



SANTA CRUZ COUNTY WATER RESOURCES MANAGEMENT 2024 STATUS REPORT

Prepared by County of Santa Cruz
Environmental Health



Above: PureWater Soquel Treatment Facility image courtesy of Soquel Creek Water District. Below: College Lake Project construction image courtesy of PV Water.

Introduction

Santa Cruz County's water resources serve a critical role in providing municipal, domestic, and agricultural water supply, preserving fragile watersheds, providing resilient habitats, and supporting recreational and commercial activities. Nearly all water supplies are derived from local rainfall and captured through stream diversions and groundwater wells (Figure 1). County staff, local agencies, organizations, and the community continue to collaborate on long-term, adaptive solutions to sustain environmental quality and ensure safe, reliable water resources for current and future needs.

Projects and planning efforts undertaken by regional agencies and non-profits are preparing for a future with a greater variability in precipitation and temperature than Santa Cruz experienced when our existing infrastructure was built. This report encompasses activities that took place during calendar year 2024 and reflects water use and rainfall from the 2024 water year which began October 1, 2023 and ended September 30, 2024.

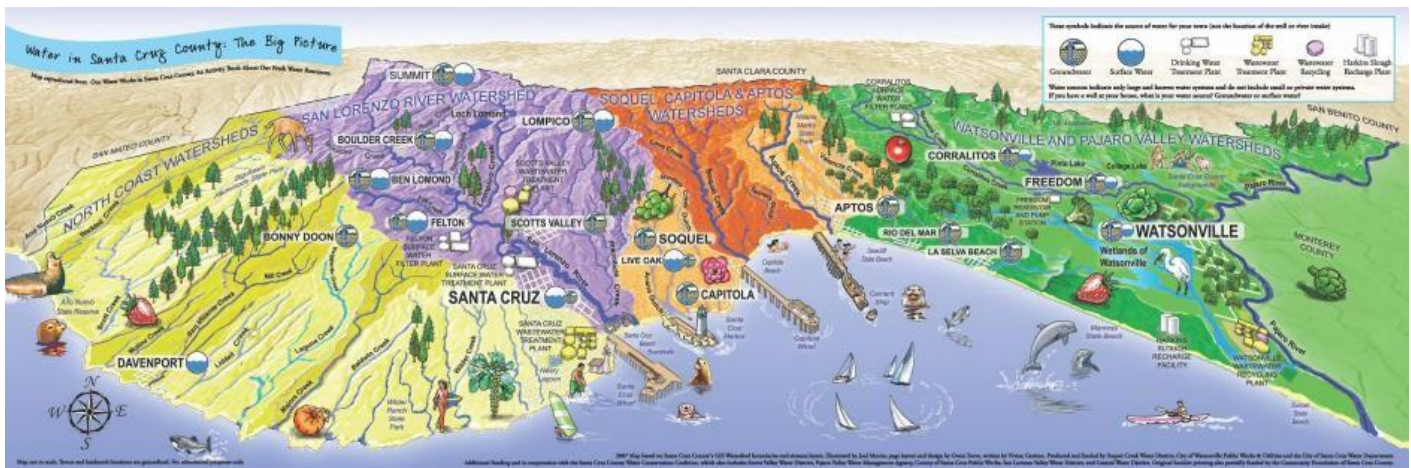


Figure 1: Local Water Supply Distribution.

Water Resource Management activities during 2024 were influenced by:

- Rain: A second consecutive, though thankfully less eventful, wet year led to the [end of the Governor's drought declaration](#) for Santa Cruz County.
- Construction: Soquel Creek Water District, Pajaro Valley Water Management Agency, and the City of Santa Cruz Water Department all made progress on constructing new water supply projects. These projects combined total a similar amount of water to the capacity of the Loch Lomond Reservoir.
- Algal blooms: Large Harmful Alga Blooms (HABs) occurred throughout the county this year, most notably at Pinto Lake—closed for nearly four months—and at Corcoran Lagoon. The County Water Quality Viewer now has a “Serious Risk” category.

Key highlights for the year include:

- Municipal water use remains lower than it was when recent drought restrictions were in place, and is around 23% below the water use levels of the early 1980s.

- Several notable retirements occurred this year: Rosemary Menard, Santa Cruz Water Director, retired in February; Dr. Audrey Levine, Supervising Water Quality Specialist for the County of Santa Cruz, retired in July; and Ron Duncan, General Manager of the Soquel Creek Water District, retired in October.
- The County of Santa Cruz Board of Supervisors adopted amended ordinances regulating well construction and Individual Water Systems. The new ordinances strive to strike a balance between making domestic and replacement well permits straightforward and attainable, while ensuring that new, larger wells are thoroughly evaluated for their impact on the Public Trust.
- Voters passed the local initiative, Measure Q, which will provide stable funding for projects that benefit the environment and the impacts of climate change. Water projects are listed as a priority.
- Voters also passed the Statewide initiative, Proposition 4, which includes significant funding for water projects. Local match may be provided from Measure Q.

Rainfall is critical to sustaining the County’s surface and groundwater resources. Water Year 2024 was a welcomed respite from the Whiplash Weather we have seen over the previous three years. Rainfall totals throughout California have been described as “abnormally normal” (see Figure 2).¹ This water year following a very wet 2023 led to the official end of the drought that had been declared by the Governor for Santa Cruz County in 2021.

Cumulative Precipitation, Santa Cruz, CA Water Year 2024

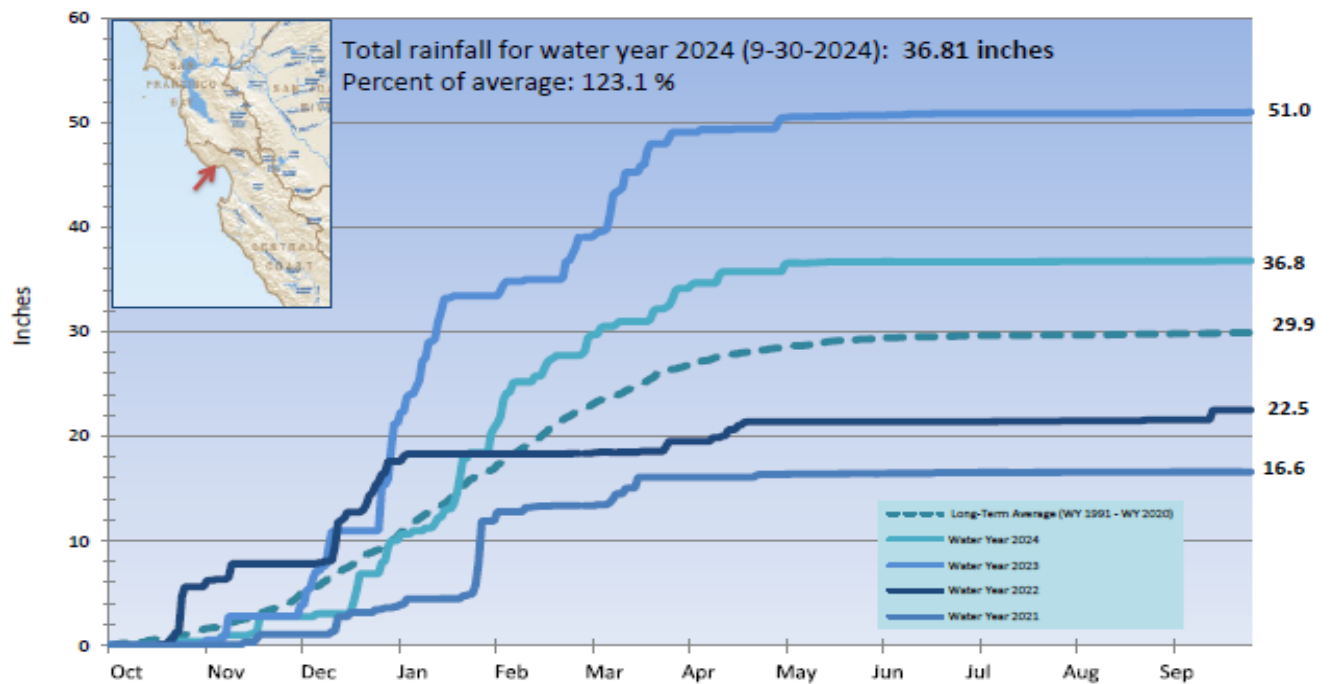


Figure 2: Rainfall in water years 2021-2024 compared to the long-term average, data from CIMIS, credit City of Santa Cruz Water Department.

¹ Data from CIMIS (California Irrigation Management Information System): <https://cimis.water.ca.gov/>

A comparison of water year 2023 and 2024 for San Lorenzo River flows is shown in Figure 3, illustrating how wet winters can sustain high streamflows throughout the dry season. Loch Lomond, the only surface water reservoir in the County, filled during the winter and remained high, ending the water year at over 90% capacity². Groundwater elevations react differently to rain depending on their depth and formation type. That said, all groundwater basins continued to benefit from direct recharge and lower than average groundwater pumping due to ample surface water and cooler temperatures³.

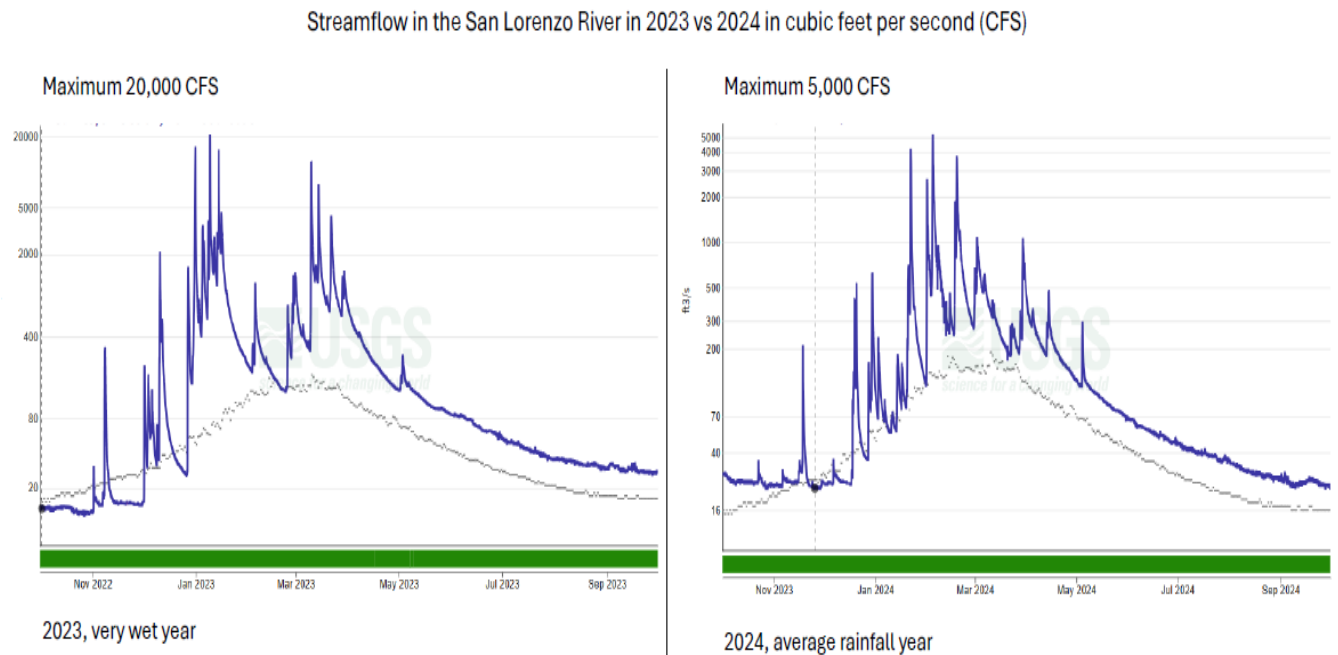


Figure 3. Water year 2023 Streamflow vs. 2024 Streamflow for the San Lorenzo River at the Big Trees gaging station ⁴in comparison to median values (1937-2024).

Coordination between water practitioners is critical to regional resilience. Water exchanges through interties are becoming more common, a trend that will continue as a new intertie between the City of Santa Cruz Water Department and Scotts Valley Water District is under development. This intertie will complete the connection of every water system from the upper reaches of the San Lorenzo Valley Water District, all the way down to Central Water District. The first effort to support the integrated nature of water management including water quality, environmental users, and water utilities was the Integrated Regional Water Management (IRWM) program, which has been underway in Santa Cruz County for over 20 years. Partner agencies continue to work together on the IRWM program, with the Regional Water Management Foundation (RWMF) serving as a hub for the 12 agencies in the Regional Water Management Group. The County and all the cities and public agencies dealing with water are

² www.cityofsantacruz.com/government/city-departments/water/weekly-water-conditions

³ sccwaterdata.us/#/overview/GroundwaterLevel

⁴ waterdata.usgs.gov/monitoring-location/11160500/#parameterCode=00065&period=P7D

signatories to the Santa Cruz IRWM Memorandum of Agreement, which was updated and renewed in 2024. www.santacruzirwmp.org/.

This report was written by staff in the Santa Cruz County Water Resources Program in Environmental Health. Updates were provided by four County departments and by partners throughout the county including the San Lorenzo Valley Water District, Scotts Valley Water District, City of Santa Cruz Water Department, Soquel Creek Water District, Central Water District, City of Watsonville, Pajaro Valley Water Management Agency, Regional Water Management Foundation, Pajaro River Flood Management Agency, and the Resource Conservation District of Santa Cruz County.

Contents

Introduction	1
Section 1: Regional Water Supply Resilience	8
Efficiency in Existing Water Supply – Municipal Suppliers	10
San Lorenzo Valley Water District (SLVWD).....	10
Scotts Valley Water District (SVWD).....	10
City of Santa Cruz Water Department (SCWD).....	11
Soquel Creek Water District (SqCWD).....	11
Central Water District (CWD).....	12
City of Watsonville Water Division (CoW):.....	13
Regional Project Funding.....	13
Efficiency in Existing Water Supply – Agriculture.....	14
Ag Irrigation Efficiency Assistance.....	14
Managed Aquifer Recharge/ Recharge Net Metering Program.....	15
Creation of New Water Supplies – Municipal.....	15
Scotts Valley Water District (SVWD):.....	15
City of Santa Cruz Water Department (SCWD):.....	16
Soquel Creek Water District (SqCWD).....	16
Groundwater Management.....	18
Santa Margarita Groundwater Agency.....	18
Santa Cruz Mid-County Groundwater Agency.....	19
County’s Roles in Supporting MGA and SMGWA.....	20
Pajaro Valley Water Management Agency (PV Water).....	20
County of Santa Cruz Well Ordinance Update.....	24
Small Water Systems and Domestic Wells	26
Services Offered by the County.....	28
Big Basin Water Company.....	30
Section 2: Water Quality	31
Santa Cruz County Water Quality Program and Laboratory.....	32
Cyanobacterial blooms.....	33
Beach Water Quality	35
Red Tide.....	37
Local Area Management Program Pilot Study.....	37

County Regulatory Programs	39
Drinking Water Quality and Supply Protection	39
Scotts Valley Water District (SVWD)	39
City of Santa Cruz Water Department (SCWD)	39
Soquel Creek Water District (SqCWD)	40
City of Watsonville Water Division (CoW)	41
Rural roads and home drainage	41
Agricultural Water Quality Programs.....	42
Section 3: Natural Resources and Flood Management.....	44
Storm and Flood Preparation and Response	44
Fisheries Monitoring and Protection	47
Watershed Management Activities	50
Attachment 1: Water Use in Santa Cruz County, 2024	56
Attachment 2: Common Acronyms	57
Attachment 3: Online Resources	58

List of Figures

Figure 1: Local Water Supply Distribution.	1
Figure 2: Rainfall in water years 2021–2024 compared to the long-term average, data from cimis, credit City of Santa Cruz Water Department.....	2
Figure 3. Water year 2023 Streamflow vs. 2024 Streamflow for the San Lorenzo River at the Big Trees gaging station in comparison to median values (1937–2024).....	3
Figure 4: Water production compared against the number of connections and rainfall from 1984–2024 for all municipal pumpers in the County. Water use peaked in 1997 and has steadily declined despite ongoing population increases and climate variability.	8
<i>Figure 5: Small Community Water Systems 2023 Monthly Use, demonstrating an increase during the summer months.....</i>	<i>9</i>
Figure 6: Cunnison Well drilling. Photo courtesy of SqCWD.	12
Figure 7: Group photo after ceremonial ribbon cutting at the advanced water purification center. Photo courtesy of SqCWD	17
Figure 8: Pipe for the College Lake Project. Source: PV Water.....	23

Figure 9: Map of watersheds with impaired water bodies in the County as identified by the Central Coast Regional Water Quality Control Board,.....31

Figure 10: Example of water quality monitoring location and results as displayed on the County's Water Quality Viewer as of November 21, 2024 : Water Quality Status (SCCEH.COM) 32

Figure 11: Cyanobacterial blooms at Corcoran Lagoon(left) and Pinto Lake (right), summer 2024 33

Figure 12: Photomicrographs from Pinto Lake Boat Rental (PL0), Corcoran Lagoon (R0) and Kelly Lake (K01). Micrographs from samples collected July 30 and October 1. Courtesy of Eric Baugher, County of Santa Cruz 34

Figure 13: Microcystin toxin concentration from late May to late October 2024. 35

Figure 14: Data are from grab samples taken by the County of Santa Cruz Environmental Health. Cowell Beach had no health advisories; Capitola Main Beach had three episodes of health advisories on June 10, July 23, August 21. 36

Figure 15: Microscope images of Akashiwo sanguinea, Ceratium, and Alexandrium. Photo by Eric Baugher..... 37

Figure 16: Shingle Mill-Photo taken on January 24, 2024..... 38

Figure 17: Hexavalent Chromium treatment pilot. Photo courtesy of SqCWD.....40

Figure 18: College Lake Project Weir. Photo courtesy of PV Water. 53

Section 1: Regional Water Supply Resilience

This section focuses on efforts by the County, municipal water providers, Groundwater Sustainability Agencies, and non-profit organizations to shore up existing water supplies and infrastructure, manage existing resources appropriately, and develop new water supplies.

As the effects of climate change become more pronounced, water sources will become increasingly stressed. To meet this challenge, county residents and agencies will have to continue efficient water use. This will help reduce stress on our water supplies and make them more resilient to climate change. Local agencies have been tremendously successful in decreasing domestic water demand by financially supporting the transition to more efficient methods of water use and educating residents about water conservation. This success can be seen when looking at the number of water connections in the county compared to water production. Since 1984, the number of water connections for large water systems has increased by approximately 32%, while annual water production during the same period has decreased 24% (see Figure 4). This trend reflects a dramatic increase in water efficiency across indoor fixtures, like toilets and washing machines, and outdoor irrigation.

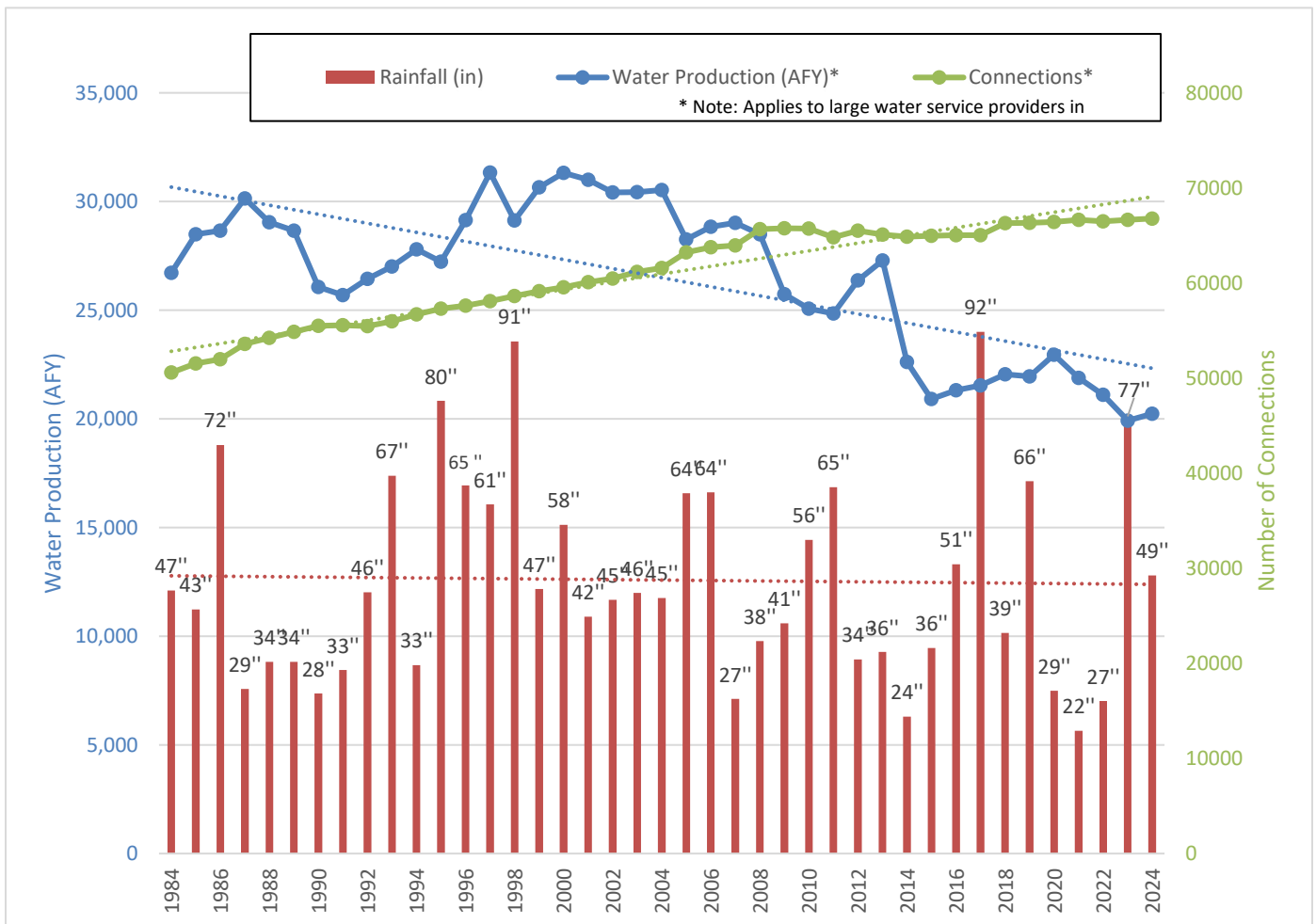


Figure 4: Water production compared against the number of connections and rainfall from 1984-2024 for all municipal pumpers in the county. Water use peaked in 1997 and has steadily declined despite ongoing population increases and climate variability.

Local partners continue, to promote efficient water use is through the [WaterSavingTips.org](https://www.watersavingtips.org) website, which creates a single location for every county resident to find information on water conservation and what conservation incentives are provided by their water supplier.

As indoor fixtures have become increasingly efficient, outdoor water use is expected to become a larger proportion of water waste. According to the California Department of Water Resources, outdoor water use accounts for 30–60% of household usage⁵, which makes it a great candidate for further reductions. The nature of outdoor water use also makes it a particular challenge to our water resources because outdoor water use is highest during the driest times of the year, when water supplies are most stressed. This is illustrated in Figure 5, which shows the 2023 water extraction data of small Community water systems (<200 connections) in Santa Cruz County. The peak water demand in August was double that of April, which can largely be attributed to increased outdoor water use.

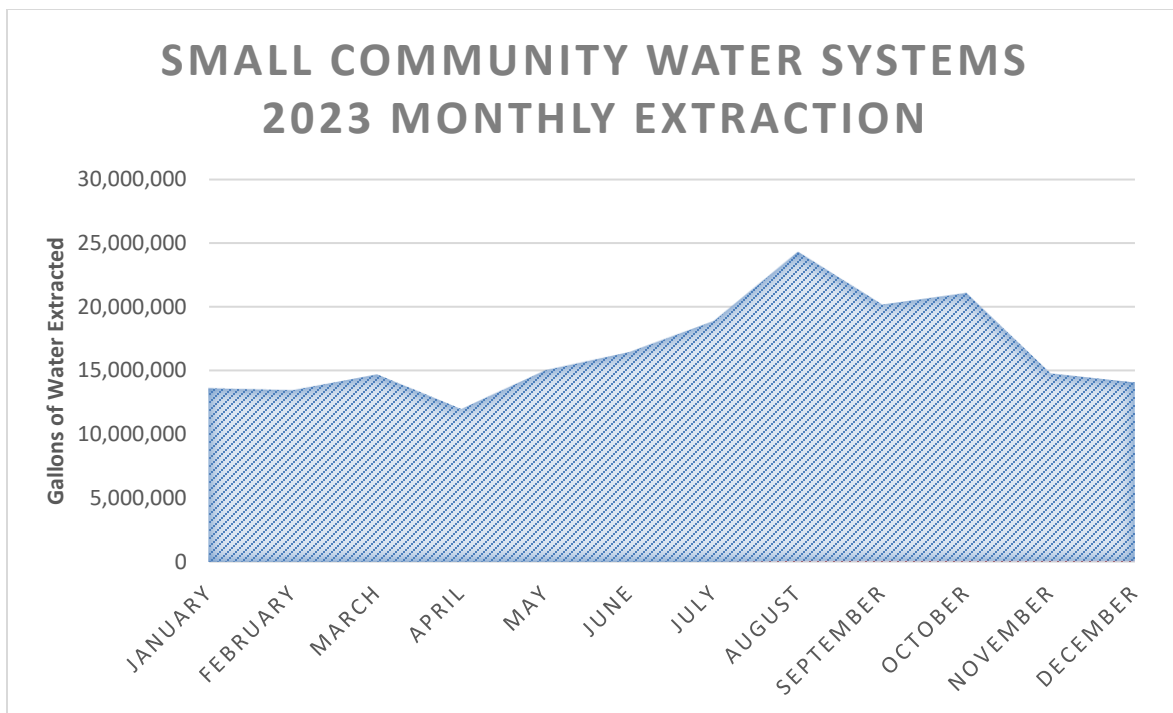


Figure 5: Small Community Water Systems 2023 Monthly Use, demonstrating an increase during the summer months.

Improving outdoor water use efficiency will continue to be a priority, but it is also important to recognize that low density development has greater potential for high outdoor water use and water waste. According to the San Francisco Bay Area Planning and Urban Research Association report “Water for a Growing Bay Area”⁶, increasing density can allow for more

⁵ [How to Save Water \(saveourwater.com\)](https://www.saveourwater.com)

⁶ [Water for a Growing Bay Area | SPUR](#)

homes without using more water. This is because infill, multifamily, housing tends to be the most water-efficient type of housing for several reasons:

1. **Infill development often occupies space that was already irrigated.** Infill development, such as adding an accessory dwelling unit (ADU), converting a single-family home to a multiplex, or splitting a single lot into two will not increase the possible space irrigated, but can reduce it.
2. **New construction tends to be more efficient than older buildings.** New construction needs to comply with current building code standards and efficient landscaping requirements. Older buildings also tend to accumulate plumbing leaks over time.

County Planning⁷ continues to encourage more infill development with both multi-family housing and ADUs.

Efficiency in Existing Water Supply – Municipal Suppliers

For municipal water providers, water supply projects and activities encompass two primary categories. The first is using existing water sources efficiently by incentivizing low water use, reducing leaks, upgrading infrastructure, and using new tools to reduce irrigation water needs. Santa Cruz County is one of the most efficient counties in the state when it comes to per capita water use, and incentives and meter upgrades by the larger water suppliers continue to encourage efficiency. The second supply category is the creation of “new” water supplies through projects like groundwater recharge and wastewater recycling, as well as optimizing the timing of using existing surface and groundwater resources.

Water agencies are undertaking the following activities to improve the efficiency of current water supplies:

San Lorenzo Valley Water District (SLVWD)

- SLVWD completed its Water Master Plan and is beginning implementation. The Master Plan provides a quantification of the existing system, including pipelines, storage reservoirs, treatment plants, pump stations, wells, and surface water intakes. The Plan reflects damage suffered during the CZU fires and not repaired as of September 2021.
- Design of improvements necessary for consolidation of Bracken Brae and Forest Springs is ongoing, supported by grant funds and FEMA funding for system repairs.
- SLVWD is moving forward with plans to update 12 aging water tanks using a combination of grant money and local match.
- SLVWD is working with the Big Basin Water Company Receiver through a grant from the County to investigate the feasibility of consolidation.

Scotts Valley Water District (SVWD)

- SVWD continued assisting City of Scotts Valley in assessing the condition of the Scotts Valley Tertiary Treatment Plant and finding a mutually advantageous solution for

⁷ Sustainable Santa Cruz County Plan (2014) and the Housing Element of the General Plan (2016–2023)

wastewater operations, which provides the source of recycled water used throughout the City.

- SVWD utilized WaterSmart customer engagement portal for leak notification procedures, contributing to a continued reduction in the volume of water lost through leaks. Achieved a 47% registration rate at WaterSmart in 2024.
- SVWD continued Think Twice Water Use Efficiency Program in response to the Stage 1 Water Condition. Program activities included 2x Turf Rebate and a Pool Cover Rebate.
- The SVWD is also working on rehabilitation of the Bethany tank site and making modifications at the Glenwood tank to prevent undermining of its foundation, following a landslide below the site during the winter storms of 2023.
- SVWD installed a Variable Frequency Drive (VFD) pump motor control at Well 10a.

City of Santa Cruz Water Department (SCWD)

- Continuing design of major infrastructure improvements at the Graham Hill Water Treatment Plant (GHWTP) under an innovative design-build framework. Issued the Final Environmental Impact Report, certified by City Council in September 2024, Construction anticipated to begin in mid-2025. Ongoing construction of the Concrete Tanks Replacement Project as a predecessor project to the larger infrastructure improvements at the GHWTP, project expected to be completed in spring 2025
- Completed contracting for the Newell Creek Pipeline: Felton to Graham Hill Segment and Brackney Landslide Area Risk Reduction project. The Newell Creek Pipeline provides the critical pipeline connection between Loch Lomond Reservoir and the Graham Hill Water Treatment Plant. Both projects are anticipated to start construction in early 2025.
- Continued construction of the Graham Hill Water Treatment Plant Concrete Tanks Replacement Project, including commissioning of two of the three new concrete tanks and solids and residuals pumping stations.
- Successfully cleared over three years of accumulated residuals in the Graham Hill Water Treatment Plant sediment basins, making use of two of the three new concrete tanks at the Graham Hill Water Treatment Plant.

Soquel Creek Water District (SqCWD)

- SqCWD continues a robust conservation program including: a large variety of indoor and outdoor rebates, a landscape budget tool for commercial landscapes, high water use diagnostics via phone, and free water saving devices like hose nozzles, faucet aerators, and low flow showerheads. The WaterSmart Customer Portal provides customers with their digital meter's daily and hourly water use, notifies them of potential leaks, and helps them diagnose the potential cause of high use. In addition to the WaterSmart Portal, staff assist customers by providing various tools (e.g., the Leak Guide, phone diagnostics, technician visits, etc.) to help them locate and resolve leaks. In 2024, average residential water consumption was approximately 48 gallons per person per day.

- Work is underway on several components of the \$7.6 million Sustainable Groundwater Management Act Implementation Grant awarded to the Santa Cruz Mid-County Groundwater Agency that focus on SqCWD infrastructure and/or collaboration, including the:
 - Design and construction of a groundwater extraction well on Cunnison Lane in Soquel (Figure 6). The new well will improve redundancy and flexibility and help redistribute groundwater pumping further inland.
 - Park Avenue transmission main/bottleneck improvements to increase system



Figure 6: Cunnison Well drilling. Photo courtesy of SqCWD.

- reliability and allow more flexibility to redistribute pumping inland away from coastal wells.
- Regional Water Resources Optimization Study. In collaboration with the City of Santa Cruz, this project will conduct modeling and analyses to inform and advance the implementation of select programs and management actions identified in the Basin's Groundwater Sustainability Plan.

Central Water District (CWD)

- The Central Water District is continuing its efforts to install a new well that will ensure water resilience for current and future needs.
- CWD is continuing to replace or update its water storage tanks located throughout the water district's boundaries.
- The District has actively been clearing plant overgrowth and debris for the purpose of reducing fire fuel loads at the District Office and at pertinent tank sites. The District has been working closely with the California Conservation Corp to complete these important projects.
- Central Water District customers continue to demonstrate commitment to ongoing conservation efforts by maintaining over 40% reduction in water consumption compared to the District's highest historical water usage.
- The District continues efforts to replace aging meters with new technology meters to allow customers more control over their water consumption. To date, over a quarter of

the District’s meters have been replaced, with plans to complete the remaining replacements within the next five years.

City of Watsonville Water Division (CoW):

- The City of Watsonville Water Division has begun construction of the new 2.4MG water storage tank back-up. This new tank will help the City maintain and continue to provide its customers with safe and reliable potable water. It will also provide emergency storage in the event of a catastrophic event such as an earthquake, drought, or in case of failure of the neighboring existing tank. Construction is expected to complete in the Fall of 2025. This project is funded by a drought mitigation grant which is administered by the RWMF.
- The City of Watsonville drilled a new well and has begun the latter phase of construction of the pump station, expected to be complete in Fall 2025. This new well and pump station will supplement existing sources and maintain the water system’s high level of reliability.
- City of Watsonville residents and businesses continue to receive water conservation education and outreach provided by the City’s Outreach Team via the CoW’s website, social media, newsletter, events, workshops, and in-person presentations. The CoW also continues to offer conservation devices and financial incentives to encourage conservation.

Regional Project Funding

- The Regional Water Management Foundation (RWMF) is providing grant administration and acting as coordinator on two IRWM implementation grants awarded to the RWMF on behalf of the Santa Cruz Region.
- Proposition 1 IRWM Implementation Grant Program Round 1 award is funding three projects that collectively benefit water supply, water quality, watershed stewardship, stormwater and flood management and habitat restoration.

Project Title	Lead Agency	Grant Award	Schedule
Countywide Sediment Reduction from Developed Parcels & Rural Roads	Resource Conservation District Santa Cruz County	\$823,237	2020 – 2025
Davenport Water Supply Tank	County of Santa Cruz, Davenport County Sanitation District	\$457,000	2020 – 2024
Watsonville Slough Farms Wetland Restoration	Resource Conservation District Santa Cruz County	\$400,305	2021 – 2025

- Work on the Proposition 1 IRWM Implementation Grant Program Round 2 grant award began in Fall 2023. The projects provide benefits to water supply, water quality,

watershed stewardship, stormwater and flood management, habitat restoration, and climate change response.

Project Title	Lead Agency	Grant Award	Schedule
Fire Hardening of Critical Water Supply Infrastructure	San Lorenzo Valley Water District	\$305,000	2023 – 2027
Equalization Tank Replacement	County of Santa Cruz, Boulder Creek County Sanitation District	\$405,312	2023 – 2026
Decision-Support Tool - Understanding Climate Influenced River Flooding	City of Santa Cruz, Department of Public Works	\$179,375	2023 – 2025
Recreational Vehicle Sewage Disposal Station	City of Santa Cruz, Department of Public Works	\$85,000	2023 – 2026
Atkinson Lane Integrated Flood Management and Watershed Restoration	City of Watsonville	\$545,000	2023 – 2027
Drinking Water Treatment System & Secondary Water Source Rountree Facility	County of Santa Cruz, General Services	\$800,000	2023 – 2026

Efficiency in Existing Water Supply – Agriculture

Ag Irrigation Efficiency Assistance

The Resource Conservation District of Santa Cruz (RCD) continues to assist growers with conserving water through improved irrigation efficiency and irrigation water use management, leveraging funds from PV Water, CDFA, CA FarmLink, and NRCS. Assistance with nitrogen management (related to water quality protection) is also often incorporated into the irrigation efficiency assistance. During 2024, RCD assisted 21 farming operations at 26 different sites to monitor and improve irrigation scheduling to achieve water conservation.

The RCD also provided:

- irrigation system evaluations to identify operation and design improvement opportunities.
- irrigation system design recommendations to optimize irrigation efficiency.
- season-long monitoring of water applied, weather data, and soil moisture to inform growers of how the amount of water applied to their crops compares to the amount of water required by their crops,
- irrigator trainings in English and Spanish.
- technical and financial assistance to implement more efficient water use practices.

During 2024, RCD and PVWater staff revised the water conservation rebate program to refine application documents and procedures. As a result, a temporary hiatus to processing rebates was implemented for a portion of the year. Rebates for 2024 totaled \$2800. Rebates and cost-share from PV Water helps growers purchase and install more efficient irrigation equipment such as lower flow sprinklers, sprinkler check valves, pressure regulators, pressure compensating drip tape, pipe retrofits, soil moisture sensors, irrigation monitoring equipment like flow meters and data loggers, and repairs of leaky pipe joints.

Managed Aquifer Recharge/ Recharge Net Metering Program

Managed Aquifer Recharge (MAR) is a landscape management strategy that can help support groundwater supply by capturing stormwater in an infiltration system (typically a strategically designed basin) where it can then infiltrate into the aquifer. Since 2016, the RCD, the University of California, Santa Cruz (UCSC) and private landowners have collaborated to implement three active MAR projects in the Pajaro Valley with funding from DWR, USDA NRCS, California Coastal Conservancy, and the State Water Resources Control Board. Monitoring results were received for two of three systems for the 2023 water year. The two systems infiltrated 189 af/yr and 369 af/year in the 2023 rain year. The annual monitoring results of the other one system infiltrated four af/year in both WY22 and 23. Additionally, water quality monitoring indicates that these projects likely help to improve groundwater quality. Data indicates that water infiltrated in the MAR basins had lower Nitrate [NO₃-N] levels than ambient groundwater.

The RCD, UCSC, PV Water and private landowners continue to collaborate to implement the Recharge Net Metering (ReNeM) Program in the Pajaro Valley. This innovative program includes collaborating with landowners to install MAR systems on their land, monitoring the performance of the systems, and providing a financial incentive to the landowners based on the volume of water infiltrated. The RCD in partnership with PV Water and UCSC secured funding from the Department of Water Resources and the Department of Conservation to assess, plan, and implement two additional MAR projects over the next three years. Additionally, the past year has seen a focused effort to further the ReNeM program by creating a business plan with dedicated staff time and associated materials. This work will result in more MAR systems in the Pajaro Valley and the surrounding watersheds.

Creation of New Water Supplies – Municipal

Scotts Valley Water District (SVWD):

- Continued working with regional partners (City of Scotts Valley, City of Santa Cruz Water and Public Works) developing a strategic direction for maximizing wastewater utilization in the region and for the benefit of Santa Margarita Groundwater Basin.
- Began construction on the Scotts Valley Transit Center LID Retrofit, Phase 2 Project. This project is funded by a \$1.5 million in Urban and Multibenefit Drought Relief Grant.
- Contractor has been awarded on the regional intertie 1 project.

- Completed construction of the Sucinto Well, which replaced failing Well 3b.
- Completed Design of the new Grace Way Well, which will be funded under the Urban and Multibenefit Drought Relief Program with the CA State DWR.

City of Santa Cruz Water Department (SCWD):

- The Water Supply Augmentation Implementation Plan is being developed as the road map towards meeting the City's reliability goals, 500 million gallons (1500 acre-feet) a year of additional water supply by 2027. The WSAIP will be completed in early 2025.
- Completed design for the Intertie 1 Project that constructs a pipeline to connect the City of Santa Cruz Water Department system with the Scotts Valley Water District water system. An addendum to the Santa Cruz Water Rights Project EIR was completed for CEQA compliance. Project is funded through a DWR grant awarded to the City of Scotts Valley. Construction is anticipated to begin in 2025.
- Continuing refinement of the Santa Cruz Water System Model in coordination with University of Massachusetts, Amherst research group. This new tool for water supply planning work incorporates a sophisticated approach to modeling for climate change allowing for analysis of thousands of scenarios to identify conditions that would particularly stress the water system.
- The Santa Cruz Mid-County Groundwater Agency (MGA) and its member agencies are advancing the five Components of the SGMA Implementation Grant. City components include completion of two aquifer storage and recovery wells at existing well sites, and groundwater modeling to support the evaluation of additional projects and management actions. Both components support the goals of the MGA as well as contributing toward the City's water supply augmentation needs.
- Ongoing coordination with the State Water Resources Control Board for action on pending water rights petitions.
- Aquifer Storage and Recovery:
 - Completed demonstration projects at existing Beltz 8 and Beltz 12 wells and initiated design for conversion of these wells to permanent ASR facilities through the aforementioned SGMA grant.
 - Initiated pilot testing at Beltz 9 well.

Soquel Creek Water District (SqCWD)

- The Pure Water Soquel (PWS) Advanced Purified Groundwater Replenishment Project is expected to be operational in 2025. This project will recycle wastewater from the City of Santa Cruz's Wastewater Treatment Facility (SCWWTF) through an advanced water purification process and use it to recharge the critically overdrafted groundwater basin and protect against seawater intrusion. SqCWD made the following progress on the major components of PWS (conveyance, treatment, and groundwater replenishment) in 2024:

- Conveyance: The conveyance pipeline will carry secondary treated effluent wastewater from the SCWWTF to the Advanced Water Purification Facility (AWPF) for treatment and purified water to the Seawater Intrusion Prevention (SWIP) wells for aquifer recharge. Construction of the conveyance pipeline continued in 2024 as well as start-up and commissioning activities.
- Purification Facility: The AWPF is a multi-step advanced water purification process involving microfiltration, reverse osmosis, and ultraviolet light with advanced oxidation with ozone pre-treatment. Construction of the AWPF continued in earnest through much of 2024. Midway through the year, construction activities largely transitioned to start-up and commissioning of the system.
- SWIP Wells: These wells will deliver purified water to the groundwater basin. Site work and equipping for the three SWIP wells continued in 2024 and is nearing completion. Start-up is expected towards the end of the year or in early 2025.
- Recycled Water Facility: As part of the overall PWS Project, SqCWD is constructing a recycled water facility at the SCWWTF for on- and off-site non-potable water uses. Construction of the recycled water facility continued in 2024. Midway through 2024, start-up and commissioning of the facility began.
- Funding: In 2024, SqCWD continued to work with the funding agencies (State Water Resources Control Board (Prop 1 Groundwater Grant and Seawater Intrusion Control Loan), Bureau of Reclamation (Title XVI Grant Program), and the Environmental Protection Agency (WIFIA Loan Program).
- Ceremonial Ribbon Cutting: On October 3, 2024, the District hosted a ceremonial ribbon cutting with over 200 attendees to celebrate the completion of the construction of the new advanced water purification center.



*Figure 7: Group photo after ceremonial ribbon cutting at the advanced water purification center.
Photo courtesy of SqCWD*

Groundwater Management

The Sustainable Groundwater Management Act of 2014 (SGMA) went into effect on January 1, 2015 and is a key driver for developing and implementing long-range plans for groundwater sustainability. SGMA required the formation of local Groundwater Sustainability Agencies (GSAs) to prepare Groundwater Sustainability Plans (GSPs) in all of the state's high and medium priority groundwater basins. Upon submittal of a GSP, GSAs have a 20-year implementation timeframe to demonstrate basin sustainability based on meeting locally defined sustainable management criteria. SGMA also requires annual reporting on GSP implementation progress to the Department of Water Resources (DWR) and a comprehensive periodic evaluation of the GSP every five years.

Santa Cruz County has three basins that are subject to compliance under SGMA. For each of these basins, the associated GSAs and their activities towards implementing their respective GSPs in Water Year 2024 are described below.

Santa Margarita Groundwater Agency

Management of the Santa Margarita Basin is overseen by a Joint Powers Authority (JPA) consisting of the County of Santa Cruz (County), the Scotts Valley Water District, and the San Lorenzo Valley Water District. This JPA is referred to as the Santa Margarita Groundwater Agency (SMGWA), which is the GSA for the basin. The SMGWA governing board includes two private well representatives, two representatives from each partner agency, and one representative each from the City of Scotts Valley, the City of Santa Cruz, and the Mount Hermon Association. The Santa Margarita Groundwater Basin has experienced a significant historical decline in groundwater levels, particularly in the southern part of the Basin near Scotts Valley and has likely also seen reductions in streamflow. While groundwater levels stabilized and are no longer declining, they have seen only modest recovery. A groundwater model analysis indicated the need to implement at least modest projects in order to maintain sustainability under future climate conditions. The GSP for Santa Margarita was adopted by the SMGWA Board in November 2021 and approved by DWR in April 2023.

In Water Year 2024, the SMGWA continued monitoring of its network of seven monitoring wells in areas of previous data gaps in the basin. Many of these wells are located near active stream gauges in the basin, which will help improve the understanding of the surface water-groundwater relationship in the basin as required by SGMA. SMGWA formed an ad hoc committee to review requirements and recommend the content and format of SGMA-mandated annual GSP progress reports. SMGWA submitted its latest annual report to DWR for Water Year 2023 by the April 1, 2024 deadline.

Also during Water Year 2024, SMGWA facilitated project coordination meetings between the basin's water supply agencies as they continue to develop their respective projects needed for basin sustainability. Of note, Scotts Valley Water District was awarded grant funding to construct an intertie with the City of Santa Cruz. While the primary purpose of the intertie is to

address water shortages during drought or emergency conditions, it can create opportunities for expanded conjunctive use to benefit the basin. Planning for the intertie project is ongoing. San Lorenzo Valley Water District continued to take steps to conduct a feasibility analysis of the use of Loch Lomond Reservoir to expand conjunctive use in the basin. Consulting services to support the analysis were procured in 2024.

Santa Cruz Mid-County Groundwater Agency

Management of the Santa Cruz Mid-County Basin is overseen by a JPA consisting of the County, City of Santa Cruz, Soquel Creek Water District and Central Water District. This JPA is referred to as the Santa Cruz Mid-County Groundwater Agency (MGA), which is the GSA for the basin. The MGA governing board includes three private well representatives and two representatives from each member agency. The Mid-County Basin is designated by the State as being in a condition of critical overdraft due primarily to the risk of seawater intrusion into the aquifers. Despite significant improvement of coastal groundwater levels due to water conservation and pumping redistribution, groundwater modeling analyses indicate that additional projects will be necessary to achieve sustainability. The GSP was adopted by the Board in November 2019 and approved by DWR in June 2021.

Work continues on GSP implementation. In January 2024, MGA completed construction of a monitoring well in the Basin that is adjacent to a stream gauge on Soquel Creek near the Olive Springs Quarry. This brings the total number of monitoring wells constructed by MGA to improve its understanding of surface water-groundwater interaction to seven. The MGA completed a non-de minimis well registration, metering, and reporting policy in June 2024. Applicable wells are to be registered by December 31, 2024, with meter installation required by September 30, 2025. Also during the water year, MGA conducted a periodic evaluation of its GSP that is required by SGMA. The evaluation, which must be submitted by January 31, 2025, resulted in MGA deciding to not amend its GSP at this time. Also during the water year, MGA procured consulting services to explore long-term funding sources for SGMA regulatory compliance, with work expected to commence in late 2024. Finally, MGA member agencies, Soquel Creek Water District and the City of Santa Cruz, continued an optimization study to identify combinations of projects to achieve sustainability in the basin and improve water supply reliability for consumers.

Work is underway on a \$7.6 million Sustainable Groundwater Management Act Implementation (SGMI) grant awarded to the MGA by the Department of Water Resources Sustainable Groundwater Management program. The grant supports the implementation of high priority projects identified in the GSP. The individual member agencies are leading the management and implementation of their respective projects. Additional description is available in this report under the lead implementing agencies:

Project Title	Lead Agency	Grant Award	Status
Cunnison Lane Groundwater Well	Soquel Creek Water District	\$1,675,000	Well constructed; treatment plant design underway.
Aquifer Storage & Recovery, Beltz Wellfield	City of Santa Cruz, Water Department	\$1,650,000	Design completed; construction to initiate in 2025
Park Avenue Transmission Main Improvements	Soquel Creek Water District	\$800,000	Completed
Technical Development of GSP Group 1 & 2 Projects	Soquel Creek Water District and City of Santa Cruz	\$1,900,000	Underway
Sustainable Groundwater Management Evaluation & Planning	MGA and County of Santa Cruz	\$1,575,000	Underway

County’s Roles in Supporting MGA and SMGWA

The County has served an important role in supporting the MGA and SMGWA. In addition to being a JPA signatory to both GSAs, the County has served as the lead in procuring and managing contracted services that leverage opportunities to strategically pool resources to benefit both basins. The County led a process to develop a regional data management system (DMS) to help the GSAs meet the requirements of SGMA, and additionally to collect and organize data collected by all of the water agencies in the County. The system can be viewed online at sccwaterdata.us/#/html/home. There are a few advantages to the regional system: it provides a robust storage system for critical historical data; it makes it easier to compare data across agencies; and the web portal makes it easy for interested parties to view results.

Pajaro Valley Water Management Agency (PV Water)

The Pajaro Valley Water Management Agency is a special district created in 1984 by the California legislature and is the GSA for the Pajaro Valley Subbasin (Basin). PV Water’s [2014 Basin Management Plan Update, Basin Management Plan: Groundwater Sustainability Update 2022 \(GSU22\)](#), and several other key documents, serve as a GSP Alternative which aims to achieve groundwater sustainability by 2040. PV Water’s efforts to achieve sustainability directly support beneficial users and uses including drinking water, agricultural irrigation, and many more. Groundwater typically provides more than 90% of the basin’s water supply with supplemental water sources such as recycled water and managed aquifer recharge water serving as the other major sources. PV Water’s existing facilities, current projects, and management actions are designed to achieve multiple objectives including providing

drought resilience, preserving beneficial uses of groundwater, and enhancing natural conditions. The two biggest uses of extracted groundwater are for domestic consumption and agricultural irrigation. As part of PV Water's GSU22, it conducted a well depth analysis of more than 1,150 domestic and agricultural wells to inform the development of sustainable management criteria to protect beneficial users of groundwater from significant and unreasonable negative impacts, as well as enhance the resiliency of drinking water and irrigation water supplies. The GSU22 is the most current version of PV Water's GSP Alternative, which will be updated approximately every five years following a periodic evaluation.

PV Water operates several existing water supply facilities and administers a series of programs to reduce groundwater extractions and help stop seawater intrusion. Supplemental water supply facilities reduce groundwater extractions through the production, distribution, and use of supplemental water supplies in-lieu of groundwater pumping. PV Water also funds and manages a comprehensive water conservation program that aims to improve use efficiencies for both agricultural and domestic water users. It also partners with University of California at Santa Cruz (UCSC), and the Resource Conservation District of Santa Cruz (RCD) on a program called "Recharge Net Metering," in which private landowners develop infiltration basins to capture and infiltrate rainwater runoff into the groundwater basin. PV Water's existing supplemental water supply facilities, the Recharge Net Metering Program, and water conservation program are described in greater detail below.

- **Coastal Distribution System (CDS):** The CDS is a distribution system composed of nearly 22 miles of pipeline used to deliver supplemental water supplies to farms in coastal areas of the Pajaro Valley. The area currently served by the CDS incorporates approximately 6,100 irrigated acres and is referred to as the Delivered Water Zone or the Delivered Water Service Area. Water delivered through the CDS replaces groundwater that would otherwise be pumped from coastal wells. Delivered water provides "in-lieu recharge" to the Pajaro Valley Basin; it helps to eliminate the problems of groundwater overdraft and seawater intrusion, while helping to keep agriculture viable in the Pajaro Valley.
- **Harkins Slough Managed Aquifer Recharge and Recovery Facility (Harkins Slough Facility):** The Harkins Slough Facility diverts surface water from Harkins Slough and conveys it to a recharge basin where it percolates into the surficial aquifer of the San Andreas Terrace located near the coast. PV Water utilizes a series of wells to recover recharged water and deliver it to coastal farms through the CDS. The Harkins Slough Facility commenced operations in 2002 and has recharged approximately 11,700 acre-feet through September 2024.
- **Watsonville Area Recycled Water Treatment Facility (RWF):** PV Water constructed the RWF and operates it in partnership with the City of Watsonville. Located adjacent to the Watsonville Wastewater Treatment Plant at the Water Resources Center, the

RWF has the capacity to produce 4,000 acre-feet per year of tertiary treated disinfected recycled water. Recycled water is augmented with water from the Harkins Slough Facility, Blend Wells, and the City of Watsonville's potable water system to increase supply and improve the quality for agricultural irrigation needs. The RWF commenced operations in 2009 and has produced more than 40,950 acre-feet through September 2024.

- **Supplemental Wells:** PV Water operates two production wells near the inland boundary of the Delivered Water Zone that augment the delivered water supply and improve water quality. As part of the College Lake Integrated Resources Management Project, PV Water plans to bring two additional wells into service.
- **Recharge Net Metering (ReNeM):** PV Water, in collaboration with program partners from UCSC, the RCD, and participating private landowners, is implementing ReNeM to enhance recharge in the Pajaro Valley. The program incentivizes small-scale recharge projects by providing rebates to landowners based on the volume of water infiltrated through their infiltration systems. The rebates are intended to help offset maintenance and operation costs incurred by landowners. Currently, the program includes three infiltration basins, with additional sites under evaluation. The ReNeM program team is currently evaluating the water year 2024 performance of the three systems and in water year 2023, it set a record total of 563 acre-feet recharged as a result of the exceptionally wet conditions of 2023.
- **Water Conservation:** PV Water set a goal to achieve 5,000 acre-feet per year of water conservation when compared to the baseline period 2006–2010. The program focuses on agricultural water conservation but also provides conservation services for domestic users. The conservation program leverages numerous technical partners including the RCD, the Natural Resources Conservation Service, the UC Cooperative Extension, the Resource Conservation District of Monterey County, and private consultants. The main components of the program include conservation outreach, partner collaboration, program coordination, demonstrations, rebates for efficient devices and materials, workshops and trainings, an irrigation efficiency program, and irrigation efficiency program evaluation. In March 2024, the PV Water Board of Directors approved a \$1.37 million agreement to fund the agricultural conservation program support services through June 2027. Over the most recent evaluated rolling 5-year period (2019–2023), total agricultural water use was approximately 5,600 acre-feet less than the baseline period.

While the result of operating the existing facilities and administering these programs has been effective in helping to reduce overdraft and slow seawater intrusion, PV Water is working to construct and implement additional projects and management actions in order to achieve

sustainable groundwater resources and provide resiliency. These additional efforts are described below.

- **College Lake Integrated Resources Management Project (College Lake Project):** The College Lake Project includes components required to store, treat, and deliver water from College Lake, for use as an irrigation supply in-lieu of pumped groundwater to reduce the rate of seawater intrusion while helping to preserve agriculture. The components include an adjustable weir structure designed to accommodate safe fish passage, intake pump-station, water treatment plant, a six-mile conveyance pipeline, and two groundwater wells to support project operations. The weir will be capable of raising the lake water level by 2.4 feet and increasing the total storage to approximately 1,800 acre-feet. An annual average of 1,800–2,300 acre-feet will be collected through a screened intake compliant with screening criteria for anadromous salmonids. Water will then be conveyed to the water treatment plant and then to the CDS where it will offset an equal amount of groundwater production. PV Water began construction of the College Lake Project in spring 2023 and anticipates completing construction in spring 2025.



Figure 8: Pipe for the College Lake Project. Source: PV Water.

- **Watsonville Slough System Managed Aquifer Recharge and Recovery Project (WSS-MARR):** WSS-MARR includes upgrades of the existing Harkins Slough Managed Aquifer Recharge Facility (Harkins Slough Facility) and construction of the Struve Slough Project, a new managed aquifer recharge and recovery project. WSS-MARR includes project components to divert, convey, store, and recover surface water for use as an irrigation supply in-lieu of pumping groundwater. The components include upgrading the existing Harkins Slough Facility to install fisheries-compliant intake screens, upgrading the pump-station, development of a new recharge basin, and constructing series of recovery and monitoring wells. The Struve Slough Project includes a new screened intake on Struve Slough, a pumping-station to be located adjacent to the

slough, as well as an approximate 7,150-foot conveyance pipeline. Collectively, WSS-MARR is designed to yield an estimated annual average of approximately 2,280 acre-feet for recharge and subsequent recovery. PV Water is preparing an addendum to the certified environmental impact report for the project, recently completed the 100% designs, is advancing efforts to obtain all necessary permits including a 4,000 AFY water right on Struve Slough. PV Water has begun to engage landowners to procure property rights for the project. The Project could be ready for construction in 2026.

- **Increased Recycled Water Deliveries:** PV Water continues efforts to increase recycled water deliveries to customers. PV Water is working to achieve this by increasing demand for recycled water and increasing storage to supply more water during periods of high demand. The goal aims to increase demand by approximately 1,000 acre-feet per year and shoulder season demand by approximately 250 acre-feet per year. Prior infrastructure improvements developed to increase recycled water deliveries included the construction of a 1.5-million-gallon storage tank, approximately 3.2 miles of additional CDS pipeline, an expanded RWF filter train, and improvements to the distribution pump station. PV Water continues to work closely with customers to maximize deliveries and increase recycled water use. In addition, condition and operational assessments of the RWF and the City of Watsonville Wastewater Treatment Plant have been conducted and will guide improvements in reliability and process performance in the future.

Guided by the GSU22 and future updates of the GSP Alternative, PV Water will continue efforts to achieve sustainable groundwater resources. Annual and periodic assessments every five years will evaluate basin conditions against sustainable management criteria established to provide a resilient and sustainable groundwater basin. The next major update and periodic evaluation is planned to begin in late 2025 and culminate in an updated GSP Alternative submitted by December 24, 2026.

County of Santa Cruz Well Ordinance Update

The Board of Supervisors approved new regulations to their well ordinance on December 10, 2024, with final adoption expected in early 2025. Santa Cruz County Code (SCCC) Chapter 7.70 specifies measures for the siting, construction, and destruction of wells to protect groundwater resources and provide suitable water supply for the intended use. SCCC Chapter 7.73 specifies yield and water quality requirements for individual water systems that predominantly utilize wells. The last significant revisions of Chapter 7.70 and Chapter 7.73 were completed in 2009 and 1993, respectively. Since the last update of Chapter 7.70 was completed in 2009, policy changes at the State and local level, including the following, have taken place:

- Adoption by the State of the Sustainable Groundwater Management Act (2014), which supports the action of three local Groundwater Sustainability Agencies (Santa Margarita, Mid-County, and Pajaro Valley);

- Senate Bill 552 and Executive Order N-7-22, which required counties to evaluate and address drought impacts on wells, and evaluate the effect of new wells on existing wells and on groundwater sustainability agencies;
- Court decisions have required counties to consider CEQA review and protection of public trust values in the issuance of new well permits;
- Locally, the County has adopted the Climate Action and Adaptation Plan, and the Drought Response and Outreach Plan;
- Concerns were raised by the National Marine Fisheries Service that the County needs to consider the impact of new wells on interconnected surface waters and threatened and endangered salmonid species;
- The County has not exercised regulatory oversight of soil borings even though that is provided for in State policy and is done in most neighboring counties;
- The State is looking to counties to take more responsibility for deficiencies of private wells.

To address these issues, Environmental Health staff and the County Water Advisory Commission have undertaken a process to update the County Codes that address wells and individual water systems. Staff convened a Technical Advisory Committee (TAC) that included representatives from the Water Advisory Commission, local water agencies, well drillers, groundwater sustainability agencies, resource agencies, and agricultural interests. Staff met with the TAC four times and held additional meetings with individual stakeholder groups. Staff also conducted outreach to the Farm Bureau and realtors. The Water Advisory Commission held a public workshop on the proposed amendments on August 7, 2024. The Planning Commission held a Public Hearing on October 23, 2024, and recommended staff proceed to take the proposed amendments to the Planning Commission and the Board of Supervisors.

Staff conducted extensive analysis and analytical modeling to evaluate the impact of groundwater pumping on streamflow and the effectiveness of various measures to reduce the impact on streamflow, including increased setbacks from streams and deeper well seals. These measures have been incorporated into the resource protection policy to reduce the impact of small domestic wells and replacement wells with no increase in water use. New non-domestic wells with significant increase in water use will require more extensive CEQA review and analysis and may be subject to denial if impacts cannot be mitigated.

Code Amendments

Staff worked with the TAC and interested stakeholders to prepare proposed amendments to Chapters 7.70 and 7.73. The objectives of the updates included:

1. Follow all applicable laws and regulations.
2. Honor the core tenets of the County General Plan which includes recognition of agricultural land as an essential and irreplaceable resource for future generations.
3. Be equitable in consideration of impacts to groundwater users, including consideration of public trust resources.

4. Limit impacts on existing users and small domestic users while providing improved protection of resources.
5. Facilitate communications with Groundwater Sustainability Agencies and recognizes their mandate to sustainably manage their groundwater basins.
6. Acknowledge the impact that climate change is having on water resources.

The following are the significant changes proposed to Chapter 7.70:

1. Additional measures are added to reduce impact of wells on groundwater resources, streams and associated public trust resources, karst areas, nearby wells, and designated groundwater extraction concern areas;
2. Different levels of review and protective measures for different types of wells are provided for, including discretionary review and potential for denial of Tier 4 wells;
3. Explicit provisions are added for review and comment on well applications by affected water agencies and groundwater sustainability agencies;
4. Provisions are added for regulation of soil borings and stormwater infiltration devices;
5. Metering of all newly installed non domestic wells will be required;
6. Penalties for code violations are added; and
7. Provisions are added for promulgation of specific policies for implementation of code requirements to allow more flexibility for implementation and adjustment of specific elements of effective policy.

The following are the significant changes proposed to Chapter 7.73:

1. More extensive water quality testing for individual water systems: Title 22 constituents, plus other constituents in water quality concern areas;
2. More stringent yield testing in known limited yield areas;
3. Recordation of a notice on the deed for new wells with limited yield or quality;
4. Individual Water System requirements also apply to non-domestic uses and additional testing is required for change or expansion of use;
5. Water quality testing and yield testing at the time of property transfer to inform the buyer.

Updates are provided through the website:

scceh.com/NewHome/Programs/WaterResources/WellOrdinanceUpdate.aspx

Small Water Systems and Domestic Wells

The Santa Cruz County Drinking Water Program oversees 106 active small water systems (SWSS), including water systems with 5-199 residential connections and systems serving at least 25 people per day for 60 or more days per year. These systems include housing developments and mutual water companies, in addition to facilities such as schools, office buildings, outdoor camps, and stores. SWSSs can have greater water supply vulnerabilities than larger systems because they tend to have few sources, often just one well or spring, and a small population to bear the cost of repairs for their aging water sources and distribution systems.

The water quality and reliability of these systems is of critical importance to the County residents and visitors that depend on them. Recent extreme weather events since 2020 (e.g., the CZU Lightning complex Fire and winter storms of 2023) have exposed and heightened some of the vulnerabilities of these systems, such as lack of redundancy and aging infrastructure. Recent legislation such as SB 552 (drought planning for small water suppliers and rural communities) require SWSs, subject to funding availability, to implement specific resiliency measures such as joining a mutual aid network, obtaining a backup source of electricity, and securing additional water sources if feasible.

While SWS drinking water quality in Santa Cruz County is generally very good, water quality challenges are still a reality for some systems. Nitrate contamination is a concern, and primarily affects areas in South County near agricultural land uses. Drinking Water Program staff work closely with a number of SWSs in this area which provide nitrate removal treatment to ensure water quality standards are met.

Another contaminant of local concern is Hexavalent Chromium, also known as Chromium-6. Chromium-6 occurs naturally in the Aromas Red Sands aquifer that is found in parts of Aptos and Watsonville. Drinking Water Program staff are working with 10 small water systems in this area with elevated levels of Chromium-6 to respond to the newly created Maximum Contaminant Level (MCL) of 10 micrograms per liter. Staff will be working with the affected systems to review proposed treatment solutions that will provide the affected residents with a source of water that meets the new requirements.

Per- and polyfluoroalkyl substances (PFAS), also known as “forever chemicals”, are another emerging group of contaminants. These substances are found in many consumer products, including nonstick cookware and waterproof coatings, and end up concentrating in landfills. The EPA implemented a rule in 2024 requiring sampling for PFAS by 2027 and treatment by PFAS have been found in elevated levels in wells serving some SWSs adjacent to the Buena Vista Landfill.

The Stanislaus Regional Housing Authority, responsible for operating the Buena Vista Migrant Center water system, has applied for a permit for an ion exchange treatment system for PFAS removal. The system has been installed but is not yet approved for use; County Water Resources staff are working with the State Division of Drinking Water to determine monitoring requirements and specifics for how the system must be operated and maintained.

The County General Services Department has secured an \$800,000 grant from the Department of Water Resources’ (DWR) Proposition 1 Implementation Grant Program via the Integrated Regional Water Management Program to install a treatment system for Chromium-6 and PFAS, and to study options to improve source quality and reliability at the Rountree Facility in Watsonville. The system is served by a single well and is proactively working to address these emerging contaminants and improve the resiliency of the system.

County staff are also involved with coordinating several long-term projects to improve water supply reliability for SWSs. Renaissance High School is currently working to consolidate with the Soquel Creek Water District due to a lack of backup sources for its single supply well, and water quality concerns, including hexavalent chromium. The Crestwood Heights Water Association is working to consolidate with the City of Watsonville due to diminishing water supply from their source wells and a lack of funds to upgrade their system.

The County has also been awarded \$97,800 in grant funding from DWR's Small Community Drought Relief Program for improvements to the Waterman Gap water system, a small water system at the northern edge of the County in Boulder Creek. The current stream source has declined in flow, and the system's backup wells have limited capacity. These funds will cover the cost of reconstructing a water line to an existing stream intake on Little Boulder Creek and installing four storage tanks to improve the system's ability to provide a reliable supply to residents.

Drinking Water Program staff continue to host Small Water Systems Forum meetings to provide regulatory updates to SWSs and encourage discussion and collaboration between these systems. Two forum meetings were held in 2024, with topics including LAFCO and local partnerships, drought resilience, water quality sampling, and emergency preparedness.

Services Offered by the County

On December 1, 2021, the Water Advisory Commission (WAC) voted to take responsibility for implementing Senate Bill (SB) 552. SB 552 required the County to write a plan that includes potential water shortage risk analysis and proposed interim and long-term solutions for State Small Water Systems and domestic wells. This plan is now referred to as the Santa Cruz County Drought Response and Outreach Plan (DROP). The Water Quality Specialist and Water Resource Planner in the Water Resources Division have taken the lead on the implementation of the DROP.

Since the Board of Supervisors approved the DROP in December of 2022, staff created web portals for both [domestic wells](#) and [State Small Water Systems](#) that utilize the information gathered in creating the DROP. These pages are intended to act as a single repository for both informational and direct support resources. To gather feedback on these webpages, draft versions were presented to private well owners that participate in the County well sounding program and the State Small Water Systems regulated by the County. This effort resulted in 16 survey respondents. County staff will provide access to this survey again during future public outreach events.

In addition, County staff have initiated GIS analyses to assess the feasibility of interties or consolidations—both physical and managerial—as solutions to water supply and water quality challenges faced by state small and small community water systems throughout the County. For the physical consolidation analysis, cost-driving criteria include factors such as the distance of the pipeline, slope of terrain, elevation differences between the source and

sink (accounting for pressure requirements such as the need for booster pumps), and the presence of expansive soils, faults, high groundwater, liquefiable materials, or landslides. For the managerial consolidation analysis, the primary criteria for assessing feasibility included the driving time between small water systems.

The County also finalized a grant agreement with the State Water Resources Control Board that will pay for staff time, outreach, water quality testing, water hauling, bottled water, and treatment devices for qualifying residents. The County also received a further \$125,000 grant from DWR to focus on gaps in the DROP such as a comprehensive wells GIS layer and clarity regarding the consolidation process.

Santa Cruz County Environmental Health was awarded funding through the SWRCB Safe and Affordable Funding for Equity and Resilience (SAFER) grant program and the DWR Urgent Drinking Water grant in 2021 and the contract was executed in 2023. This funding will be used to make progress to implement this plan, beginning with the tasks outlined in Table 1: Funding Received by Santa Cruz County below (subject to change as the work progresses).

Table 1: Funding Received by Santa Cruz County to support Individual and State Small Water Systems.

Task	Funding allocated	Funding source
Water Quality Testing	\$150,000	State Water Resources Control Board
GIS database update to identify and map all parcels served by domestic wells, and investigate consolidation feasibility	\$95,000	Department of Water Resources
Small system & domestic well outreach and POU/POE treatment systems* (*recipients must meet income requirements)	\$360,000	State Water Resources Control Board
Contract with bulk, potable water hauler	\$90,000	\$80,000 State Water Resources Control Board program, recipients must be income limited + \$10,000 Department of Water Resources
Local Guide to Consolidation	\$15,000	State Water Resources Control Board

Contracts are currently in place to provide emergency hauled water, bottled water, treatment devices, and water testing. The intention of these contracts is to support household well owners and state small water systems manage issues related to loss of access to water. This loss could be associated with wells that go dry due to drought conditions or have known water quality problems, such as contamination from nitrate, arsenic, or hexavalent chromium.

To identify households that could utilize these free services, Santa Cruz County began a partnership with the [Central Coast Drinking Water Well Testing Program](#), a regional program from the Bay Foundation and Regional Water Quality Control Board that provides free well testing to all county residents. The goal of the Central Coast Program is to ensure that households are aware of their drinking water quality and improve understanding of groundwater quality on the Central Coast. By coordinating these two programs, Santa Cruz County was able to reach more residents and provide faster support to financially qualified residents.

Big Basin Water Company

Big Basin Water Company (BBWC) is a privately-owned utility serving 540 households with drinking water and 30 parcels for wastewater management in the San Lorenzo Valley. BBWC was beset by years of financial strain and limited investment in critical infrastructure, leading to repeated service interruptions for customers, difficulty rebuilding for CZU survivors, and litigation by the State Water Resources Control Board on the drinking water side and Regional Water Quality Control Board on the wastewater side. Since taking over in 2023, and with financial assistance from the State through a grant to the County of Santa Cruz, the court appointed Receiver has made significant strides in improving the system operations:

- Through a contract with Cypress Water Services, the drinking water system is functioning now with few water outages or boil water notices.
- Rate increases were approved by the California Public Utilities Commission, and the billing system has been updated.
- A comprehensive needs assessment⁸ was developed by Moonshot Missions that evaluates the further upgrades necessary.
- The San Lorenzo Valley Water District is open to discussions about consolidation.
- The residents relying on the wastewater system voted to transition that system to be operated by the County of Santa Cruz CSA 7.
- County staff have been meeting regularly with the regulatory agencies as well as elected officials to work towards a sustainable resolution to the challenges of the BBWC.

⁸ www.bigbasinwater.com/announcements/c64s18khew63q9snudmdzmqlcwft2y

Section 2: Water Quality

As shown in Figure 9, several watersheds within Santa Cruz County have been identified by the State of California as having impaired waterbodies pursuant to Section 303(d) of the Federal Clean Water Act (CWA)⁹. By definition, 303(d) listings and adopted TMDLs are related to impacts on one or more beneficial uses and the need to control the source(s) of these impairments. The Regional Water Board has oversight over these waterbodies and manages water quality through implementing Total Maximum Daily Loads (TMDLs) that are incorporated into Basin¹⁰ Plans, and the National Pollutant Discharge Elimination System (NPDES)¹¹ permit program, including the Storm water (MS4)¹² program. The County of Santa Cruz and the Cities of Santa Cruz, Capitola, Scotts Valley, and Watsonville conduct extensive water quality monitoring and there is ongoing collaboration to exchange data among the individual stakeholders.

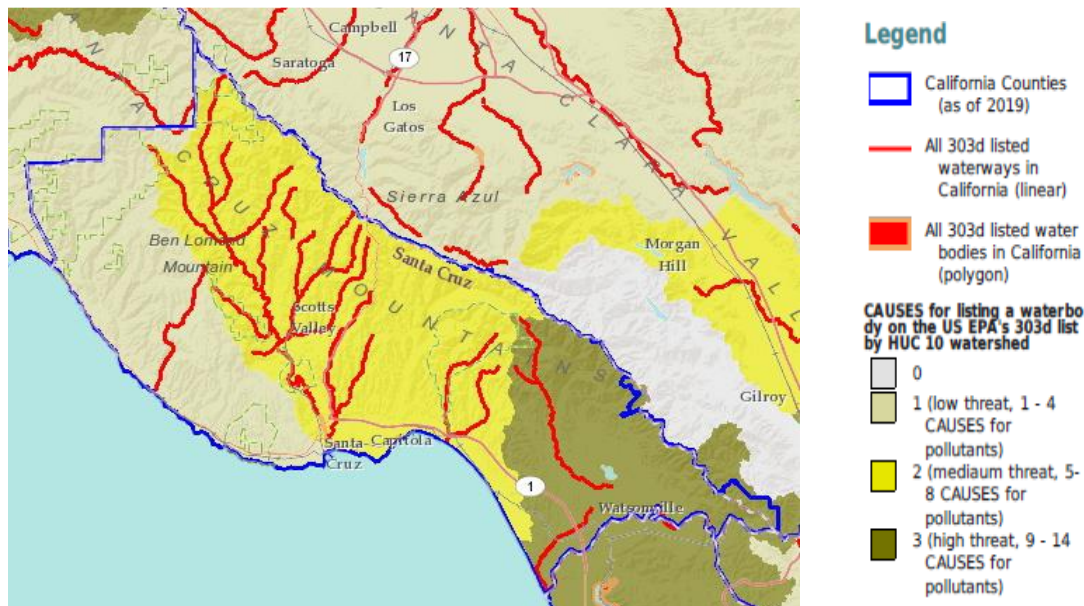


Figure 9: Map of watersheds with impaired water bodies in the County as identified by the Central Coast Regional Water Quality Control Board,

⁹ www.waterboards.ca.gov/water_issues/programs/tmdl/background.html

¹⁰ www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/

¹¹ www.waterboards.ca.gov/water_issues/programs/npdes/

¹² www.waterboards.ca.gov/water_issues/programs/stormwater/municipal.html

Santa Cruz County Water Quality Program and Laboratory

This reporting period provided an opportunity to evaluate the multi-year effects of the intense storms of 2023 and 2024 following prolonged drought conditions and continued recovery from the 2020 CZU fires. An overview of the County's freshwater and coastal water quality monitoring sites is shown in Figure 10, with the colors representing public health advisories based on the most recent sample date. Coastal sites are monitored for fecal indicator bacteria in accordance with the California Beach Water Quality Program.¹³ Freshwater sites are also monitored for fecal indicator bacteria along with other chemical and biological analyses. In the fall of 2023, the laboratory installed a new analytical instrument for the measurement of nitrogen and phosphorus compounds in water. These are nutrients that feed algal blooms in the South County lakes and red tides blooms at sea. In addition, the laboratory was able to modify other instruments to expand on the analysis of Algal toxins, salinity, surfactants, and be able to characterize water based on its origination-ground, ambient/surface, or wastewater. Furthermore, each watershed and associated tributaries received multiple sample events over the course of dry and wet seasons to build a chemical fingerprint. Each tributary feeding into the larger impaired watersheds were also monitored and some individual chemical signatures were developed. We now have robust analysis that show site-to-site and season-to-season variations at different locations across the county. In general, from observation, the variations are limited when accounting for flow.

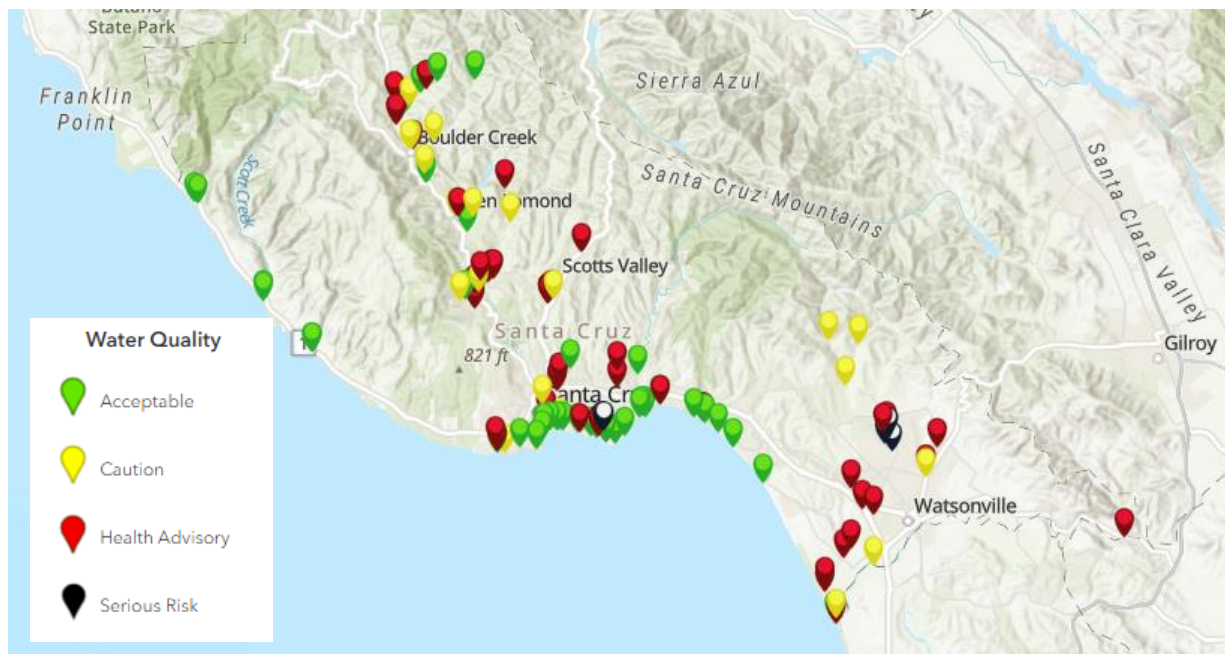


Figure 10: Example of water quality monitoring location and results as displayed on the County's Water Quality Viewer as of November 21, 2024: Water Quality Status¹⁴

¹³ mywaterquality.ca.gov/safe_to_swim/

¹⁴ scceh.com/NewHome/Programs/WaterResources/SurfaceWaterStewardship/WaterQualityMonitoring/SurfaceWaterQuality.aspx

Cyanobacterial blooms

A major issue that emerged during this water year was the prevalence and persistence of cyanobacterial blooms that began earlier than 2023's Harmful Algal Bloom and persisted longer (Figure 11). The influx of nutrients during the rainy season, coupled with extended periods of warm weather and stagnant water, led to elevated levels of cyanobacteria and associated toxins at several locations, including Corcoran Lagoon, Pinto Lake, Kelly Lake, and Drew Lake. During the winter and spring of 2024, the County expanded their sampling upstream of Corcoran Lagoon. Knowing that this lagoon is prone to Harmful Algal Blooms, our investigation led us to Rodeo Gulch and properties that maintain livestock. The high concentrations of nitrogen and phosphorus being carried into Corcoran Lagoon provided the nutrients for a filamentous specie of cyanobacteria called *Nodularia*. It produces a hepatic toxin called microcystin. The EPA has a health advisory threshold when Microcystin is greater than 0.8 parts-per-billion. Local agencies and non-profits are continuing to explore possible solutions to these blooms.

There are many algae species that are toxin producing. *Cylindrospermopsis*, *Anabaena* can produce other forms of toxins that have adverse health effect on game and fish, wildlife, and humans and/or their pets that are using contaminated waters for recreation. When a Harmful Algal Bloom begins, it's important to begin to characterize the species present and the related type of toxins. Observations of the last two seasons' blooms indicate that the dominant species change over the course of the bloom. One toxin may dominate the bloom at the start, then shift to another toxin. During a bloom, as algal species decay, dissolved oxygen concentration becomes reduced to a dangerous level that is toxic to aquatic life.



Figure 11: Cyanobacterial blooms at Corcoran Lagoon (left) and Pinto Lake (right), summer 2024

Qualitative microscopy and biochemical analyses were conducted to track the progress of the blooms and evaluate potential health risks. Example photomicrographs are shown in Figure 12. There were site-to-site differences in the overall density of microorganisms and differences over the duration of the cyanobacterial bloom.

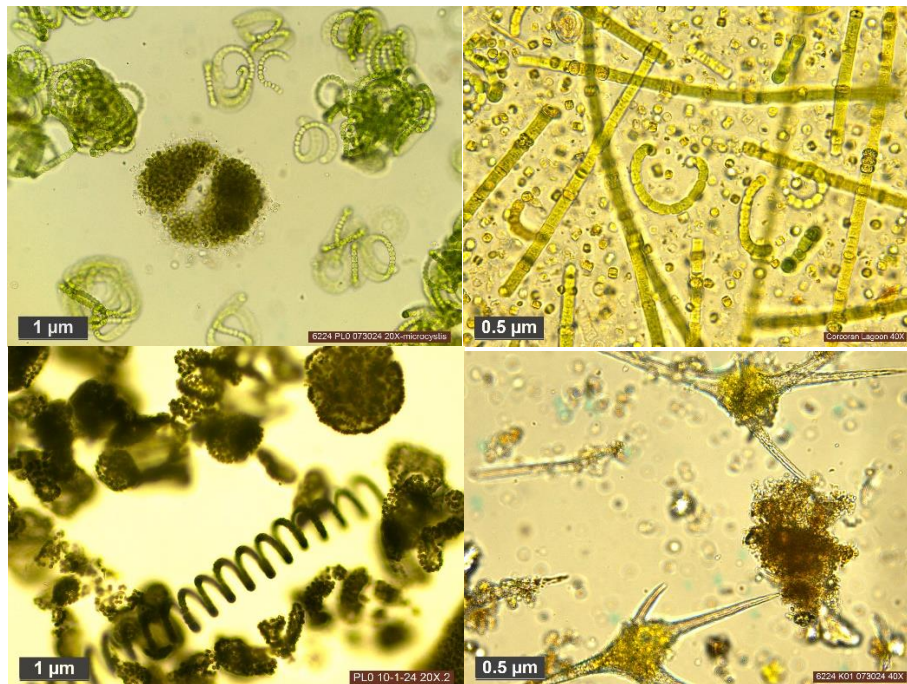


Figure 12: Photomicrographs from Pinto Lake Boat Rental (PL0), Corcoran Lagoon (R0) and Kelly Lake (K01). Micrographs from samples collected July 30 and October 1. Courtesy of Eric Baugher, County of Santa Cruz

The cyanobacteria can release toxins into the environment that are harmful to people and pets who are exposed to the water. The dominant toxin detected during the cyanobacterial blooms was microcystin. Microcystin levels between 6 and 20 parts per billion are of concern and levels exceeding 20 parts per billion pose significant health risks. A comparison of microcystin levels at Pinto Lake is shown in Figure 13 over the duration of the 2024 cyanobacterial bloom. The concentration of microcystin increased as the water temperature increased throughout summertime at Pinto Lake (PL16, PL0, PL11) and Corcoran Lagoon (R0.) Late in the season at Pinto Lake, the microcystin varied depending on wind direction blowing the algae to one side of the lake or the other.

Sample Date	Microcystins, PPB			
	PL16	PL0	PL11	R0
5/20/2024	0.38	0.08	0.91	
5/28/2024	0.95	2.21	0.80	20.00
6/4/2024	0.62	0.32	0.17	125.00
6/11/2024	0.37	1.20	0.56	125.00
6/25/2024	0.20	0.24	0.19	111.78
7/10/2024	0.37	0.33	0.74	150.00
7/16/2024	0.19	0.23	0.29	
7/30/2024	2.15	3.07	4.60	
8/5/2024	>15.000	14.02	15.00	134.46
8/19/2024	>20.000	20.00	20.00	94.26
8/27/2024	16.23	18.47	14.31	90.00
9/3/2024	>25.000	25.00	25.00	
9/10/2024	14.04	6.01	5.64	73.17
9/24/2024	16.97	13.16	8.22	
10/1/2024	2.96	25.00	7.26	
10/15/2024	4.32	4.22	16.17	13.95
10/22/2024	8.71	40.00	0.85	19.87
10/28/2024	8.55	42.45	28.99	19.00

Figure 13: Microcystin toxin concentration at Pinto Lake from late May to late October 2024.

Additional work on cyanobacterial speciation will be conducted using molecular testing (digital PCR) in parallel with microscopy, analysis of algal pigments (chlorophyll and phycocyanin), and toxin surveillance. The detection of active cyanobacterial blooms will trigger supplemental testing, and areas experiencing exceedances are posted, with very high levels triggering restricted access. Thus far, digital PCR has not had successful detection of microcystis, through detection of the genetic sequence coding for the microcystin synthetase gene. It appears that there is abundant variation of the genetic sequence among the population of algae making dPCR detection non-viable. Our best methodology for detection is microscopy combined with ELISA antibody detection of the toxin itself.

Beach Water Quality

Water quality in 2024 at the County’s beaches showed improvement over the 2023 season. Elevated fecal indicator bacteria (E. Coli and Enterococci) were episodic with relation to tidal influence and any late spring rain events. Sampling schedules were modified to avoid directly sampling ocean water after a rain, but within 24 hours thereafter. Any elevated readings were re-tested to determine persistence of elevated fecal indicator bacteria and/or to remove the health advisory when MPN/100mL returned to safe concentrations, i.e., less than 400 MPN/100mL for E. Coli and less than 104 MPN/100mL for Enterococcus.

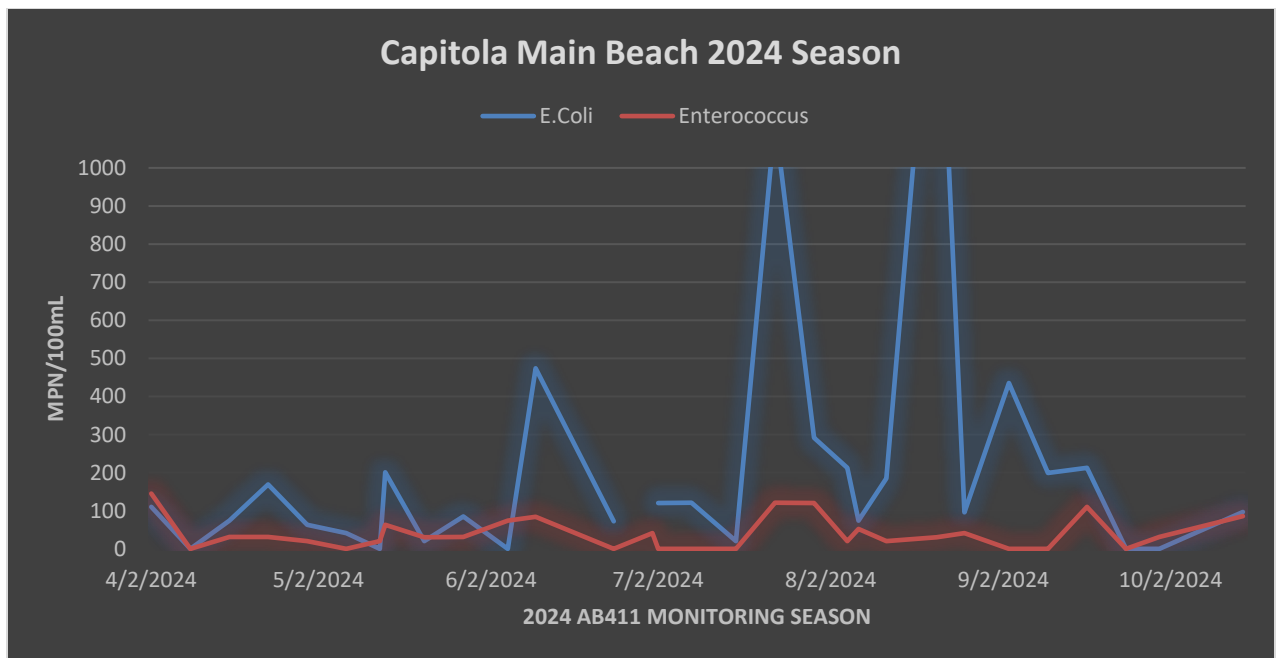
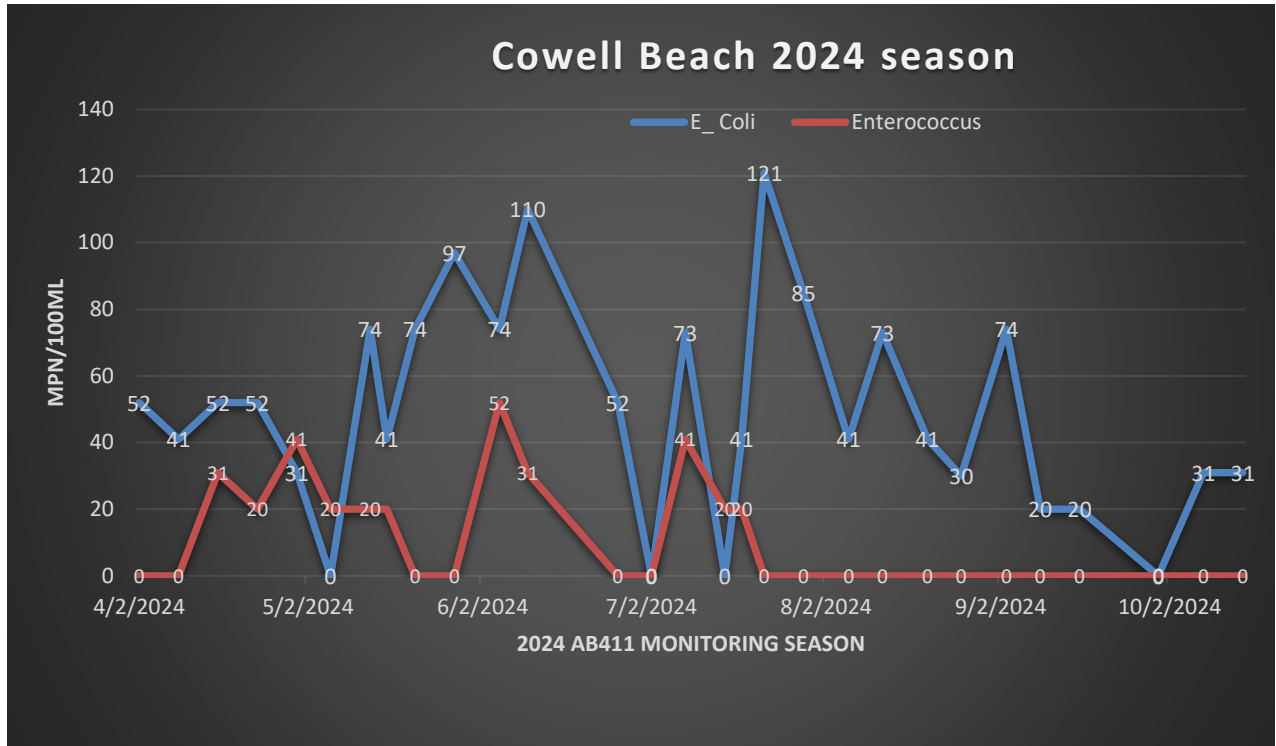


Figure 14: Data are from grab samples taken by the County of Santa Cruz Environmental Health. Cowell Beach had no health advisories; Capitola Main Beach had three episodes of health advisories on June 10, July 23, August 21.

Red Tide

Appearance of a red tide began in June 2024. It vanished in July but returned in late August and persisted into early October. The beaches with the most impacted ocean water were New Brighton, Seacliff, Rio del Mar, and Platform. The dominant species of red tide phytoplankton found was *Akashiwo sanguinea*. *Ceratium* and *Alexandrium* were also found during the second bloom of late summer (Figure 15). Increased Domoic Acid and Saxitoxin were measured in ocean water samples taken during the two blooms. Domoic acid is responsible for marine mammal distress as the neurotoxin accumulates within the fish that they feed on and biomagnifies within their nervous system, affecting their brain and heart. Saxitoxin is another neurotoxin that is highly potent and causes paralytic shellfish poisoning in humans. Therefore, the ban on shellfish harvesting from May 1 to October 31 is always in place. It was more important to note the ban this year with the active red tide and phytoplankton responsible for paralytic shellfish poisoning.

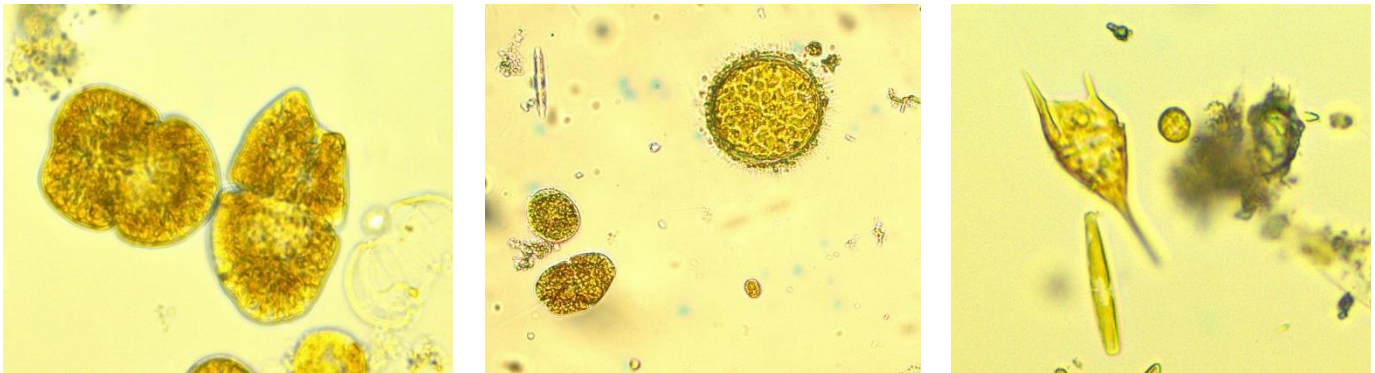


Figure 15: Microscope images of Akashiwo sanguinea, Ceratium, and Alexandrium. Photo by Eric Baugher.

Local Area Management Program Pilot Study

Environmental Health staff continued the process for implementation of the County's Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems (OWTS). The LAMP was required to be consistent with requirements of the State OWTS Policy and was developed in consultation with local stakeholders and staff from the Central Coast Regional Water Quality Control Board. The LAMP provides for increased protection of public health and water quality through increased water quality monitoring and surveillance of OWTS performance, and more stringent requirements for installation and maintenance of new and replacement OWTS.

Implementation of the new requirements is proceeding relatively smoothly, but the significantly increased cost of enhanced treatment systems presents a challenge to property owners wanting to upgrade or repair their system. Over 47% of the recent OWTS installations are using enhanced treatment; however, the number of OWTS repair permit applications has declined by 70% since 2018, when the more stringent rules took effect. Environmental Health staff are exploring ways to reduce costs and considering options to provide funding assistance to property owners.

During the 2024 wet and dry seasons, two small tributaries of the San Lorenzo River were investigated to gather analysis to determine if their localized watersheds were impacted by OWTS. Staff selected Shingle Mill Creek which feeds into the San Lorenzo River at Henry Cowell Park at North Big Trees Park Road. The second location was Two Bar Creek, which feeds into San Lorenzo River at Brimblecom Road. OWTS density in these two areas vary. The most densely situated OWTS exist at Shingle Mill Creek. The sampling route began at the highest elevation point and subsequent samples were collected following the creeks to their point of entering the San Lorenzo River. We repeatedly sampled these two watersheds multiple times over dry and wet weather conditions. The observed change in creek flow was noticeable in changing the geochemistry, ionic balance between anions and cations.

DNA and viral RNA extractions were performed on the water samples and human markers applied to detect presence of human waste. A target of increasing interest among environmental scientists is the Pepper Mild Mottle Virus. It's an RNA virus that can persist in the



Figure 16: Shingle Mill-Photo taken on January 24, 2024

environment and is shed in human waste of those that consume peppers and several other type of vegetables. It is a plant virus specific to peppers and does not cause any health concern for humans. We have developed the means to detect its presence in water. The presence indicates human waste has been released into the watershed, either directly or via OSWT that is no longer functioning properly.

The County lab has other methods for detecting failed OWTS such as UV absorbance at 254nm and fluorescence which shows presence of dissolved organic matter and components related to clothes washing detergent that would be found in wastewater. In addition, we developed a method to detect dissolved and total organic Nitrogen and Phosphorus through oxidative digestion at 121°C. This allows us to quantify the total amount of nitrogen and phosphorus as another proxy for wastewater

which contains significant concentrations of both elements. Having this multidimensional analysis for a water sample gives us information about the influence of OWTS on their immediate watershed environments and their contribution to pollution in the impaired waterways. Robust data from both locations require more review, additional sample events in 2025, and a final report drafted to discuss the findings. In 2025, additional locations will be

established in mid-county and south county, especially in the impaired watersheds that feed into Pinto Lake catchment.

County Regulatory Programs

Community Development and Infrastructure (CDI) Public Works continue to review land development projects in the county and require stormwater mitigations for all projects that add or replace over 500 sq ft of impervious area, with quantitative mitigations for those over 5,000 sq ft. This will maintain—and in some cases improve—existing infiltration conditions, help reduce flash flooding, filter runoff from developed areas, and increase rainwater infiltration to mitigate the impacts of land development on groundwater resources.

Drinking Water Quality and Supply Protection

Scotts Valley Water District (SVWD)

- The Scotts Valley Water District replaced filter media at the Orchard Run WTP, El Pueblo WTP and Well 10a WTP.
- SVWD completed monitoring for UCMR5 at all entry points to the distribution system in March 2024.
- In support of the intertie 1 project, SVWD and SCWD staff is conducting a Disinfection By-Products formation potential study. Hydraulic modeling was conducted to determine approximate water age at extremities of the SVWD water system under the scenario of receiving SCWD water from the GHWTP. A bench test study of DBP formation potential is being conducted based on raw water supply of SCWD GHWTP water, and approximate age in SVWD's distribution system.
- Initial Lead Service Line Inventory was completed and submitted to the SWRCB, utilizing a machine learning approach.

City of Santa Cruz Water Department (SCWD)

- Processed over 41,000 water samples testing for microbial, inorganic, organic, pesticides, herbicides, and radioactive contaminants.
- Continued ongoing monitoring of the Loch Lomond (4400912) and Santa Cruz (4410010) potable drinking water systems in compliance with drinking water permit regulations and bacteriological sample siting plan.
- Completed the United States Environmental Protection Agency's (EPA) fifth unregulated contaminant monitoring rule (UCMR5) sampling.
- Continued ongoing management and monitoring of Loch Lomond Reservoir for cyanobacteria and cyanotoxins.
- Continued ongoing monitoring of raw source water and treated finished water for unregulated contaminants of emerging concern such as Per- and polyfluoroalkyl substances (PFAS) and pharmaceuticals and personal care products.

- Completed the Beltz Well 8 and Beltz Well 12 aquifer storage and recovery (ASR) demonstration project.
- Completed the Beltz Well 9 ASR pilot study.
- Completed the triennial Lead and Copper Rule (LCR) monitoring.
- Published the 2023 Annual Water Quality Report in English and Spanish.
- Began initial monitoring requirements to comply with the final National Primary Drinking Water Regulation (NPDWR) for six PFAS.
- Began initial monitoring requirements to comply with the California State Water Resources Control Board Division of Drinking Water's (SWRCB-DDW) hexavalent chromium Maximum Contaminant Level (MCL).
- Maintained California State Water Resources Control Board Environmental Laboratory Accreditation Program certified drinking water laboratory. Initiated CEQA compliance for the Graham Hill Water Treatment Plant Facility Improvements Project
- Completed the lead and copper customer-side service line inventory.
- Continued 6ppd monitoring in the San Lorenzo River in support of NMFS anadromous salmonid recovery efforts.

Soquel Creek Water District (SqCWD)

- Replacement of Soquel Creek Water District's Country Club well is part of a larger plan to build a water treatment plant at the location to treat 1,2,3 – Trichloropropane. Construction of the replacement well is complete and additional water quality investigation is ongoing before commencing treatment plant construction.
- As part of the SqCWD's Well Master Plan and the Santa Cruz Mid-County Basin's Groundwater Sustainability Plan, SqCWD continues to redistribute groundwater pumping further inland where possible to reduce seawater intrusion at the coast.
- SqCWD maintains and continues to collect samples from a network of monitoring wells along the coastline to track groundwater levels and water quality to track seawater intrusion.



*Figure 17: Hexavalent Chromium treatment pilot.
Photo courtesy of SqCWD.*

- A pilot study to treat Hexavalent Chromium (Cr.6) using reduction coagulation filtration (RCF) treatment is underway to treat water from the Seascape, San Andreas, and Bonita Wells (Figure 17). Design of the treatment system is underway. Construction is targeted for completion by October 2026 to meet compliance deadlines.
- Planning for construction of the Cunnison/Tannery Iron and Manganese Treatment Plant to

support the new Cunnison well was underway in 2024.

- Completion of an initial Lead Service Line Inventory was completed in 2024. Over 1,200 visual inspections of customer service lines were completed as part of the process and no lead service lines were found.

City of Watsonville Water Division (CoW)

- The City of Watsonville Environmental Sustainability Division is striving to implement multi-benefit projects that incorporate climate change, natural hazard mitigation, green infrastructure, and habitat restoration benefits. The following grant funded projects are active:
 - Middle Struve Slough Water Quality and Habitat Improvement Project funded by the Ocean Protection Council in partnership with Watsonville Wetlands Watch is in implementation. This project will implement water quality measures and habitat restoration. This year, this project area was part of World Wetlands Day.
 - Upper Struve Slough Wetland Enhancement and Public Access project funded by the Department of Water Resources in partnership with Watsonville Wetlands Watch is in implementation. This project will reduce localized flooding and improve habitat.
 - Watsonville Ramsay Park Phase IV California Natural Resource Agency grant will implement green infrastructure elements at the new Nature Center. Improvements include a green roof, bioswale, and reduction of heat island effects.
- Pinto Lake experienced a significant cyanobacteria harmful algal bloom this year. The CoW had to restrict access for nearly four full months from August through November 2024. The CoW worked with the County of Santa Cruz to plan the closures. Additionally, the CoW submitted the CDFW Aquatic Invasive Species Annual report for Pinto Lake.
- The Water Division continues to monitor its groundwater quality. The presence of hexavalent chromium (Cr6+) and Per- and polyfluoroalkyl substances (PFAS) have been detected in some of our groundwater wells. A maximum contaminant level (MCL) for Cr6+ is effective as of October 1, 2024. The EPA finalized the MCLs for PFAS in April 2024. The City continues its quarterly monitoring as it prepares treatment designs for both Cr6+ and PFAS.

Rural roads and home drainage

The RCD completed site visits to 14 unique properties requesting technical assistance related to rural roads or drainage and erosion issues around their home and/or streambanks. Recommendations were provided based on specific concerns. RCD discussed improvements that would also reduce sediment runoff to local waterways. The RCD completed a sediment reduction project in the Bear Creek watershed, which included improvements to a private road such as three culvert upgrades, eight rolling dips, and additional road grading and surfacing.

Agricultural Water Quality Programs

- In 2024, PV Water continued to operate multiple basin water quality monitoring programs in addition to operating water supply projects that achieve the dual purpose of augmenting water supply needs while helping to maintain or improve basin water quality. These programs are briefly summarized below.
 - **Surface Water Quality Monitoring Program:** PV Water staff routinely collects and analyzes water quality data from approximately 40 locations to provide information on the water quality conditions of streams, creeks, rivers, sloughs, and lakes in the Pajaro Valley. In addition, PV Water also maintains a large network of autonomous data loggers, and measures discharge to monitor hydrologic conditions with major focuses on the Watsonville Slough System, Pajaro River, and College Lake watersheds.
 - **Supplemental Water Quality Monitoring Program:** PV Water staff routinely collect and analyze water quality data from the CDS sources and points of delivery to provide information on changing water quality conditions, assess its suitability for agriculture customers, and to quantify nutrient and salinity inputs into the soil and groundwater in the Delivered Water Service Area.
 - **Groundwater Quality Monitoring Program:** PV Water staff directly monitor groundwater quality from a network of over 180 public and private wells that staff routinely visit to obtain water level and water quality information. At minimum, staff visit these wells in the spring and fall of each year with a subset of wells monitored more frequently. PV Water's groundwater monitoring network is supplemented by data collected by local water purveyors and other publicly available water quality datasets.
 - **Salt and Nutrient Management Plan:** PV Water developed and continue implementing the Salt and Nutrient Management Plan to ensure attainment of water quality objectives for protection of beneficial water uses and guide management of salts, nutrients, and other significant chemical compounds within the groundwater basin. As part of the plan implementation, PV Water works with community partners, such as the RCD and U.C. Cooperative Extension, to continue to offer resources and education opportunities that equip growers to efficiently irrigate and manage nutrient application.
- RCD Agricultural Program staff continued to work with NRCS, researchers, management agencies, funders and industry to get effective water quality best management practices developed, incentivized, and on the ground. RCD staff collaborated with California FarmLink and Kitchen Table Advisors to deliver a variety of technical assistance services targeting socially disadvantaged farmers and ranchers (SDFRs), including assistance with improved soil and nitrogen management for water

quality regulatory compliance (Ag Order 4.0). Additionally, RCD continued to support growers to receive funding and implement projects through the California Department of Food and Agriculture (CDFA) State Water and Energy Efficiency Program (SWEEP) and the Healthy Soils Program (HSP). The SWEEP program offers growers the opportunity to apply for up to \$200,000 for projects that improve water and energy use efficiency, and the HSP program offers growers up to \$100,000 to help implement practices that improve soil health. In 2023 CDFA received additional funding and launched a pilot “block grant” program to support further distribution and implementation of SWEEP projects. The RCDSCC was awarded one of these block grants, in partnership with RCDMC and SMRCD. Through this block grant these three RCDs are currently supporting an additional pool of farming operations (35 total) for implementing water and energy conservation projects in the central coast region. The RCD also has secured funding to launch a compost cost-share program supporting growers to further the adoption of compost application to boost soil organic matter and increase soil water holding capacity.

- A sediment basin was completed at Watsonville Slough Farm. The basin will detain up to 485 CY of sediment and treat agricultural storm and irrigation water from a surrounding 11.6-acre area of farmland. The sediment basin directly treats water flowing into the Watsonville slough and will improve water quality and wildlife habitat.

Section 3: Natural Resources and Flood Management

Watershed management is a critical component of water supply and water quality. What happens on the landscape and in the watersheds impacts the availability and quality of water, and the damage caused by droughts and storms alike. Watershed health is also critical to the environmental users of water. The County, along with regional partners, has made deep commitments to fisheries resources and continues to implement multi-faceted approaches to ensure these species thrive. As these species are an indicator of overall watershed health, efforts to improve these populations have cascading benefits for all users of the watershed.

Storm and Flood Preparation and Response

- The Stream Wood Program continues to facilitate the retention of naturally recruited wood by educating landowners about the benefits of stream wood and modifying stream wood when necessary to protect property or other resources. The program received a high number of requests for assistance during the 2024 water year, largely due to several intense storm events as well as increased erosion from the extreme 2023 water year, which weakened tree stability (e.g., along Soquel Creek). This caused many trees to become more susceptible to falling, even during lower-intensity storms. In addition, the program's visibility has grown due to community outreach, heightened concerns following the previous extreme water year, and increased access to public resources such as the Stream Wood page on the County website and the RCD's website. Program staff responded to about 38 requests for assistance in water year 2024. Roughly 24% of those were referred to Public Works or other agencies due to potential impacts to roads or other infrastructure. Of the roughly 38 sites that were addressed by Water Resources staff, wood was modified (either partially cut or entirely cut) at about 29% in order to mitigate risks to homes or infrastructure. At about half of the sites, wood was not modified and was left as is. Water Resources staff continue to respond to requests for assistance and adopt new data management tools.

Environmental Health completed a Streamwood Program Training with County Public Works, Drainage, on 9/19/24. This training was attended by approximately 25 workers who handle many of the stream wood tasks for the program and perform other maintenance activities in county waterways. The training was essential for aligning field practices with the program's conservation goals and regulatory requirements. The training covered the Streamwood Program objectives, permit requirements, life history of sensitive riparian and aquatic species, and best management practices to protect County streams and riparian areas.

The County of Santa Cruz was awarded a \$500,000 grant from the Wildlife Conservation Board in June 2024 to further expand and enhance the Santa Cruz

County Stream Wood Program. For over 15 years, this program has operated with limited resources to address large woody debris in local streams, which is critical for salmonid habitats. Historically, large wood has often been removed by landowners, undermining its habitat benefits. The recent funding will enable the program to address an influx of post-winter 2023 requests and boost its long-term capacity. This includes evaluating and, where possible, retaining large woody debris to support habitat complexity and improve ecological resilience in salmonid-bearing streams.

- CDI's Floodplain Manager submitted the material to FEMA ISO office for the Community Rating System (CRS) 5-year cycle audit in Spring 2023. The CRS is a voluntary program the County participates in to improve floodplain management and increase development standards within the flood hazard areas. Results of the 5-year audit are pending review.
- The Pajaro Regional Flood Management Agency (PRFMA) is a joint powers authority of the County of Santa Cruz, Santa Cruz County Flood Control and Water Conservation Zone No. 7, the County of Monterey, the Monterey County Water Resources Agency, and the City of Watsonville. Formed in 2021, the agency will plan, finance and implement projects and programs to reduce flood risk from the lower Pajaro River and its tributaries in Santa Cruz and Monterey Counties. Some of the PRFMA's accomplishments in 2024 include: The federal Pajaro River Flood Risk Management Project, now called the Pajaro River at Watsonville Project, has completed the design phase for Reach 6 (Corralitos Creek between Green Valley Road and East Lake Avenue). More importantly, Reach 6 is now in the construction phase, with pre-construction phase activities occurring now (Fall of 2024) which include tree removal, utility relocation, structure demolition, the property acquisition. Earth moving to build new levees on Corralitos Creek, where none currently exist, will begin in Spring/Summer 2025.
- Design of Reaches 5, 4, and 2/3 are currently beginning and will extend over the next 2-3 years while Reach 6 is being constructed. AB 876 and other strategic implementation programs will allow the project to shave years off of its total construction timeline. However, the project will still take 5-10 years to fully complete.
- PRFMA is part of a larger consortium recently awarded \$71M from the NOAA Climate Resilience Regional Challenge grant. PRFMA will receive just over \$10M as part of this grant to plan, design, and build additional flood risk reduction along the Santa Cruz County side of the Pajaro River upstream of the confluence with Salsipuedes Creek, where the USACE is not planning on introducing improvements as part of the Pajaro River at Watsonville Project. Project planning and implementation in this area will extend over the next five years or so.

- PRFMA was also recently awarded \$400,000 from the FEMA BRIC Program to start feasibility work to develop flood risk reduction solutions along what's called Reach 1 of the Pajaro River, extending downstream from the Highway 1 bridge to the ocean. It is anticipated that solutions developed will provide at least 100-yr flood protection, with implementation extending over the next 5-10 years.
- PRFMA has also partnered with AMBAG (the Association of Monterey Bay Area Governments) to receive a \$2.5M grant from the California Department of Transportation to plan improvements to the Highway 1 crossing over the Pajaro River. Again, ultimate construction of any improvements will not likely be completed for 8-10 years, but this effort, combined with the progress mentioned above, will build capacity to the Pajaro River system where it is needed and outside of the Pajaro River at Watsonville Project.
- PRFMA continues to synergistically collaborate with USACE's Engineering With Nature Program, California Department of Water Resources, other entities conducting Ecological Floodplain Inundation Potential modeling, the University of California, and California State University to examine how multibenefit habitat and groundwater recharge features can be incorporated into all projects.
- PRMFA has also recently completed the rehabilitation of the upper 3000 feet of the Monterey County levee system on the Pajaro River to introduce more resilience to the levee system there, ahead of full reconstruction as part of the Pajaro River at Watsonville project.
- Results for the Community Rating System (CRS) 5-year cycle audit were received in October 2024. The CRS is a voluntary program the County participates in to improve floodplain management and increase development standards within the flood hazard areas. The County continues to maintain a class 8 rating for the additional floodplain management activities implemented by CDI, which affords residents a 10% reduction in their flood insurance premiums. Activities include, but are not limited to: documentation and protection of natural open spaces located in the FEMA designated Special Flood Hazard Area, higher regulatory standards for new development within the floodplain, and Stormwater and floodplain management planning activities.
- The RCD provided technical assistance and conservation planning assistance to forestland managers throughout the county. In 2024, the RCD implemented four forest health and ecological restoration projects on over 350 acres across the county. These projects serve to improve ecosystem function, protecting source waters from sedimentation and other potential impacts that may result from catastrophic wildfire. The RCD's no-cost chipping program supports defensible space creation for homes in the wildland urban interface and in the spring of 2024 served 405 individuals.

Fisheries Monitoring and Protection

County Water Resource Program staff continue to implement various programs and projects to benefit steelhead and coho salmon habitat that is degraded due to historic and current land and water use. Coho salmon are listed as endangered under both the state and federal Endangered Species Act (ESA) and are critically endangered in Santa Cruz County. Water Resource staff continue to assist coho salmon conservation efforts. Steelhead are listed as threatened under the Federal ESA and continue to persist in most county streams at low to moderate population numbers. Current recovery actions focus on improving dry season streamflow and habitat complexity. A key component of these efforts includes the proposed protective standards to limit streamflow depletion associated with new non-de minimis wells. These standards are part of an updated well ordinance, expected to take effect in mid-2025. Increasing habitat complexity is also an objective of the Stream Wood Program.

- Fish Monitoring in North County Streams: Dr. Jerry Smith, Emeritus Professor, San Jose State University, performed annual fish monitoring in Waddell and Gazos Creeks (which is just outside the County border) during summer 2024. In Waddell Creek, no coho were captured, and steelhead densities were only slightly higher than in 2023, averaging 4.8 young of year per 100 ft, and 1.8 yearlings and older per 100 ft. Habitat conditions in the lower portion of Waddell Creek improved somewhat relative to 2023, due a large log jam upstream that retained sediment. Most pools sampled above this reach, and in the West Fork, have been filled by sediment following the CZU Fire.
- No coho were documented in Gazos Creek, (none have been observed since 2005). However, steelhead density rebounded relative to recent years, despite modest habitat improvements. Average densities for young of year were 33 per 100 ft and yearlings and older averaged 7 per 100 ft.
- During summer of 2024, NOAA conducted snorkel surveys throughout the Scott Creek watershed. Results were not available at the time of this report. The City of Santa Cruz also performs annual monitoring in County streams.
- Juvenile Steelhead and Stream Habitat Monitoring (JSSH): The Santa Cruz County Water Resource Program continues to partner with local water agencies and consulting fishery biologists to perform juvenile steelhead and habitat monitoring. This long-term, annual monitoring program measures the density of juvenile steelhead at monitoring sites throughout the San Lorenzo, Soquel, Aptos, and Pajaro watersheds. It also assesses habitat conditions for steelhead and coho salmon and helps inform conservation priorities throughout the County. During summer/fall of 2024, 39 stream sites were sampled by electro-fishing (26 in San Lorenzo River, 9 in Soquel Creek, and 4 in Aptos Creek watersheds), and 2 lagoons were sampled by seining (Aptos and Pajaro Lagoon; Soquel Lagoon was also sampled through the City of Capitola). Streamflow was measured at 15 locations.

Monitoring data were being processed at the time of writing this report, but a few preliminary findings indicate relatively low young-of-the-year (YOY) densities, possibly related to low egg survival and late-season storms that may have scoured out or buried redds. YOY densities were higher at upper watershed sites. Juvenile growth rate was relatively high, associated with the above average baseflows, low YOY densities and reduced competition for food. No steelhead were captured in Pajaro Lagoon, as has been the case since sampling began there in 2012. No coho salmon were observed.



*Three captured juvenile steelhead and one sculpin temporarily held in a mesh basket.
Photo courtesy of Sean Abbey (County of Santa Cruz)*

- Water Resources staff partnered with RCD Santa Cruz County to outreach to property owners on the San Lorenzo River with the objective of identifying opportunities to remove fish passage barriers. This effort was informed by the inventory completed by Santa Cruz County staff in November 2023, that identified historical, anthropogenic (human-built) structures on the San Lorenzo River that affect fish passage. These historical structures affect upstream and downstream passage for adults and juveniles, especially during dry years or periods of low base flow in the river. This study focused on documenting 37 historical structures that completely or partially span the San Lorenzo River. Of those 37 historical structures, 24 structures span the channel and substantially affect fish passage. This report recommends the removal or modification of channel-spanning historical structures that substantially affect fish passage. Specifically, this report recommends that the County, CDFW, and NOAA Fisheries work together to facilitate the removal or modification of historical structures rated as Medium or High Passage Severity. RCD staff continue to engage with property owners and seek funding for this work.

- The County of Santa Cruz Stream Crossing Inventory and Fish Passage Evaluation report identifies current priorities for fish passage among the County's road stream crossings. The 2022 update identifies locations on Casserly, Lompico and East Liddell Creeks where culvert replacement could improve passage for steelhead, aquatic and terrestrial animals. The study informs culvert replacement projects by Santa Cruz County CDI.
- In 2014, County Water Resources staff completed an inventory and assessment of steelhead passage barriers on Branciforte Creek. With this report, RCDSCC has completed the removal of 3 barriers.
- Program staff continue to monitor and maintain fish ladders located in County streams.
- Water Resources staff participate in the Caltrans FishPAC, a group dedicated to improving fish passage at state road crossings. In Santa Cruz County, Caltrans is actively working on 4 of the 6 highway crossings identified as high priority for replacement or remediation.
- RCD watershed restoration program staff, in coordination with the City of Santa Cruz Public Works and Water departments, completed the next phase of the Branciforte Creek Flood Control Channel Fish Passage Enhancement Project. With funding from the State Coastal Conservancy, the project team completed a feasibility study to identify preferred design alternatives that will ultimately help salmonids pass through this barrier in order to access critical spawning grounds higher up in the watershed. The RCD continues to support the City in seeking funding to move the project into the next design phase.
- The City of Santa Cruz Water Department completed public review for National Environmental Policy Act (NEPA) and CEQA compliance for the Anadromous Salmonid HCP with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW). A final Fish and Wildlife Section 2081 application was also submitted.
- The City of Santa Cruz continued ongoing monitoring related to fisheries, hydrology, water quality and rare terrestrial species relative to Water Department environmental regulatory compliance. Notable observations include:
 - Coho found in Laguna Creek for the 5th year in a row.
- The Scott Creek Coastal Resiliency Project is a unique, integrated bridge replacement and ecological restoration project with multiple benefits. This project will improve community and highway resilience to climate change and sea level rise, will

implement a major recovery action for endangered coho salmon and a suite of other listed species, and will improve public coastal access, amongst many other benefits. For nearly 10 years the Resource Conservation District of Santa Cruz County, the Santa Cruz County Regional Transportation Commission, and Caltrans, along with our state and federal resource agency partners, have collaborated to re-envision how to plan for major transportation infrastructure projects by focusing on first understanding the needs of the ecosystem, then designing infrastructure and restoration activities together to meet those needs. This year, with funding from CDFW, the RCD completed the remaining technical coastal studies identified by the Technical Advisory Committee as essential for informing bridge design and selection of a preferred alternative bridge span and alignment. Caltrans secured \$4.5M in SHOPP funding to move the project into environmental review, and the RCD secured funding from the Coastal Conservancy to continue active engagement of the Integrated Watershed Restoration Program Technical Advisory Committee in the process, and to advance ecological components of the project in partnership with Caltrans.

- RCD watershed restoration program staff continued to advance restoration planning efforts along lower Scott Creek at Swanton Pacific Ranch with funding from the California Department of Conservation. The project area is just upstream of the Scott Creek lagoon, which will be restored as part of the Scott Creek Coastal Resiliency Project. The project will eventually restore over 1 mile of creek to benefit listed species of fish, amphibians, and reptiles, and integrate with the lagoon restoration to significantly move the needle on species recovery.
- In coordination with state and federal agencies and conservation partners, RCD watershed restoration program staff helped advance design and permitting for streamwood enhancement projects on San Vicente Creek (Cotoni Coast Dairies National Monument and San Vicente Redwoods preserve) and Aptos Creek (Nisene Marks State Park) that are slated for implementation in 2025. RCD staff also continued to work with private landowners to advance barrier removal projects in the Branciforte Creek watershed, a focal watershed for salmonid recovery, conducting landowner outreach and site visits. In addition, RCD staff is working with the California Department of Parks and Recreation (State Parks) Santa Cruz District to develop restoration projects on State Parks lands impacted by illegal cannabis operations. Project examples include floodplain restoration, streamwood enhancement, and decommissioning of legacy logging roads.

Watershed Management Activities

- CDI has continued to oversee the timber harvests in the county to ensure robust water quality and habitat protection during timber harvests, and to cover staff time on enforcing violations of the erosion control, riparian and wetland protection, and grading ordinances that may impact water quality and riparian habitat. On those

violations that require a notice of violation, staff diligently pursue enforcement and restoration of riparian habitat and prevention of sediment from entering our streams. The Planning Department took the lead in restoring and cleaning a former encampment site along Carbonera Creek, adjacent to the County Emeline Campus, and funded new informational signage for the Planning Department public space regarding resource protection. CDI continues to work towards establishing a multi-department task force to address other homeless encampments that impact habitat and water quality.

- CDI's code compliance section continues to prioritize enforcement of properties that impact water quality via sediment or septic impacts, as well as general waste associated with unmanaged properties. Staff have developed a good working relationship with the CDFW enforcement staff and our district attorney to pursue larger-scale violations that impact water quality and riparian habitat.
- The County Zone 5 Master Plan is being updated, scheduled for completion by December 2025. Zone 5 covers, generally, the urban unincorporated areas of Soquel, Live Oak and the Pleasure point areas as well as the City of Capitola. The Zone 5 Master Plan update's scope of work includes condition and capacity assessment of the large stormwater conveyances, 36" or larger in pipe diameter, within the Zone. Evaluation of the maintenance program and recommendation for improvements on that will also be made as part of the Zone 5 Master Plan update. Aside from assessing the condition and capacity of the larger storm water conveyances within the Zone, an additional goal of this Master Plan update is to generate detailed cost estimates for the current and proposed maintenance and Capital Improvement Program (CIP) upgrade of all the large drainage conveyances. These estimates will be utilized to seek additional sustainable funding sources for the improved maintenance and the CIP implementation from the benefiting property owners in the Zone. The contract was extended through December 2025 in order to identify and pursue permanent funding sources to implement the flood control and pollution prevention needs within Zone 5.
- The City of Santa Cruz Water Department continued ongoing management work including:
 - Identification of karst protection zones relative to the revised County Well Ordinance,
 - Maintenance of watershed divide and stream crossing signs,
 - Onboarded new forestry and fisheries consulting teams,
 - Completed evaluation of Newell Creek watershed lands forest management needs,

- Continued fuel management around Loch Lomond Reservoir, Laguna and Zayante watershed properties,
- Completed the Fern Ridge Road shaded fuel break project,
- Initiated City policy changes that will enable more proactive management of said properties and support regional forest health goals,
- Continued invasive species control at Loch Lomond Reservoir,
- Collaborated with the County on emergency access planning in Lompico,
- Provided regulatory support for operational emergencies,
- Continued implementation of watershed interpretive programs, implementation including addition of additional “Loch Walk” events,
- Initiated Non-Flow Conservation Fund restoration work with the Resource Conservation District and other partners,
- Continued assistance with San Lorenzo River lagoon and lower San Lorenzo River management,
- Coordinated federal funding for fish passage improvements in the Branciforte Flood Control Channel,
- Participated in several regional, large-scale restoration grant proposal efforts,
- Pursued enforcement on illegal stream diversions and other unpermitted developments that have potential water resources implications,
- Continued coordination with hazardous materials spill incident responders,
- Continued coordination with Cal Trout on Branciforte Creek PIT, antennae installation,
- Provided administrative oversight of County-wide juvenile steelhead and stream habitat monitoring project.
- Identified two additional special status species on City watershed lands including Santa Cruz Mountains beardtongue and the Santa Cruz black salamander.
- Continued implementation of the Low Effect Mount Hermon June beetle Habitat Conservation Plan and Operations and Maintenance Habitat Conservation Plan; including implementation of a mitigation project for California red-legged frogs and western pond turtle in partnership with State Parks.
 - Supported USFWS western pond turtle Endangered Species Act listing process.
 - Completion of the Drinking Water Sanitary Survey update.
- The City of Santa Cruz has also participated heavily in the regional response to the houseless community and threats to drinking water sources including coordination on flood – related riparian camp evacuations, patrols of key riparian areas along the San Lorenzo River and tributaries and coordination of camp cleanups.

- The City of Santa Cruz also initiated operation of the San Lorenzo River lagoon control structure during the fall of 2024.
- In 2024, PV Water continued to work with regulatory and technical experts such as aquatic ecologists, archeologists, biologists, Indigenous American monitors, and federal resource management agencies to support the operation of existing water supply facilities and guide construction of the College Lake Project. In addition, PV Water leveraged these experts to survey natural resources, guide development of the WSS-MARR project, and refine mitigation measures. The work performed included programs to observe and collect information on environmental and biological resources in and around the Harkins Slough Facility as well as the proposed Struve Slough Project locations with focused interest in cultural resources, waterfowl/nesting birds, South-Central California Coast Steelhead, and California Red Legged Frogs.

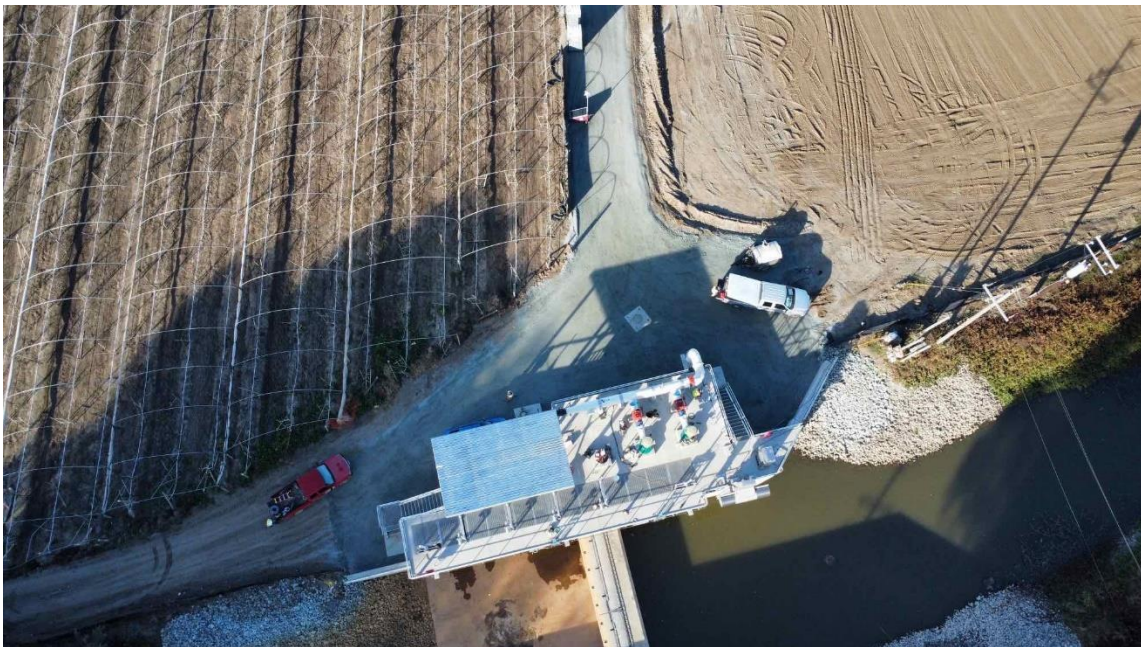


Figure 18: College Lake Project Weir. Photo courtesy of PV Water.

- As construction of the College Lake Project continues in its second year (see Figure 18), PV Water continues to implement a robust mitigation and monitoring program that was outlined in the College Lake Project EIR to protect environmental resources during construction. The project itself includes construction of a fish passage structure which will allow movement of fish into and out of College Lake. In prior conditions, fish did not have safe passage through College Lake, including the endangered steelhead.
- PV Water also continues implementation of the College Lake Integrated Resources Management Project Adapted Management Plan 2022 which guides project operations and lake management. The plan provides adaptive management framework, including metrics, triggers, and management actions, to guide operations

and maintenance of the project with a focus to mitigate impacts to the College Lake ecosystem.

- As part of PV Water's broader basin management activities and planning under the Sustainable Groundwater Management Act (SGMA), it evaluated and considered groundwater dependent ecosystems (GDEs) when developing the GSU22 and adopting sustainable management criteria for interconnected surface waters. It was determined that at the time, there was minimal connection between surface water and groundwater and that there is no potential for significant and unreasonable depletions of interconnected surface water due to the existing disconnect. However, PV Water, through implementation of projects and programs to achieve sustainable groundwater resources, aims to increase the frequency and duration of hydraulic connectivity between groundwater and surface water where reasonably achievable. Enhanced connectivity would provide greater opportunity for groundwater dependent ecosystems to be restored, developed, expanded, and/or improved. PV Water is also currently planning to construct a series of new wells to expand the available data on interconnected surface and groundwater.
- PV Water has continued to improve, update, and expand the capabilities of the Pajaro Valley Hydrologic Model (PVHM) including the simulation of future scenario planning with climate change. The PVHM is one of the principal planning tools for the agency and in collaboration with the United States Geological Survey, will be used to evaluate future basin conditions that support sustainable water resources for all beneficial uses including instream needs. Previous climate scenario modeling included modeling of future variable climate scenarios as well as an uncertainty analysis to support basin management planning. During 2024, PV Water initiated updates of the PVHM and subsequently will be conducting a calibration and scenario modeling in the coming year.
- In July 2024, PV Water entered into a grant agreement with the California Department of Water Resources as part of the Watershed Resilience Planning Pilot Program. The program underscores the importance of watershed-based solutions, climate resilience, and equity through collaboration of local partners. The program builds on previous regional planning efforts such as the Pajaro River Watershed Integrated Regional Water Management Plan (IRMWP). In September 2024, PV Water contracted a support team to assist in the effort with major work tasks including: identifying and assessing existing regional networks; developing a watershed network; delineating the watershed area; developing a watershed resilience vision; assessing climate vulnerabilities and the state of the watershed; assessing vulnerabilities and risks; developing adaptation and implementation strategies and preparing a watershed resilience plan. The program will progress quickly and involve a series of meetings with interested parties with the majority of work to occur over water year 2025 and a portion of water year 2026.

- In the summer of 2024, PV Water and regional partners collaborated with the California Department of Water Resources as part of the Basin Characterization Pilot Program to conduct a series of geophysical surveys across the lower Pajaro River Watershed. The surveying consisted of a towed transient electromagnetic (tTEM) instrument being pulled behind an all-terrain vehicle (ATV) to collect data on the geophysical properties (resistivity/conductivity) of the subsurface and improve the understanding of the Basin's hydrogeology in areas of interest. PV Water, along with collaborating partners at the University of California at Santa Cruz, the RCD, the Pajaro Regional Flood Management Agency, and cooperating landowners surveyed future managed aquifer recharge basin sites, the levees and banks of the Pajaro River and Salsipuedes Creeks, existing ReNeM sites, as well as potential future ReNeM sites. The survey data will support flood management projects, managed aquifer recharge projects, and improve the understanding of the Basin hydrogeology. Currently, the survey data is being processed by the state's contractor and is anticipated to be available in the coming months.

Attachment 1: Water Use in Santa Cruz County, 2024 (Data for smaller systems is from calendar year 2023)

Water Supplier	Connections	Population	Water Use acre- feet/yr	Groundwater	Surface Water	Recycled Water	Imported from Outside the County
Santa Cruz City Water Dept.	24,957	95,017	7,612	1.2%	98.8%	0.0%	
Watsonville City Water Service	14,602	65,231	6,389	99.6%	0.4%		
Soquel Creek Water District	14,548	40,644	2,930	100.0%			
San Lorenzo Valley Water District	7,900	23,700	1827	30.1%	69.9%		
Scotts Valley Water District	3,945	11,147	1,110	85.8%		14.2%	
Central Water District	829	2,706	364	100.0%			
Big Basin Water Company*	540	1,120	160	100.0%			
Mount Hermon Association	491	2,850	152	100.0%			
Forest Lakes Mutual Water Company	326	1,067	36	100.0%			
Smaller Water Systems (5-199 conn.)	2,540	7,958	1,258	85.0%	6.0%		9%
Individual Users*	8,000	21,000	2,350	95.0%	5.0%		
Pajaro Agriculture (SC Co only)**†			19,960	95.3%	0.3%	4.4%	
Mid- & North-County Agriculture*			2,400	90.0%	10.0%		
Totals	78,589	273,132	44,845	76%	20%	3.6%	0.1%
Summary by Water Source (acre-feet/year)				34,057	9,111	1624	62
Summary of Non-Agricultural Use (acre-feet/year)			24,045	14,858	8,834	299	62
Summary of Non-Agricultural Use (percent of water use)			53.6%	43.6%	97.0%	18.4%	100.0%

*Values are Estimates

** Includes a small number of water systems

† Recycled water source is the City of Watsonville

Attachment 2: Common Acronyms

AF	Acre Foot
AFY	Acre Foot per Year
BMP	Best Management Practices
CDI	Community Development and Infrastructure Department
CEQA	California Environmental Quality Act
CoW	City of Watsonville
CWD	Central Water District
DMS	Data Management System
DWR	Department of Water Resources
EIR	Environmental Impact Report
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IRWM	Integrated Regional Water Management
JPA	Joint Powers Agreement
LAFCO	Local Agency Formation Commission
LID	Low Impact Development
MGA	Santa Cruz Mid-County Groundwater Agency
MGD	Million Gallons per Day
MGY	Million Gallons per Year
O&M	Operations and Maintenance
OR3	Office of Response, Recovery, and Resiliency
PPB	Parts Per Billion
PV Water	Pajaro Valley Water Management Agency
RCD	Resource Conservation District of Santa Cruz County
RWMF	Regional Water Management Foundation
SCWD	City of Santa Cruz Water Department
SGMA	Sustainable Groundwater Management Act
SLVWD	San Lorenzo Valley Water District
SMGWA	Santa Margarita Groundwater Agency
SqCWD	Soquel Creek Water District
SVWD	Scotts Valley Water District
UCSC	University of California, Santa Cruz

Attachment 3: Online Resources

County Water Resources Program	scceh.com/Home/Programs/WaterResources.aspx
County Water Quality Map	scceh.com/waterquality.aspx
County Steelhead Monitoring Program	scceh.com/steelhead.aspx
Santa Cruz County Office of Response, Recovery, and Resiliency	www.co.santa-cruz.ca.us/OR3.aspx
Central Water District	sites.google.com/view/centralwaterdistrict
City of Santa Cruz Water Department	www.cityofsantacruz.com/government/city-departments/water
City of Watsonville Public Works and Utilities	www.cityofwatsonville.org/590/Public-Works-Utilities
San Lorenzo Valley Water District (SLVWD)	www.slvwd.com/
Scotts Valley Water District (SVWD)	www.svwd.org/
Soquel Creek Water District (SqCWD)	www.soquelcreekwater.org/
Pajaro Valley Water Management Agency (PV Water)	www.pvwater.org/
Santa Cruz Mid-County Groundwater Agency (MGA)	www.midcountygroundwater.org/
Santa Margarita Groundwater Agency (SMGWA)	smgwa.org/
Resource Conservation District of Santa Cruz County (RCD)	www.rcdsantacruz.org/
Santa Cruz Integrated Regional Water Management Plan (IRWM)	www.santacruzirwmp.org/
Water Conservation Coalition of Santa Cruz County	watersavingtips.org/
Santa Cruz Countywide Data Viewer	sccwaterdata.us/#/html/home