead to runoff and overspray;
- Appropriate irrigation equipment, including requiring weather-based irrigation controllers and flow sensors to maximize water efficiency and detect leaks;
- Soil preparation and mulching;
- Stormwater management; and
- Alternative water sources.

A complete landscape plan must be submitted and found to satisfy the standards before a building permit can be issued. Engineering section staff reviews the landscape plans for

compliance with the ordinance, coordinates plan review with other City departments and jurisdictions, and once installed, performs final inspections of the completed landscape.

9.3.2 Implementation to Achieve Water Use Targets

The City last updated its Water Conservation Master Plan in 2017. The goal of the plan was to define water conservation activities and serve as a roadmap to help the community achieve maximum, practical water use efficiency. The plan in total included 35 measures planned to be implemented between 2015 and 2035, including the demand management measures in Section 9.2. Based on the calculated water savings expected from the implementation of the plan, the City actually achieved its water use target in 2020. Because the full extent of savings were already realized, the implementation of the Water Conservation Master Plan was phased out between approximately 2020 and 2022.

Current levels of customer demand and the Updated Long-Range Water Demand Forecast (Appendix D) indicate that the Santa Cruz community has achieved levels of water conservation well beyond the levels anticipated as a product of the programmatic conservation included in the Water Conservation Master Plan. The water conservation realized over the last decade has been achieved primarily through the effects of a combination of increased water rates and customer water use behavior changes because of the 2014-2015 drought. At the time the 2015 UWMP was written the City had already achieved its 20x2020 goal of 110 gallons per capita per day (GPCD). At the time of this 2025 UWMP, the City has maintained level of water use well below this target, with customers using 82 GPCD in 2025. The residential per capita use in 2025 was 42 GPCD. This very low system-wide water use is highly beneficial from the perspective of meeting demands and preserving water resources, but it also represents a “hardened demand” that presents limited opportunity for further per capita demand reductions moving forward.

9.4 Urban Water Use Objectives

In 2018, the California State Legislature passed Assembly Bill 1668 and Senate Bill 606, directing the State Water Board to adopt efficiency standards and performance measures for commercial, industrial, and institutional water use. As part of the proposed regulation, Urban Retail Water Suppliers will be held to annual Urban Water Use Objectives. The State Water Board developed water use objectives in 2023, and the implementing regulations went into effect January 1, 2025 (California Code of Regulations, title 23, section 965 et seq.). The regulation requires suppliers to annually calculate their objective, which is the sum of efficiency budgets for a subset of urban water uses: residential indoor water use, residential outdoor water use, real water loss and commercial, industrial and institutional landscapes with dedicated irrigation meters. The City must report on compliance with its Urban Water Use Objective each year (on a fiscal year basis). The City submitted required reports for 2023, 2024, and 2025 as required by California Water Code, and has met the Urban Water Use Objective each year. Given the City of Santa Cruz well-demonstrated track record of water conservation and its customers being among the lowest per capita water users in California, the City expects to be able to maintain compliance with the objective.

10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This chapter summarizes the process of adoption, submittal, and implementation of the 2025 Urban Water Management Plan (UWMP) and 2025 Water Shortage Contingency Plan (WSCP), including the steps for amendment if it becomes necessary. The process of preparing the UWMP is described in Chapter 2, and process of preparing the WSCP is described in Chapter 8.

10.1 Inclusion of All 2025 Data

As mentioned in Section 2.3, the City is reporting on a calendar year basis. The plan was prepared in 2026 and accordingly includes water use and planning data for the entire calendar year of 2025, except where noted.

10.2 Notice of Public Hearing

Water suppliers must hold a public hearing before adopting a UWMP and a WSCP. The public hearing provides an opportunity for the public to provide input before these plans are adopted by City Council.

Table 10-1 below lists all the cities and counties that receive water service from the City of Santa Cruz and that were sent a notice of the public hearing. As mentioned in Section 2.4, these jurisdictions were previously sent written notice regarding the plan review and update process well in advance of 60 days before the public hearing, in accordance with California Water Code section 10621(b). These notices are included in Appendix B.

Table 10-1: Notification to Cities and Counties (submittal table 10-1R)

City/County Name	60 Day Notice	Notice of Public Hearing
City of Capitola	Yes	Yes
City of Santa Cruz	Yes	Yes
Santa Cruz County	Yes	Yes

Prior to the public hearing, the draft plans were made available for public inspection, review, and comment on the City's web site, at the Water Department office, and at the City's Central Library beginning on May 8, 2026.

The draft plans were also circulated, along with notice of the time and place of the public hearing, to the County of Santa Cruz and the City of Capitola as required by law. Notification letters included the location where the draft 2025 UWMP and WSCP could be viewed, the hearing schedule, and contact information of the preparer for the City. Copies of these letters are included in Appendix U.

In addition to these jurisdictions, the City provided the notice of the public hearing to the Association of Monterey Bay Area Governments, local elected officials, the Santa Cruz Local Agency Formation Commission, the University of California, Santa Cruz, and to all major public water utilities in Santa Cruz County, including the following:

- Soquel Creek Water District
- San Lorenzo Valley Water District

- Scotts Valley Water District
- Central Water District
- City of Watsonville

The public hearing was noticed to the public in the local newspaper as prescribed in Government Code 6066. The notice included the time and place of the hearing, as well as the various locations where the plans were made available for public review. A copy of the notices of the public hearing published in the Santa Cruz Sentinel newspaper are included in Appendix U.

10.3 Public Hearing and Adoption

The City Council is planned to hold a public hearing on the UWMP and WSCP in accordance with California Water Code section 10642. Copies of any written comments received during the public review process, a summary of any changes after circulation of the draft UWMP, official minutes of the public hearing, and the adoption resolutions for the plans will be included in Appendix U.

10.4 Plan Submittal

The final adopted UWMP and WSCP will be submitted electronically to DWR the California State Library, and transmitted to all jurisdictions receiving water service from the City of Santa Cruz within 30 days of adoption, in accordance with California Water Code section 10644. Additionally, all final data tables will be submitted to California Department of Water Resources using the Water Use Efficiency data portal.

10.5 Plan Availability

The final, adopted UWMP and WSCP will be made available to the public in accordance with California Water Code section 10645 by posting on the City's web site within 30 days of submission to the California Department of Water Resources.

Table 10-1 lists the cities and counties that receive water service from the City of Santa Cruz. These entities will be provided copies of the plans within 30 days of plan adoption, in accordance with California Water Code sections 10632 and 10644.

10.6 Amendment Process

If the City of Santa Cruz chooses or needs to amend the adopted 2025 UWMP or WSCP, proper notification, including copies of the amendments, will be provided in accordance with sections 10621, 10640, 10642, and 10644 for the notification, public hearing, adoption and submittal.

11 REFERENCES

Cal-Adapt. 2018. Local Climate Change Snapshot: Santa Cruz, California. https://cmip5.cal-adapt.org/tools/local-climate-change-snapshot. Accessed October 22, 2025.

California Department of Water Resources (DWR). 2010. 20x2020 Water Conservation Plan. https://www.waterboards.ca.gov/water_issues/hot_topics/20x2020/docs/20x2020plan.pdf. Accessed March 4, 2026.

California Department of Water Resources (DWR). 2012. California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Zones. https://cimis.water.ca.gov/Content/pdf/CimisRefEvapZones.pdf. Accessed October 22, 2025.

California Department of Water Resources (DWR). 2016. Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009). February 2016.

California Department of Water Resources (DWR). 2021. Letter from DWR with Statement of Findings Regarding the Approval of the Santa Cruz Mid-County Basin Groundwater Sustainability Plan. https://sgma.water.ca.gov/portal/gsp/assessments/11. Accessed June 3, 2021.

California Department of Water Resources (DWR). 2025. California Irrigation Management Information System (CIMIS). Monthly Average ETo Report for Station 104 De Laveaga. https://cimis.water.ca.gov/Default.aspx. Accessed October 22, 2025.

California Department of Water Resources (DWR). 2026. Urban Water Management Plan Guidebook. January 2026.

California Employment Development Department. 2025. Employment & Wage Data - 2024 4th Quarter - Santa Cruz Water Service Area. Compiled by Labor Market Division staff, December 2025.

California State Water Resources Control Board. 2020. Efficient Indoor Water Use and Practices. Appendix J to Indoor Residential Water Use Study prepared by the Department of Water Resources. Available at: https://www.waterboards.ca.gov/conservation/regs/docs/irwus-appendix-j.pdf. Accessed April 21, 2026.

Capitola, City of. 2019. Capitola General Plan. Available at: https://www.cityofcapitola.org/communitydevelopment/page/capitola-general-plan. Accessed March 4, 2026.

Capitola, City of. 2024. Housing Element of the General Plan 2023-2031. Available at: https://www.cityofcapitola.org/communitydevelopment/page/2023-2031-housing-element-update. Accessed March 4, 2026.

Hickey, John J. 1968. Hydrogeologic Study of the Soquel-Aptos Area, Santa Cruz County, California. U.S. Geological Survey, Water Resources Division.

Kennedy/Jenks. 2018. Santa Cruz Recycled Water Facilities Planning Study. Prepared for City of Santa Cruz. June 2018.

Kennedy/Jenks. 2026. Water Supply Augmentation Implementation Plan. Prepared for City of Santa Cruz Water Department.

M. Cubed. 2015. City of Santa Cruz Water Demand Forecast. October 2015.

M.Cubed. 2016a. Effect of Temperature on City of Santa Cruz Water Demands. Prepared for City of Santa Cruz Water Department. March 30, 2016.

M.Cubed. 2016b. Projected Statewide and County-Level Effects of Plumbing Codes and Appliance Standards on Indoor GPCD: Prepared for California Department of Water Resources, Water Use Efficiency Branch.

M.Cubed. 2019. Comparative Analysis of Projected and Actual Demand in 2018. Prepared for City of Santa Cruz Water Department. February 22, 2019.

M.Cubed. 2021. Update of the City of Santa Cruz's Long-Range Water Demand Forecast. Prepared for City of Santa Cruz Water Department. September 10, 2021.

M.Cubed. 2025. 2025 Update to the City of Santa Cruz Long-Range Demand Forecast.

National Marine Fisheries Service (NMFS). 2012. Volume 1, Recovery Plan for the Evolutionarily Significant Unit of Central California Coast Coho Salmon. September 2012.

National Marine Fisheries Service (NMFS). 2016. Executive Summary, Coastal Multispecies Recovery Plan (California Coastal Chinook Salmon, Northern California Steelhead, and Central California Coast Steelhead). October 2016.

National Oceanic & Atmospheric Administration National Centers for Environmental Information (NCEI). 2021. U.S. Climate Normals. 1991-2000, Station: Santa Cruz CA, USC00047916. Accessed October 22, 2025.

Santa Cruz, City of. 2019a. City of Santa Cruz 2030 General Plan. https://www.santacruzca.gov/Government/City-Departments/Community-Development/Long-Range-Policy-Planning/Ordinance-Policy-Updates/Downtown-Plan-Expansion/General-Plan. Accessed March 4, 2026.

Santa Cruz, City of. 2019b. 2019 Wastewater Treatment Facility Annual Summary Report & Outfall Inspection Report.

Santa Cruz, City of. 2023. City of Santa Cruz 2023-2031 Housing Element Update. Available at: https://www.santacruzca.gov/Government/City-Departments/Community-Development/Long-Range-Policy-Planning/Ordinance-Policy-Updates/Housing-Element-Update Accessed March 4, 2026.

Santa Cruz, City of. 2025. 2025–2030 City of Santa Cruz Local Hazard Mitigation Plan – Climate Adaptation Plan.

Santa Cruz, County of. 2023. 2023 Housing Element. https://cdi.santacruzcountyca.gov/Portals/35/CDI/Planning/Policy/GeneralPlanTownPlan

s/General%20Plan%20Chapters/2023%20Housing%20Element_Final_10-16-24%20New%20Date.pdf Accessed March 4, 2026.

Santa Cruz, County of. 2024. General Plan and Local Coastal Program. March 18, 2024. Available at: https://cdi.santacruzcountyca.gov/Planning/PolicyPlanning/General,TownVillagePlans.aspx Accessed March 4, 2026.

Santa Cruz Mid-County Groundwater Sustainability Agency (MGA). 2019. Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan. November 2019.

Santa Cruz Mid-County Groundwater Sustainability Agency (MGA). 2025a. Santa Cruz Mid-County Basin Water Year 2024 Annual Report. March 28, 2025.

Santa Cruz Mid-County Groundwater Sustainability Agency (MGA). 2025b. Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan 2025 Periodic Evaluation. January 2025.

United States Census Bureau. 2024. 2019-2023 American Community Survey 5-Year Estimates Subject Tables. Tables DP05, B19013, S1501, S1601, S1602, S1701, S2502. https://data.census.gov/. Accessed October 29, 2025.

University of California, Santa Cruz (UCSC). 2017. Coastal Long Range Development Plan. https://lrdp.ucsc.edu/Final2008CLRDP/CLRDP-Jan17.pdf. Accessed October 28, 2025.

University of California, Santa Cruz (UCSC). 2021. 2021 Long Range Development Plan. https://lrdp.ucsc.edu/2021/files/flrdp/print/UCSC-2021-LRDP-1-Executive-Summary-&-Introduction.pdf. Accessed October 28, 2025.

University of California, Santa Cruz (UCSC). 2025. Achievements, Facts, and Figures. https://www.ucsc.edu/about/achievements-facts-and-figures/. Accessed October 22, 2025.

Water Research Foundation. 2016. Residential End Uses of Water Study, Version 2. April 7, 2016.

Water Supply Advisory Committee (WSAC). 2015. City of Santa Cruz Water Supply Advisory Committee Final Report on Agreements and Recommendations. October 2015.