

SANTA ROSA PLAIN

GROUNDWATER ANNUAL REPORT

What is happening with groundwater in your community?

The Santa Rosa Plain Groundwater Sustainability Agency (GSA) monitors, tracks and annually reports on groundwater levels, storage and quality in the subbasin. The GSA is also required to measure whether groundwater pumping is causing land subsidence, intrusion of seawater, and affecting creeks, streams and other surface water.

The Santa Rosa Plain Groundwater Sustainability Plan was approved in January, 2023. Each year the GSA must provide an Annual Report to comply with the Sustainable Groundwater Management Act, and provide a snapshot of groundwater conditions from the previous water year (Oct. 1 - Sept. 30). The Annual Report measures the basin's progress towards meeting defined sustainability goals and provides a status update of project implementation.

The GSA's Annual Report for Water Year 2023 was submitted to the California Department of Water Resources on Apr. 1, 2024, and describes basin conditions from Oct. 1, 2022, through Sept. 30, 2023.

An end to the drought

Water Year 2023 brought much-needed precipitation to the region, following three years of drought. Rainfall in 2023 Water Year was above average, but was preceded by three consecutive dry years, including the third driest year on record over the last 127 years.

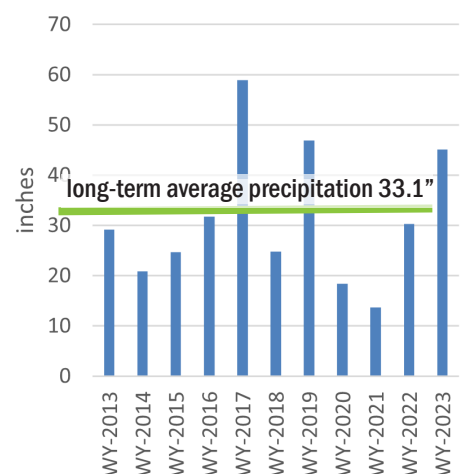
Droughts are a natural part of California's climate. Creating alternative water storage opportunities during wet years will provide greater water resilience during times of drought.

The long-term drought stressed our groundwater resources. The hope is that with more rain, and strategic planning and design, more of this water will make its way underground and recharge our groundwater aquifers. Our efforts to monitor the basin help us track that infiltration to manage a sustainable water supply.



SANTA ROSA PLAIN GROUNDWATER SUSTAINABILITY AGENCY

2013-2023
Santa Rosa Plain Annual
Rainfall Totals by Water-Year
(Oct. 1 - Sept. 30)



SUSTAINABILITY INDICATORS



Groundwater levels

The Santa Rosa Plain subbasin is characterized by two aquifer systems: A shallow system (less than 200 feet deep) and a deep system (greater than 200 feet deep).

Groundwater-levels were similar or higher in Water Year 2023 compared with Water Year 2022 throughout much of the subbasin in the shallow aquifer systems. Increases of groundwater levels of up to about five feet occur within the shallow aquifer system in about 10% of the subbasin.

In the deep aquifer system, areas of increases exceeding 20 feet occur in the southern portions of the subbasin in the vicinity of Rohnert Park and along the eastern edge of the subbasin, from Santa Rosa to north of the Town of Windsor.

The groundwater level monitoring network consists of a total of 113 wells within and along the boundaries of the contributing watershed areas, including 96 wells within the subbasin itself.

There were no minimum threshold exceedances for the chronic lowering of groundwater levels in 2023. Groundwater levels at wells with established warning levels remained above those threshold values.

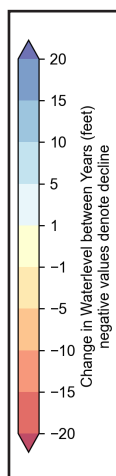
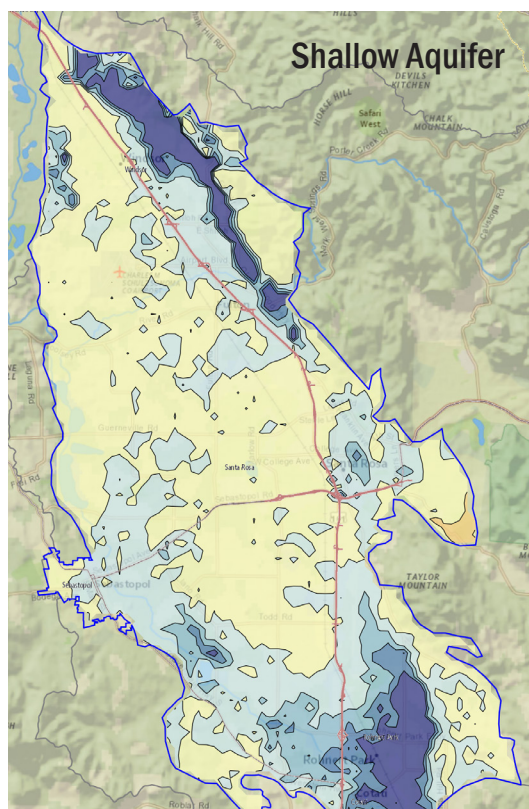
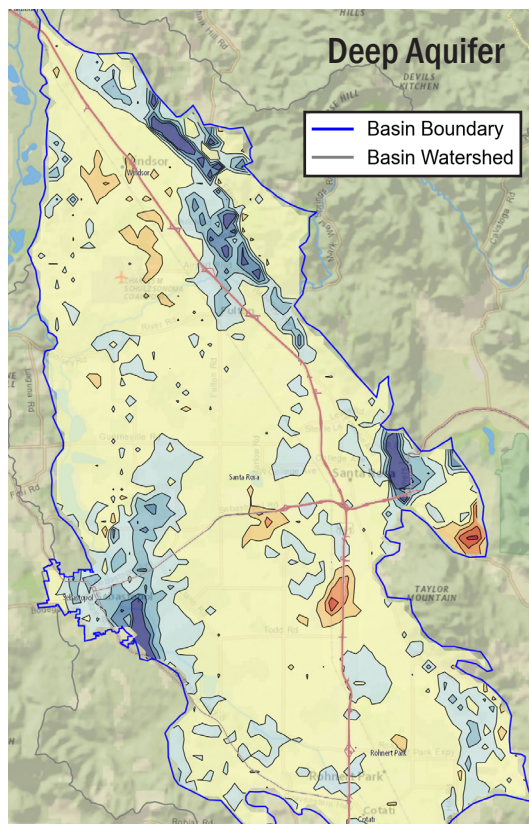


Groundwater storage

The amount of groundwater stored in the basin is estimated based on changes in groundwater levels. The annual change in groundwater storage within the basin for water year 2023 is estimated to have increased by approximately 6,460 acre-feet, with nearly all of that change occurring in the shallow aquifer system. An acre-foot is equal to the area of a football field filled with one foot of water - which is enough to meet the annual indoor and outdoor needs of three average households in Sonoma County, approximately 326,000 gallons.

The increase in groundwater storage in water year 2023 offset 55% of the declines in storage that occurred since Water Year 2011. The gains in groundwater storage in the deep aquifer in Water Year 2023 increased groundwater storage to near its highest levels since the late 1970's.

GROUNDWATER STORAGE CHANGE FALL 2022-FALL 2023



Depletion from creeks, streams and other surface water

It is extremely complicated to determine if, when and where groundwater pumping is depleting creeks, streams, and other surface water. The GSA worked with scientists to develop a proxy for monitoring depletion of interconnected surface water and found that the total volume of streamflow measured at surface water gauges within the subbasin increased in Water Year 2023 compared with previous water years. There are ongoing and planned activities to address the data and information gaps related to this indicator as part of the sustainability plan.



Groundwater quality

The GSA monitors the basin for arsenic, nitrates and total dissolved solids (TDS, or salt) to determine if GSA projects or groundwater pumping is degrading water quality. Groundwater is tested by public water suppliers to determine the concentration of each constituent and then those results are compared with maximum contaminant levels established by the state and Environmental Protection Agency. The GSA considers groundwater quality to be degrading if two additional wells (above the baseline number of wells) are above maximum contaminant levels.

In Water Year 2023, the concentration levels for these substances didn't exceed the minimum sustainability thresholds for groundwater quality in the subbasin.



Land subsidence

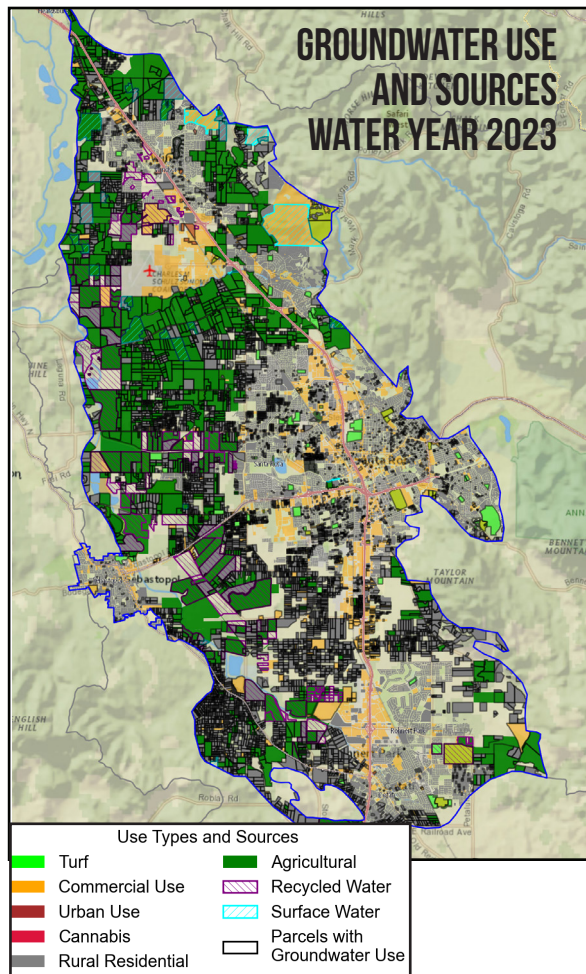
In some parts of California, particularly the Central Valley, the land surface is dropping (known as subsidence) due to groundwater pumping. Permanent (or inelastic) subsidence can damage aquifers and, on the land surface, destroy roads, bridges and other infrastructure. GSAs are responsible for managing inelastic subsidence caused by lowered groundwater elevations.

In Santa Rosa Plain, there is no indication that groundwater pumping is causing land subsidence for 2023.



The complete Santa Rosa Plain Groundwater Annual Report, Water Year 2023, with detailed information, data, graphs, maps and more can be found at

santarosaplaingroundwater.org/annual-reports



Total water use

Total water use within the basin is based on the estimated and metered uses of groundwater, surface water and recycled water. The majority of water-use is estimated using the best available science and information. The Groundwater Sustainability Plan outlines strategies to fill this data gap.

TOTAL SUBBASIN WATER USE BY SOURCE (ACRE-FEET), COMPARED OVER THREE WATER YEARS				
	2021	2022	2023	
Groundwater Extraction	19,791 (43%)	19,145 (41%)	17,604 (40%)	
Surface Water	22,378 (49%)	21,022 (46%)	21,084 (48%)	
Recycled Water	3,738 (8%)	5,945 (13%)	4,970 (12%)	
TOTAL WATER USE (ACRE-FEET) COMPARED OVER FOUR WATER YEARS				
2020	2021	2022	2023	
50,835	45,907	46,112	43,658	
TOTAL WATER-USE IN SUBBASIN FROM ALL SOURCES (ACRE-FEET) COMPARED OVER TWO YEARS				
Water-use sector (text color corresponds to map legend on the left)	Water-use from groundwater extraction		Water-use from all sources combined	
	WY 2022	WY 2023	WY 2022	WY 2023
Agriculture	5,620 (29%)	5,119 (29%)	11,107 (24%)	9,738 (22%)
Urban: municipal water systems and urban private wells	5,128 (26%)	4,342 (25%)	26,031 (56%)	25,313 (58%)
Rural residential	3,960 (21%)	3,976 (23%)	3,960 (9%)	3,976 (9%)
Turf - golf course and schools	2,227 (12%)	2,092 (12%)	2,804 (6%)	2,547 (6%)
Non-municipal public water system: industrial and commercial	2,210 (12%)	2,075 (6%)	2,210 (5%)	2,075 (5%)
Total	19,145	17,604	46,112	43,649

Groundwater Sustainability Plan Implementation

The Groundwater Sustainability Plan was submitted to the California Department of Water Resources in January 2022 and approved on Jan. 26, 2023. The plan establishes a standard for sustainability of groundwater management and use, and determines how the basin will achieve this standard by 2042. In October 2023, the GSA received funding from the state to begin implementing projects outlined in the plan.

Communication and Stakeholder Engagement

- ▶ Holding public GSA Board, Advisory Committee and community meetings.
- ▶ Maintaining and updating the online Groundwater User Information and Data Exchange (GUIDE) program to exchange parcel-specific water use information with groundwater users has continued. (see santarosaplaingroundwater.org/user)
- ▶ Direct outreach to growers and rural well owners for voluntary monitoring, voluntary metering, water-use efficiency programs and recharge initiatives will begin in Water Year 2024.

Land Use Planning and Well Permitting Integration/Coordination

- ▶ Continued establishing protocols and procedures for the sharing of groundwater information between Permit Sonoma and the GSAs in Sonoma County.
- ▶ Coordinated with Permit Sonoma to comply with the Governor's Drought Executive Order N-7-22 that included new well permitting requirements for local agencies, including GSAs.

- ▶ Participation in the county's Well Ordinance Technical and Policy Working Groups to provide technical expertise and policy perspectives from the GSA for addressing public trust resources during well permitting decisions.
- ▶ Coordination with county in development of countywide Drought Resilience Plan to address domestic wells vulnerable to groundwater-level declines.

Addressing Data Gaps

- ▶ Completing seepage runs of streamflow measurements to assist in identifying and mapping interconnected surface waters within the subbasin.
- ▶ Outreach for refining and expanding the voluntary groundwater-level monitoring program has been initiated.
- ▶ Refinement of groundwater use estimates through the GUIDE program.
- ▶ Developing an assessment approach that includes groundwater-dependent ecosystem and interconnected surface water data gaps.
- ▶ Planning and implementation of a voluntary metering program will begin in Water Year 2024.

Projects and Management Actions

Initiation of activities related to projects and management actions including:

- ▶ Development and discussion of the policy and programs options study.
- ▶ Scoping for a project to assess and implement conservation and groundwater-use efficiency opportunities, which will begin in Water Year 2024.
- ▶ Aquifer storage and recovery (ASR) planning has advanced through the planning, design and construction of ASR aspects of Sonoma Water's Santa Rosa Plain Drought Resiliency Project. Water Year 2024 activities will include design and permitting of ASR pilot studies at two Sonoma Water wells and evaluation of additional locations for implementing ASR within the subbasin.
- ▶ In Water Year 2024, stormwater capture and recharge opportunities will be investigated and designed within the subbasin.
- ▶ In Water Year 2024, the GSA will coordinate with recycled water purveyors within the subbasin to initiate an evaluation of recycled water availability for offsetting groundwater use within the subbasin.