March
2023

Water Year 2022 Report

for the Santa Clara and Llagas Subbasins

Valley Water

Santa Clara Valley Water District

Water Year 2022 Report for the Santa Clara and Llagas Subbasins

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Valley Water
Clean Water • Healthy Environment • Flood Protection

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Executive Summary

EXECUTIVE SUMMARY

The Santa Clara Valley Water District (Valley Water) is the Groundwater Sustainability Agency (GSA) for the Santa Clara and Llagas subbasins (Basins 2-9.02 and 3-3.01, respectively) in Santa Clara County, which are sustainably managed due to the comprehensive activities described in Valley Water's 2021 Groundwater Management Plan (Plan).[1] This Water Year (WY) 2022 Report for the Santa Clara and Llagas Subbasins provides information on groundwater conditions and management as required by the Sustainable Groundwater Management Act (SGMA).[2]

Despite statewide drought conditions, groundwater elevation and storage have remained in healthy condition through WY 2022.[3] Total groundwater pumping was 122,400 acre-feet (AF)[4], providing 43% of the water used by county residents and businesses. WY 2022 was a dry water year but Valley Water secured adequate surface water supplies to support 88,900 AF of managed recharge using local and imported surface water for groundwater replenishment. Treated water delivered by Valley Water (90,500 AF) and recycled water use (17,100 AF) also provided in-lieu recharge, and countywide water conservation programs reduced water demands by more than 81,000 AF. This comprehensive recharge continues to support a balanced long-term groundwater budget. During WY 2022, inflows exceeded outflows in the Santa Clara Subbasin resulting in an increase in storage of 2,500 AF but outflows exceeded inflows in the Llagas Subbasin resulting in a decrease in storage of 300 AF. However, WY 2022 groundwater storage remained within the low "Normal" stage under the Water Shortage Contingency Plan.

Valley Water continues to implement the comprehensive activities described in the Plan, including efforts to:

- Maintain existing conjunctive water management programs and evaluate opportunities for enhancement or increased efficiency.
- Continue to aggressively protect groundwater quality through Valley Water programs and collaboration with land use agencies, regulatory agencies, and basin stakeholders.
- Continue to incorporate groundwater sustainability planning in Valley Water planning efforts.
- Maintain adequate monitoring programs and modeling tools.
- Continue and enhance groundwater management partnerships with water retailers and land use agencies.

Valley Water sustainably manages the Santa Clara and Llagas subbasins as a central part of our mission to provide Silicon Valley safe, clean water for a healthy life, environment, and economy. Implementation of the Plan helps ensure continued sustainability in accordance with SGMA, the Santa Clara Valley Water District Act, and Valley Water Board of Directors (Board) policy to "manage groundwater to ensure sustainable supplies and avoid land subsidence," and "aggressively protect groundwater from the threat of contamination."

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[1] The 2021 Plan is the first required five-year update to the Department of Water Resources (DWR) approved Alternative to a Groundwater Sustainability Plan (2016 Plan). Per state requirements, an annual report must be submitted by April 1 of each year following Valley Water adoption of the Plan.

[2] A comprehensive calendar-year based Annual Groundwater Report with detailed information on groundwater levels, storage, land subsidence and groundwater quality conditions is available at: https://www.valleywater.org/groundwater.

[3] October 1, 2021 through September 30, 2022

[4] All values in this report are based on best available data (measured or estimated) and may be refined as additional data becomes available.

CHAPTER 1 – INTRODUCTION

For over 90 years, Valley Water has managed groundwater in Santa Clara County under the Santa Clara Valley Water District Act.[5] In December 2016, Valley Water submitted its Board-adopted 2016 Groundwater Management Plan (Plan) to the Department of Water Resources (DWR) as an Alternative to a Groundwater Sustainability Plan under SGMA, and DWR approved the Plan in July 2019. SGMA requires GSAs to submit periodic evaluations of approved Alternatives at least once every five years, with the first due by January 1, 2022. To meet this requirement, Valley Water prepared the 2021 Plan[6], which was adopted by Valley Water's Board on November 23, 2021 after a public hearing. Valley Water's comprehensive groundwater management programs and investments described in the Plan have resulted in sustainable groundwater conditions for many decades and will ensure groundwater resources are sustainable into the future.

Under the California Code of Regulations Title 23, Division 2, Chapter 1.5, Subchapter 2, Article 7, §356.2, each agency shall submit an annual report to DWR by April 1 of each year following adoption of the Plan. This report for Water Year (WY) 2022 is the sixth annual report submitted to DWR. It covers the Santa Clara Subbasin (DWR Basin 2-9.02) and the Llagas Subbasin (Basin 3-3.01), which are managed in their entirety by Valley Water. Figure 1 shows the location of the two groundwater subbasins.

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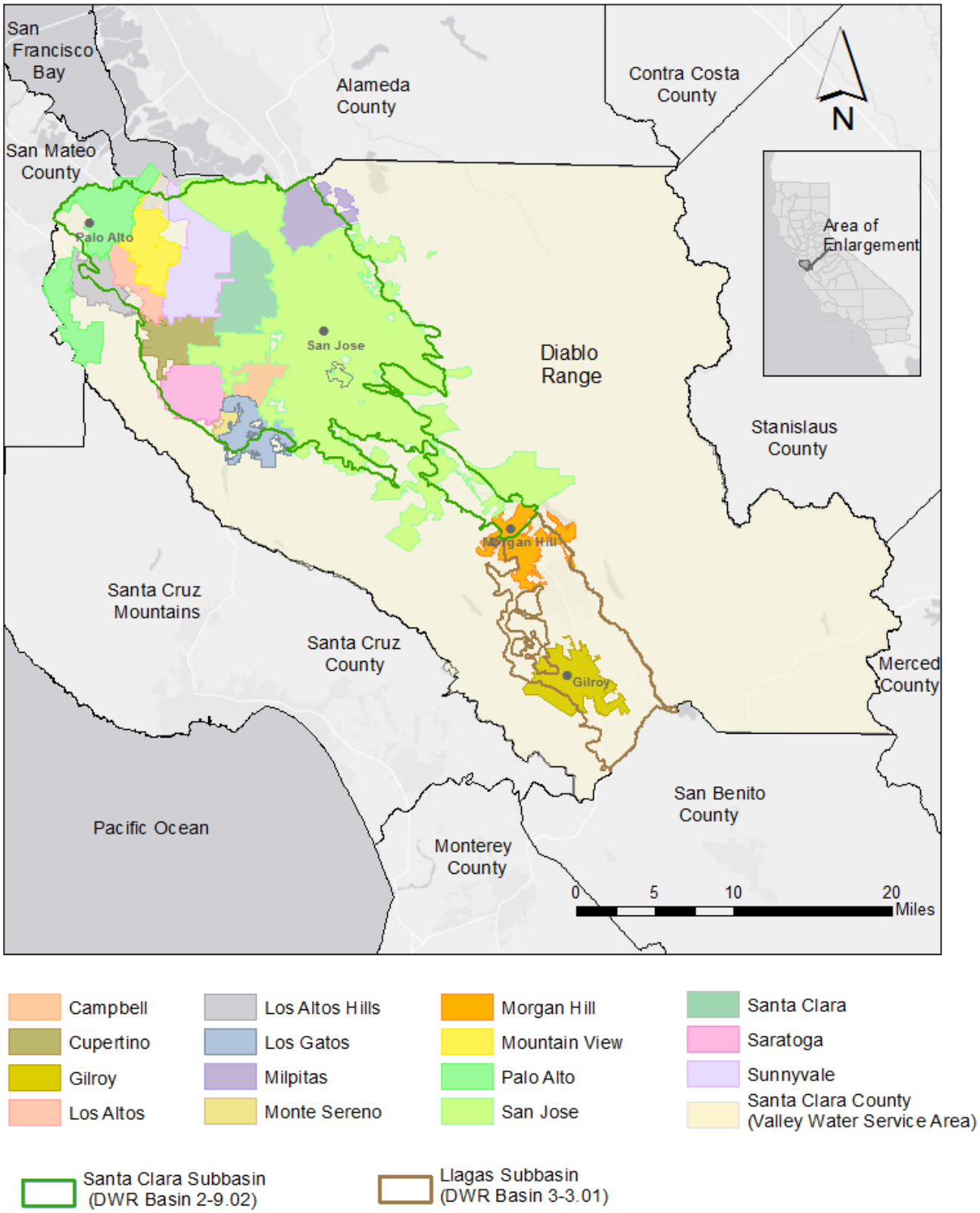
[5] Santa Clara Valley Water District Act, Water Code Appendix, Chapter 60.
[6] https://www.valleywater.org/your-water/where-your-water-comes/groundwater/sustainable

Figure 1. Santa Clara and Llagas Subbasin Location Map



CHAPTER 2 – GROUNDWATER ELEVATION DATA

Valley Water tracks groundwater elevations, groundwater quality, and land subsidence through comprehensive groundwater monitoring programs. In WY 2022, Valley Water collected monthly groundwater elevation readings at 168 wells in the Santa Clara Subbasin and 62 wells in the Llagas Subbasin. Furthermore, local water retailers shared groundwater elevation data at 115 wells. While this report provides a summary of groundwater elevations based on 11 regional wells, all available countywide groundwater elevation data are accessible through the Monitoring Network Module within DWR's SGMA portal[7] and the Valley Water website.[8] All well information in the Monitoring Network Module was recently updated to reflect current surveyed latitude and longitude coordinates.

Groundwater elevation contour maps for the Santa Clara and Llagas subbasins with related measurement locations are presented in Figures 2 and 3 for Spring 2022 and Fall 2022, respectively.[9] These contours represent the principal aquifer within each subbasin because those aquifers support the vast majority of pumping. Seasonal high groundwater conditions typically occur in March or April, with seasonal lows in September or October. The spring and fall maps (Figures 2 and 3) were created using the water level readings measured closest to March 31, 2022 and September 30, 2022, respectively.

This report also presents groundwater elevation data from 11 regional wells in the Santa Clara and Llagas subbasins (Figure 4); these wells are spatially distributed within the two subbasins and various cities in the county. Hydrographs for these regional wells show the static water level trend over the period of record, which varies by well (Figure 5).

After the 2012 to 2016 drought, groundwater elevations recovered quickly due to robust managed recharge and continued water use reduction by the community, with water levels in many wells near or above historical high levels. This managed recovery of groundwater levels resulted in healthy groundwater conditions in WY 2017 through 2020 (Figure 5), with the groundwater basins essentially full heading into the recent drought (2020 to present). WY 2022 groundwater elevations in many regional wells were lower than WY 2021 due to statewide drought conditions and increased groundwater pumping. However, the groundwater elevations remain far above the historical minima and levels observed during the last major droughts of 1987-1992 and 2012-2016. Despite drought conditions, artesian pressures were observed in the northern Santa Clara Subbasin. Groundwater elevations in WY 2022 were also well above Valley Water thresholds established to minimize the risk of land subsidence in the Santa Clara Subbasin.[10]

[7] https://sgma.water.ca.gov/portal/
[8] https://gis.valleywater.org/GroundwaterElevations
[9] Groundwater elevations in this report use the North American Vertical Datum of 1988 (NAVD 88).
[10] As described in the Plan, land subsidence was a significant issue historically in the central and northern Santa Clara Subbasin. See Valley Water's Annual Groundwater Report for a detailed discussion of recent subsidence monitoring: https://www.valleywater.org/groundwater.

Figure 2. Spring 2022 Groundwater Elevation Contours

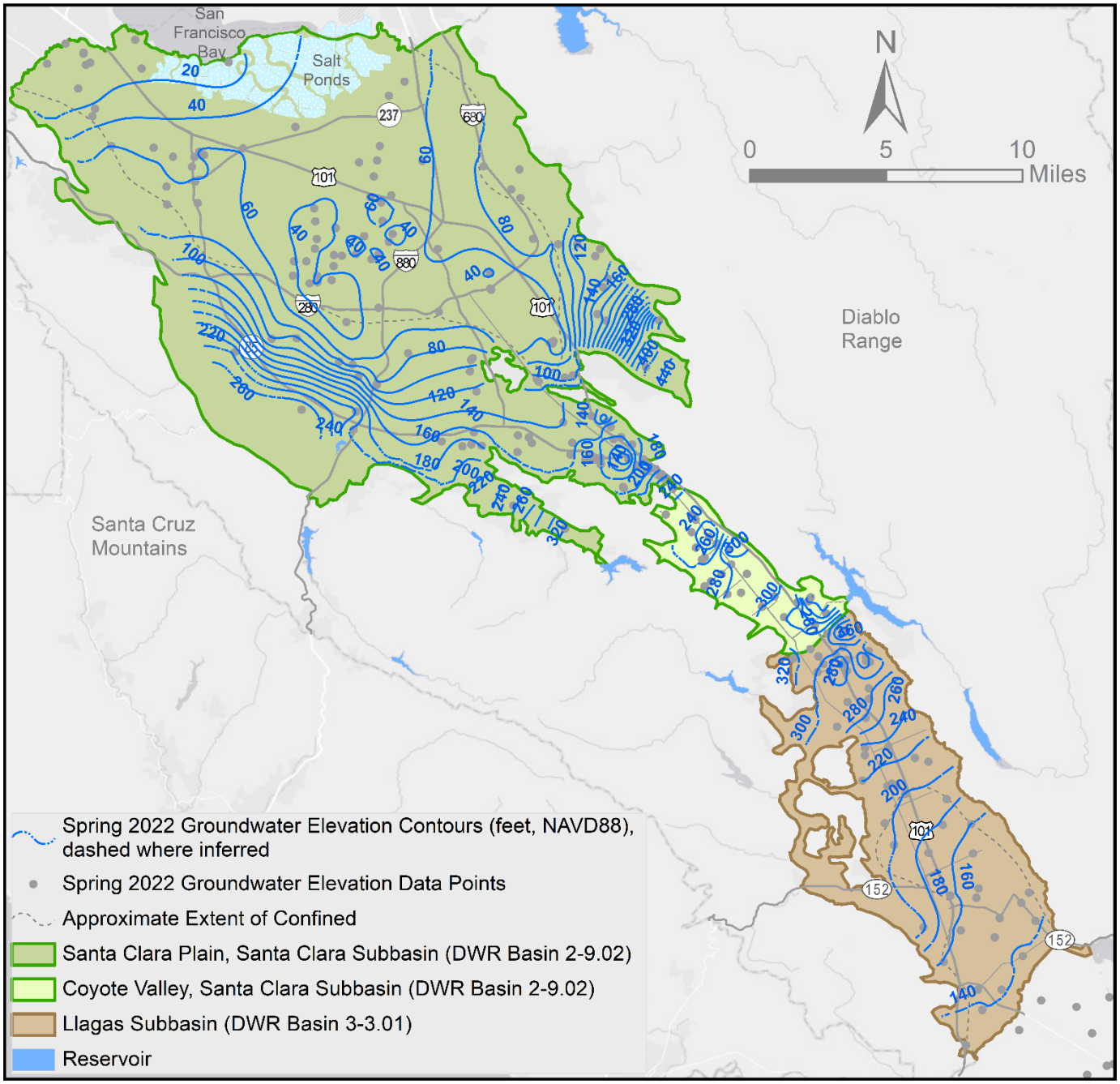


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Figure 3. Fall 2022 Groundwater Elevation Contours

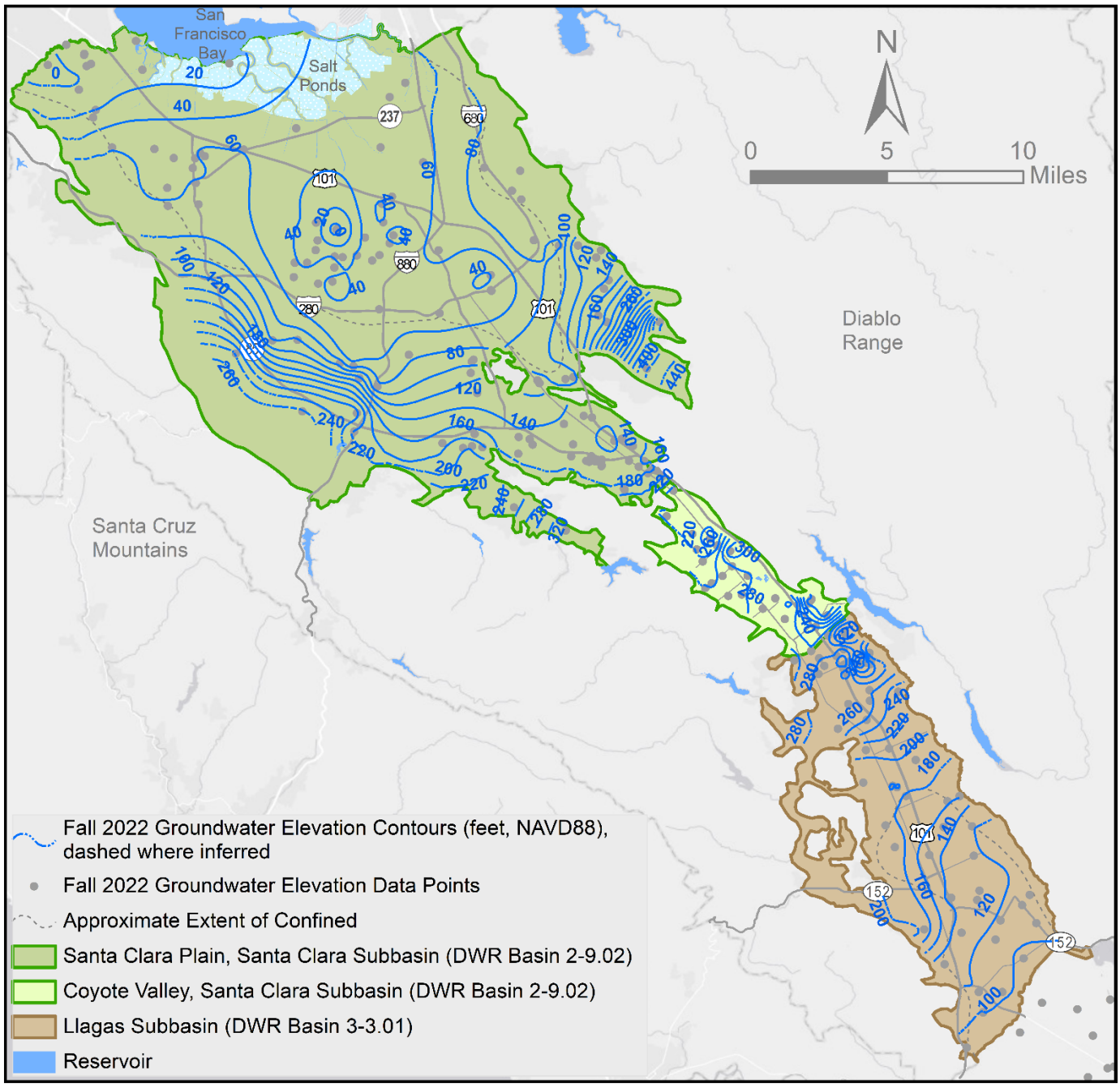

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Figure 4. Regional Groundwater Elevation Monitoring Wells

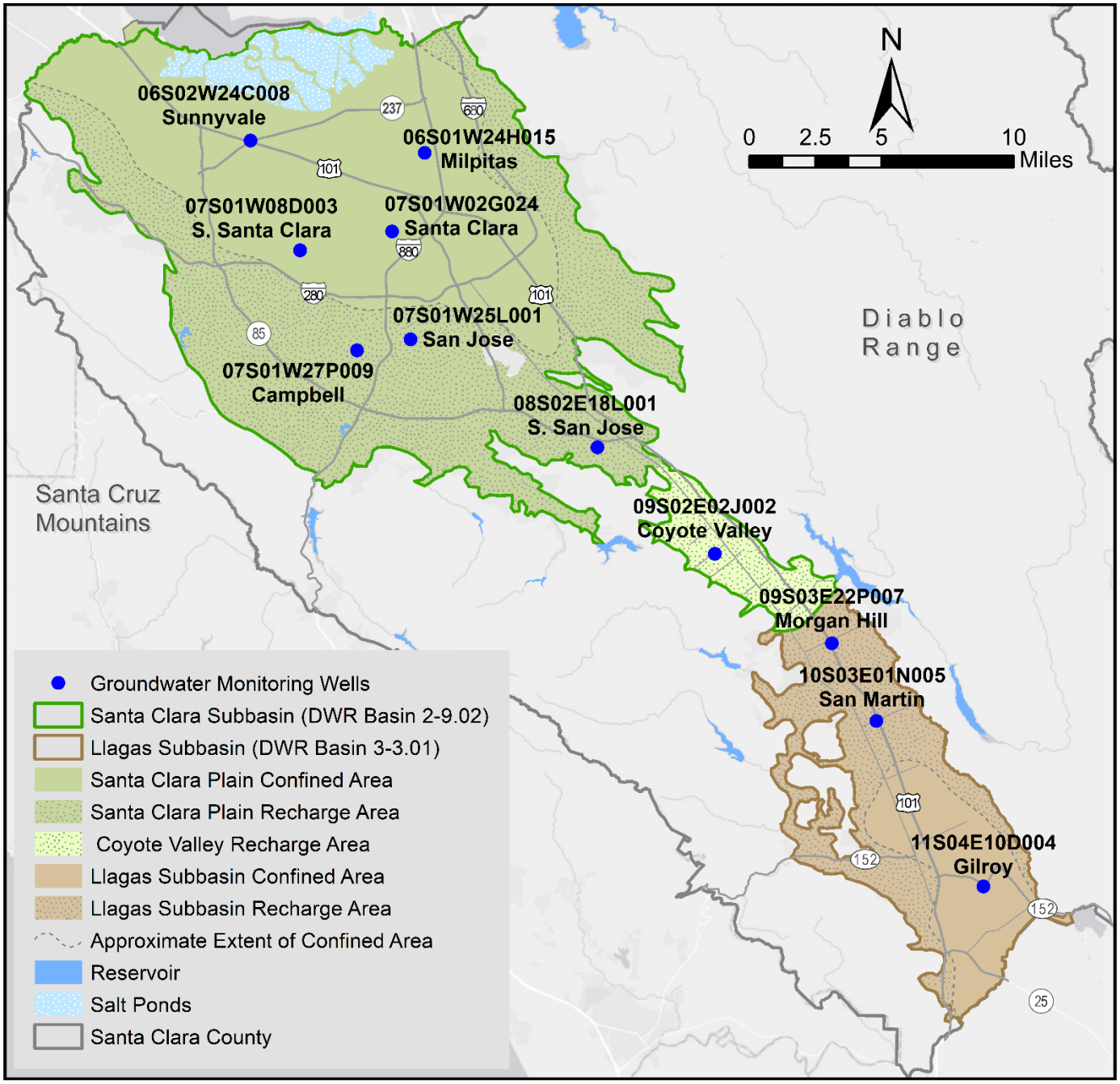
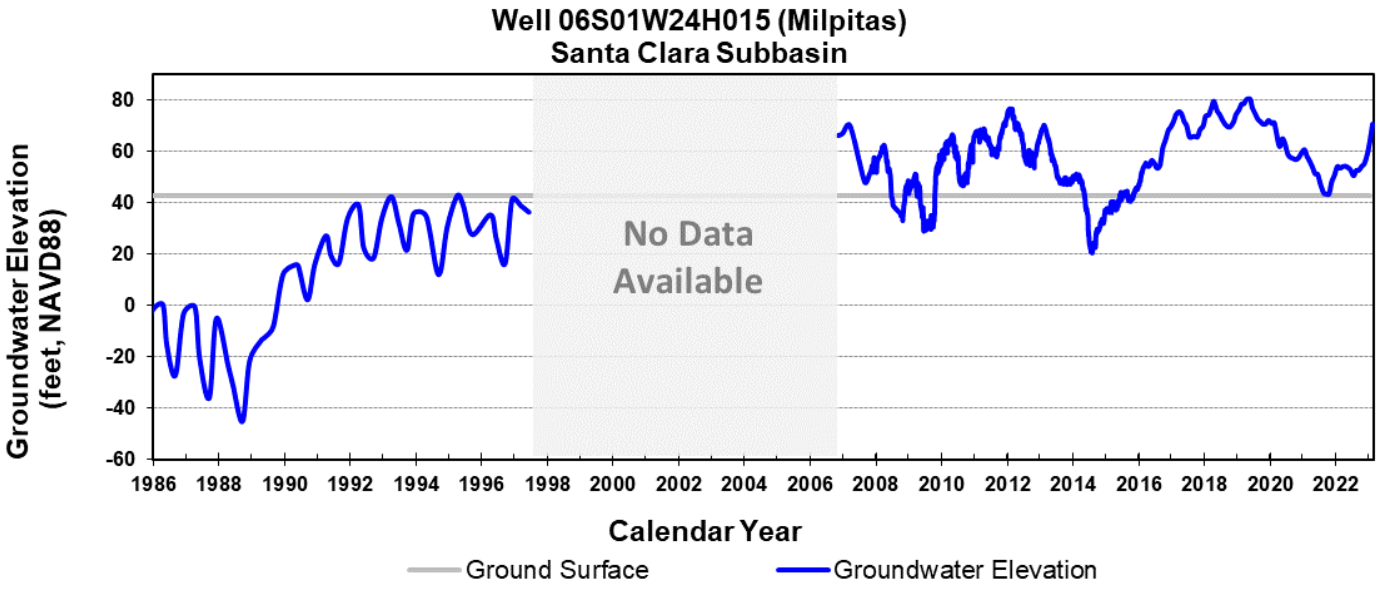
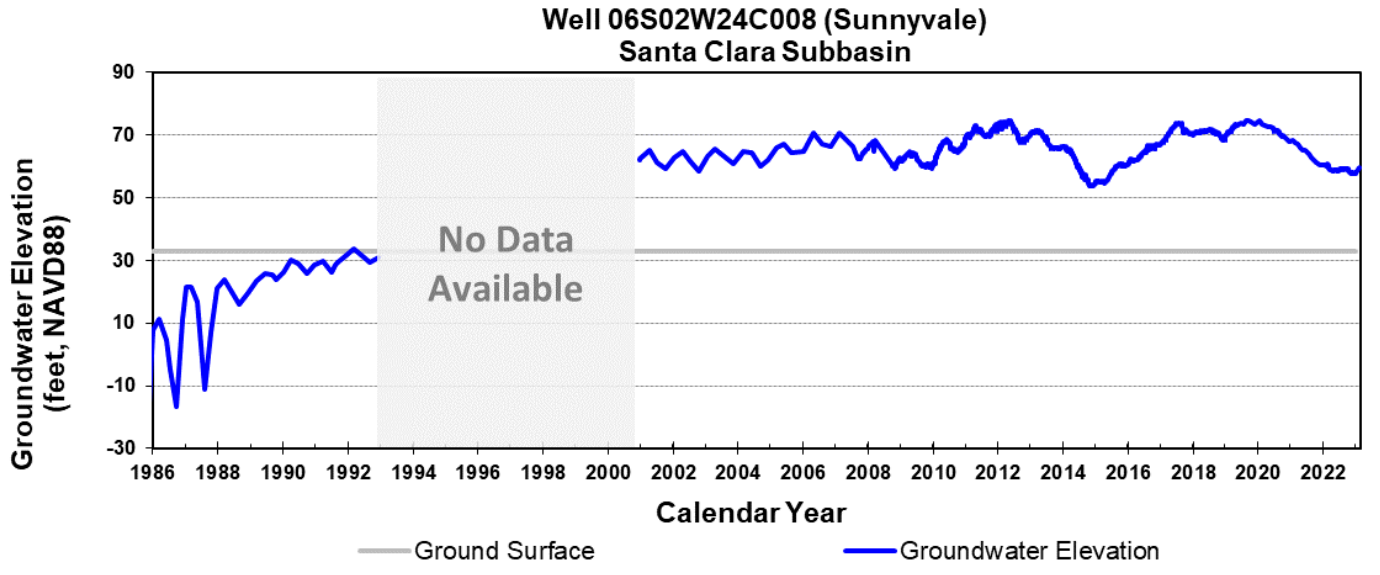


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells

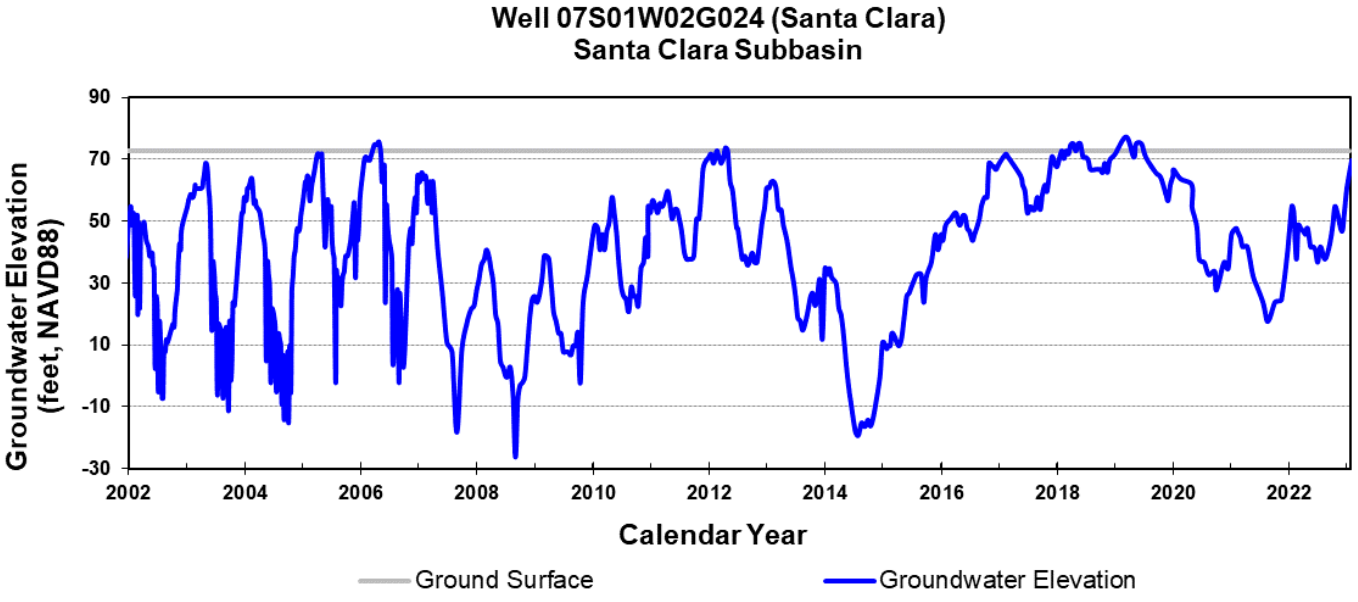


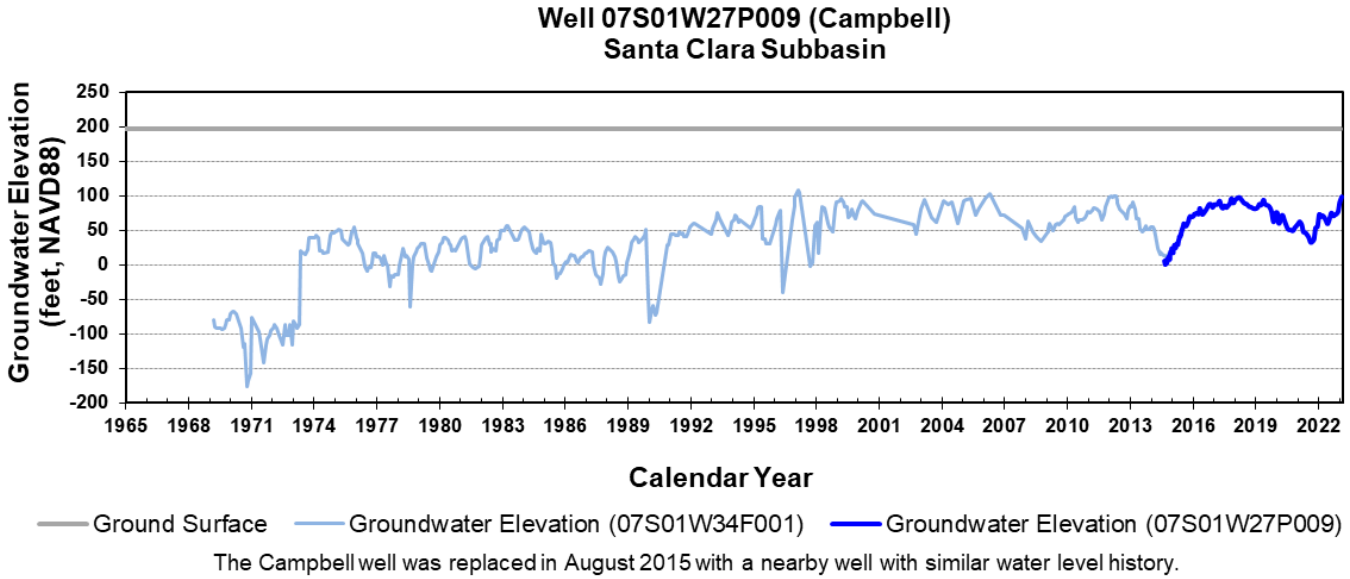
During period with no data available, well was observed to be artesian but there was no pressure gauge installed.



During period with no data available, well was observed to be artesian but there was no pressure gauge installed.

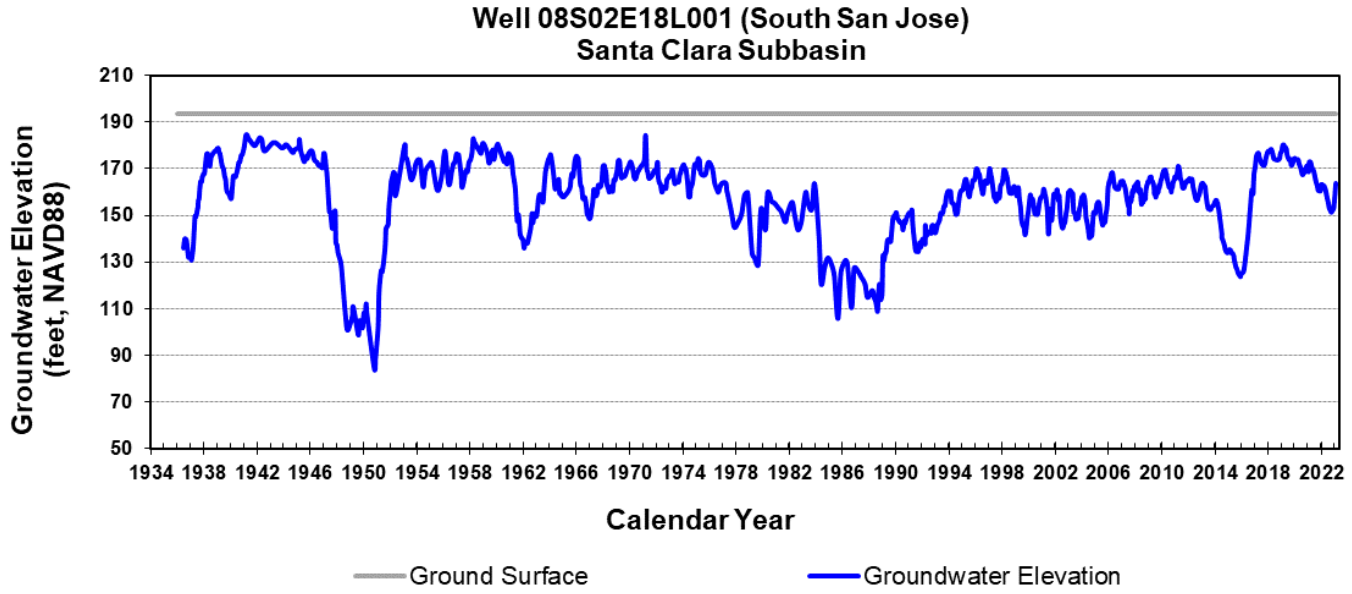
Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)





The Campbell well was replaced in August 2015 with a nearby well with similar water level history.

Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



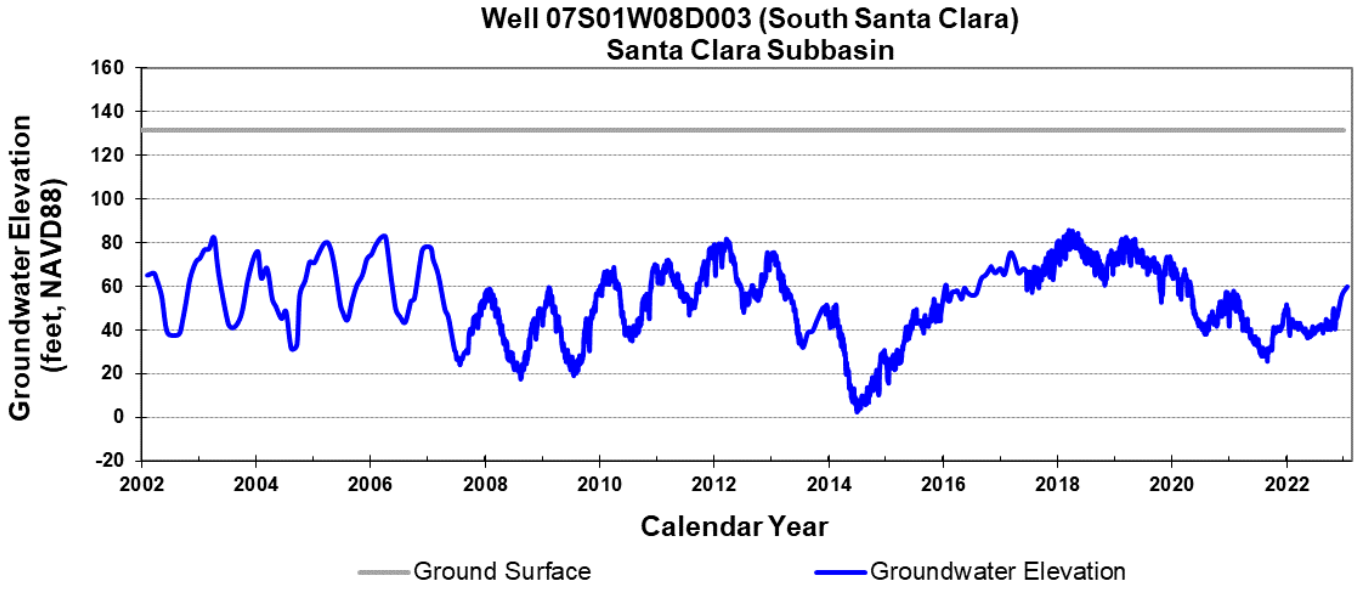
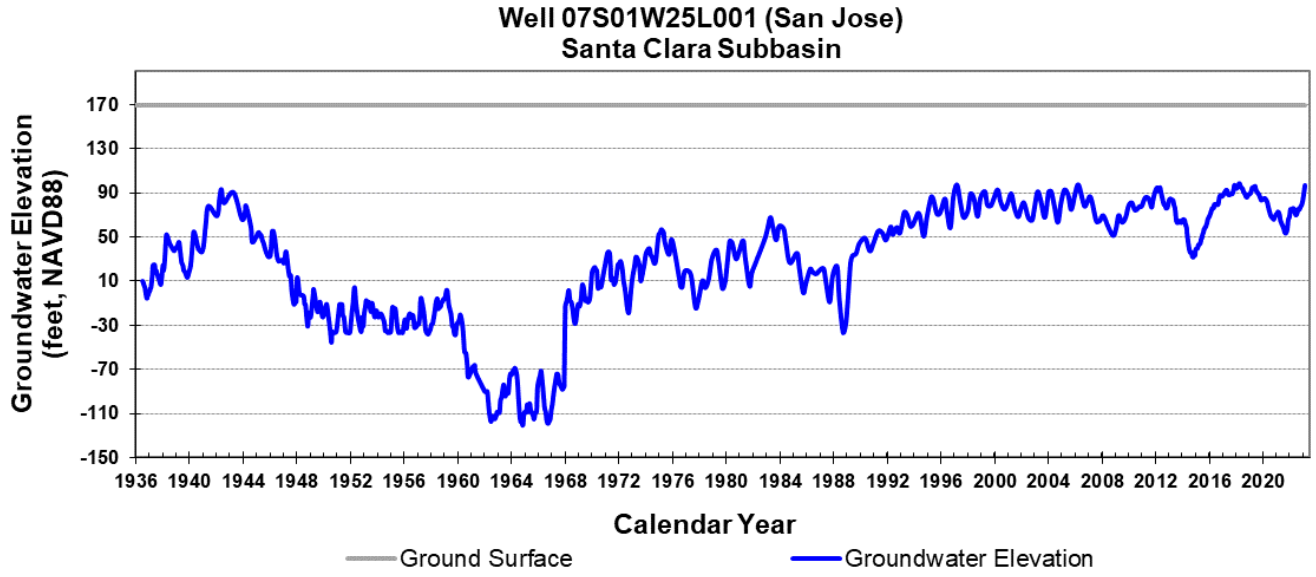


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



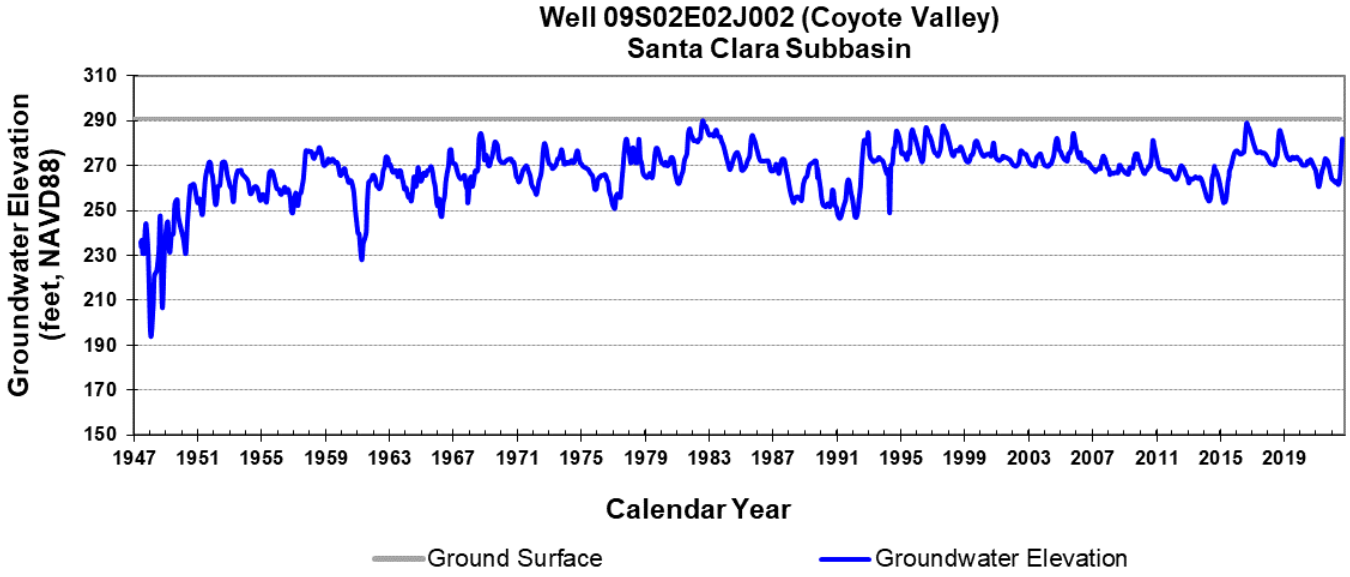
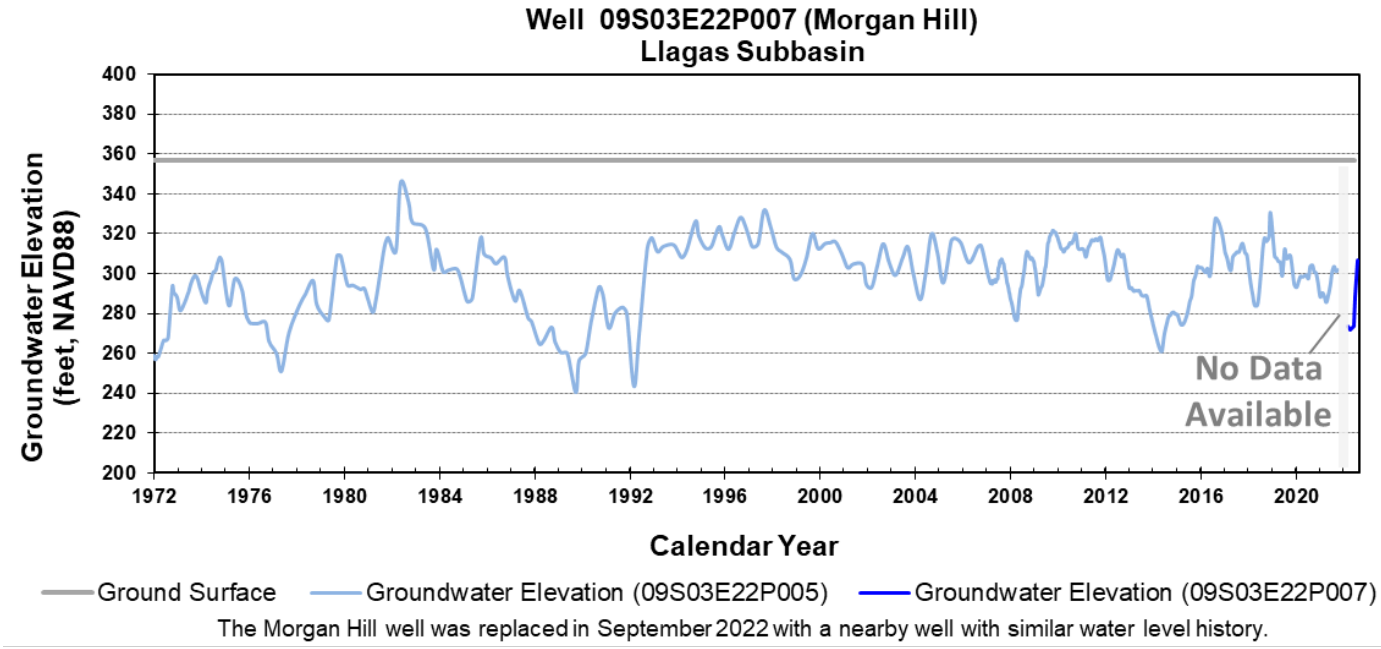


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



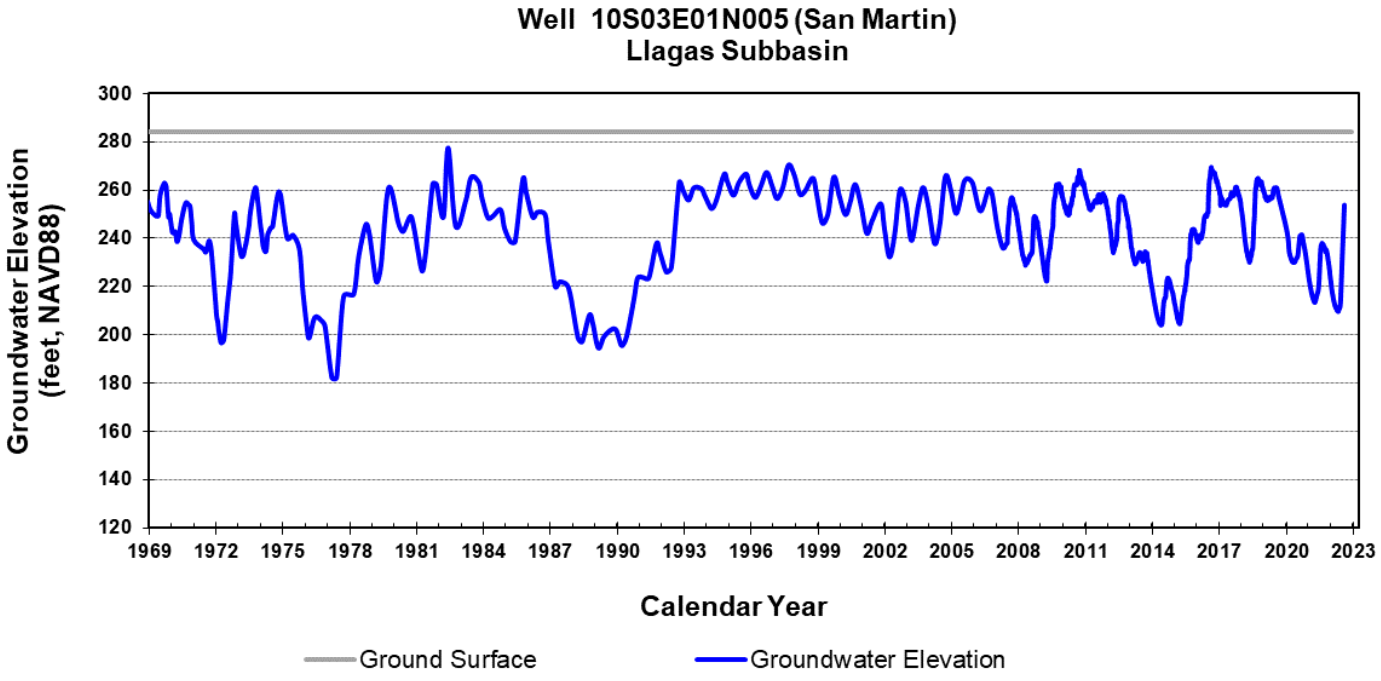
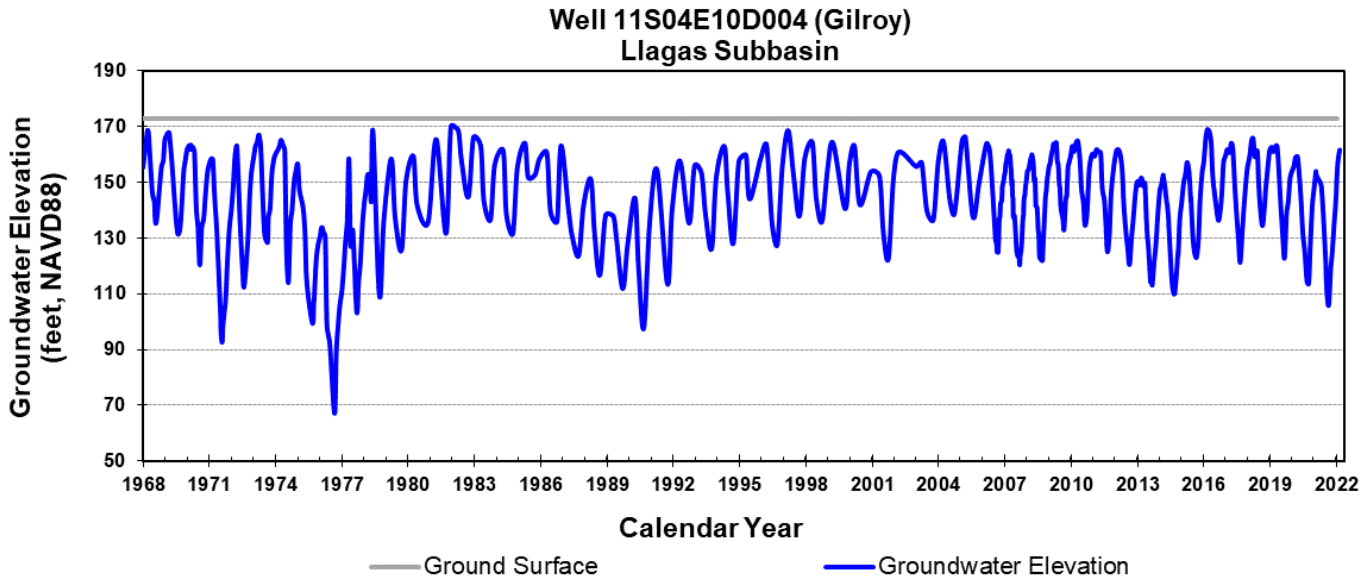


Figure 5. Hydrographs at Regional Groundwater Elevation Monitoring Wells (continued)



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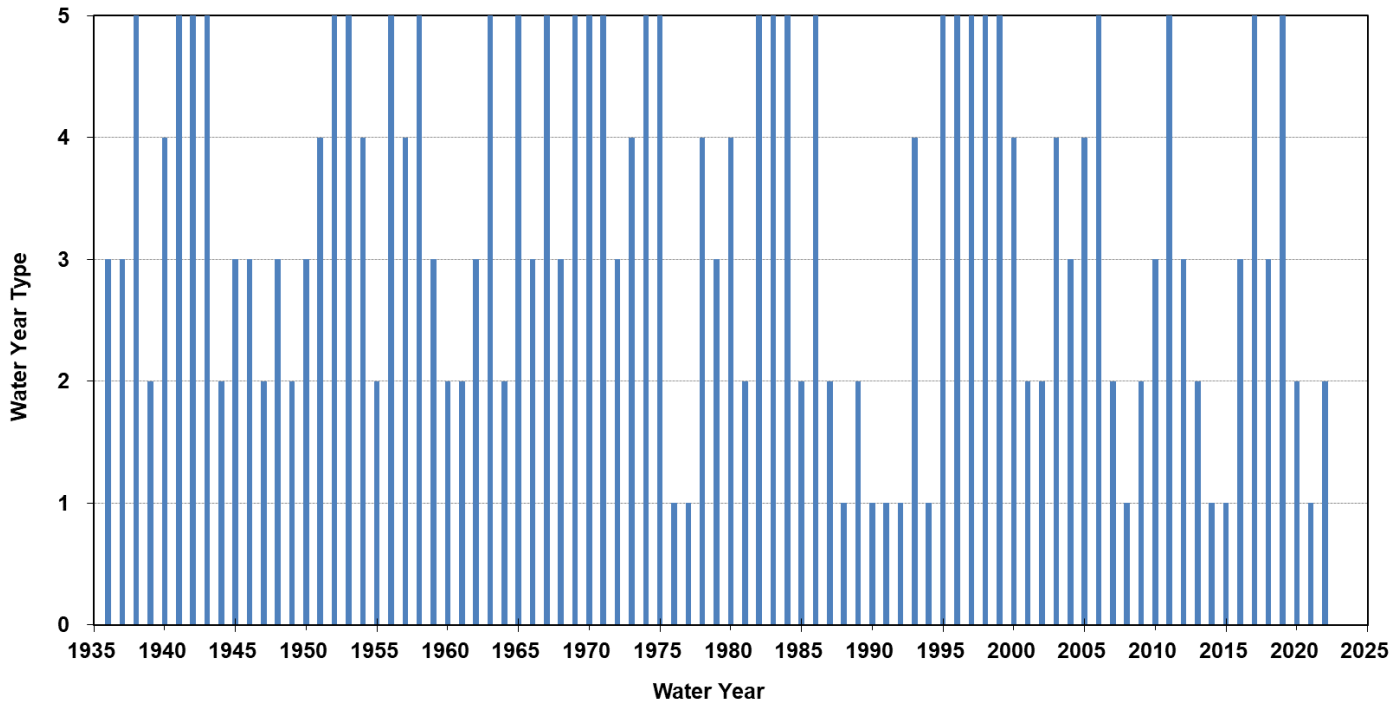
Chapter 2 – Groundwater Elevation Data

According to DWR, WY 2022 was a third dry water year type, although it was not as extreme as the preceding WY 2021[11]. Valley Water uses the DWR Sacramento River Index (SRI) (Figure 6) to help model hydrologic conditions in Santa Clara County because this index reflects conditions in the Sierra and the Sacramento-San Joaquin Delta that influence Valley Water's imported water deliveries. Rainfall stations within Santa Clara County confirm that the rainfall in WY 2022 was below the historical average. For example, rainfall at the San Jose International Airport (Station ID SJC) was approximately 8.86 inches or 72% of average.

Figure 6. Water Year Types from WY 1936 to 2021 – Sacramento River Index (SRI)



Notes: Water Year Types per DWR SRI: 1 (Critical); 2 (Dry); 3 (Below Normal); 4 (Above Normal); 5 (Wet)

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[11] Department of Water (DWR), Water Year 2022: The drought continues, California Department of Water Resources, Sacramento, CA, 12 pages, available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/Water-Year-2022-Brochure_ay11.pdf

CHAPTER 3 – WATER SUPPLY AND USE

Valley Water manages a diverse water supply portfolio, with sources including groundwater, local surface water, imported water, and recycled water. About half of the county's water supply comes from local sources with the other half from imported sources. Imported water includes Valley Water's State Water Project (SWP) and Central Valley Project (CVP) contract supplies, and supplies delivered by the San Francisco Public Utilities Commission (SFPUC) to water retailers in northern Santa Clara County. Local sources include natural groundwater recharge and surface water supplies. A smaller but growing portion of the county's local water supply is recycled water. Valley Water's goal is to develop recycled water and purified water to provide for at least 10% of Santa Clara County demands.

Valley Water distributes local and imported surface water supplies to managed recharge facilities, three drinking water treatment plants, local creeks for environmental needs, or directly to water users. The conjunctive management of surface water and groundwater maximizes water supply reliability, allowing Valley Water to store surface water in local groundwater basins to help balance pumping and provide reserves for use during dry years or water shortages.

3.1 Groundwater Extraction

Total groundwater pumping in WY 2022 was 122,400 AF, providing 43% of the water used by county residents and businesses. Figure 7 shows the location and volume of groundwater pumping, and Table 1 summarizes pumping by subbasin and water use category. About 81,000 AF of groundwater was pumped in the Santa Clara Subbasin, with about 95% of that supporting municipal and industrial (M&I) uses (Table 1). Agricultural and domestic use totaling 4,000 AF was mostly in the more rural Coyote Valley in the southern Santa Clara Subbasin.

Total pumping in the Llagas Subbasin was 41,400 AF (Table 1). In this subbasin, agricultural use was more significant (23,400 AF), accounting for 57% of the total pumping. M&I groundwater use was 16,300 AF or 39% of subbasin pumping. While the quantity of groundwater used for domestic purposes was relatively small in the Llagas Subbasin (1,700 AF or 4%), over 2,800 individual domestic wells reported groundwater use in WY 2022.

Groundwater pumped from the subbasins is recorded in accordance with the Santa Clara Valley Water District Act. This act requires well owners and operators to register all wells within the county and to file monthly, semi-annual, or annual production statements for water-producing wells within Valley Water's groundwater benefit zones, with reporting frequency dependent on the amount of water produced. By Board Resolution, meters are only installed at those sites determined to be economically feasible per approved criteria or as required to facilitate the complete and accurate collection of groundwater production revenue. In the northern Zone W-2, which essentially overlaps the northern Santa Clara Subbasin (Santa Clara Plain groundwater management area), meters are required for facilities producing more than 4 AF of agricultural water or more than 1 AF of non-agricultural water annually. Within Zones W-5 and W-8 (Llagas Subbasin) and W-7 (Coyote Valley groundwater management area of the Santa Clara Subbasin), meters are required for facilities producing more than 20 AF of agricultural water or more than 2 AF of non-agricultural water.

Metered wells extracted the vast majority (107,800 AF or 88%) of the groundwater pumped in WY 2022 (Table 1). Where meters were not used, crop factors were used to determine agricultural water use, whereas domestic use was estimated from a table of average uses.

Figure 7. WY 2022 Groundwater Pumping in the Santa Clara and Llagas Subbasins

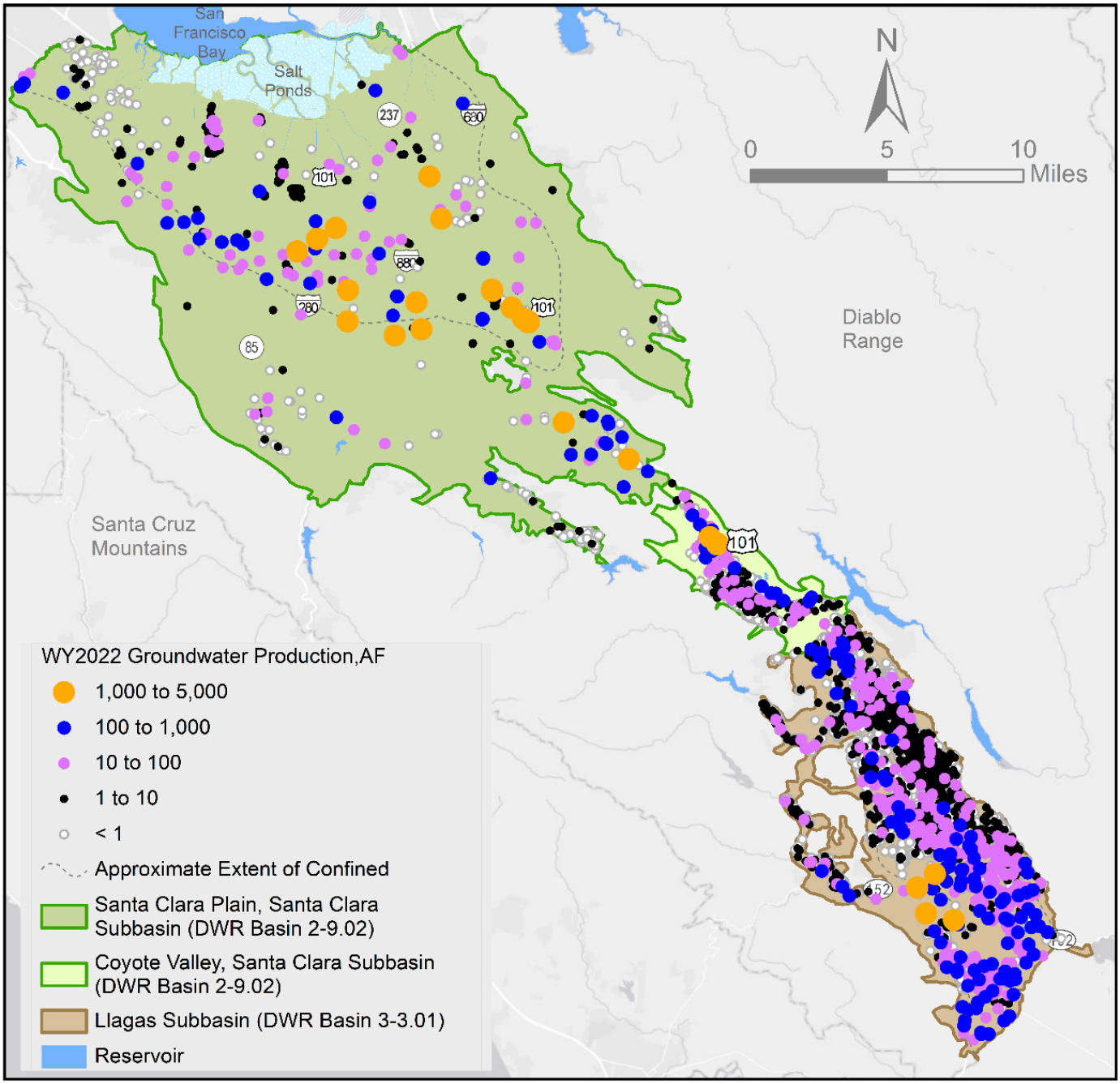


Table 1. WY 2021 Groundwater Pumping (AF) by Water Use

Water Use Sector	Measurement Method	Santa Clara Subbasin (Zones W-2 and W-7)	Llagas Subbasin (Zones W-5 and W-8)	Total Pumping
M&I	Metered	71,600	15,500	87,100
	Estimated	5,400	800	6,200
Domestic	Metered	0	100	100
	Estimated	300	1,600	1,900
Agricultural	Metered	3,000	17,600	20,600
	Estimated	700	5,800	6,500
Total		**81,000**	**41,400**	**122,400**

Notes:

- As shown above, the majority (88%) of groundwater pumping is metered. Smaller pumpers are required to report production semi-annually or annually on a fiscal year (July 1 – June 30) basis. Non-metered pumpers report groundwater pumping based on crop factors (agricultural use) or table of average uses (domestic use). In this table, estimated pumping shown for the water year is based on fiscal year reporting and typical pumping patterns.
- All values are rounded to the nearest hundred.
- In general, metered groundwater pumping has an accuracy within 2%. For metered wells that are used for multiple purposes (especially agricultural and domestic), while the total volume pumped is within this accuracy, the allocation between various uses may be estimated. Reporting accuracy is not applicable for the estimated groundwater pumping.

3.2 Surface Water Supply Used

In WY 2022, Valley Water actively recharged about 88,900 AF of imported and local surface water in the Santa Clara and Llagas subbasins. Valley Water also provided about 92,400 AF of in-lieu recharge, which includes 90,500 AF of treated surface water deliveries to retailers (cities and water companies) and 1,900 AF of raw surface water deliveries to customers (Table 2). This is in addition to raw surface water delivery by SJWC (4,800 AF) and deliveries by the SFPUC to eight water retailers (45,300 AF) overlying the Santa Clara Subbasin and recycled water deliveries by four recycled water producers and Valley Water (17,100 AF), which totaled 67,200 AF countywide (Table 2). Valley Water's long-term water conservation programs also saved about 81,000 AF, which further reduced the demand on groundwater.

Valley Water Managed Recharge

Valley Water replenishes the groundwater subbasins with imported water and watershed runoff captured in 10 local reservoirs. Valley Water's recharge facilities include more than 285 acres of recharge ponds and over 91 miles of creeks. Imported sources include the SWP and CVP. The volumes of imported or local water used for managed recharge each year depend on many factors including hydrology, imported water allocations, water treatment plant demands, and environmental needs. In general, a greater percentage of local water is used for recharge in wet years due to increased capture of storm runoff in local reservoirs. In WY 2022, Valley Water recharged about 70,000 AF of local and imported water in the Santa Clara Subbasin and about 18,900 AF in the Llagas Subbasin.

Table 2. Santa Clara County Total Water Use in AF for WY 2022

Water Use[1]	Santa Clara Subbasin	Llagas Subbasin	County-wide	Measurement Method	Accuracy	Source	Sector
Groundwater Pumped	81,000	41,400	122,400	Metered (88%) and estimated (12%)[2]	Within 2% (metered)	Managed recharge of local runoff and imported (SWP/CVP) water, natural recharge	M&I, domestic, and agricultural[3]
Valley Water Treated Water Deliveries	90,500	0	90,500	Metered	Within 2%	Local runoff and imported (SWP/CVP) water	M&I
Valley Water Raw Surface Water Deliveries	1,400	500	1,900	Metered (95%) and estimated[2]	Within 2% (metered)	Local runoff and imported (SWP/CVP) water	M&I, domestic and agricultural
SFPUC Supplies to Local Retailers[4]	45,300	0	45,300	Metered	Within 1.5%	Surface water reservoirs[5]	M&I
SJWC Raw Surface Water Deliveries	4,800	0	4,800	Metered	Within 2% (metered)	Local Surface Water Reservoirs	M&I
Recycled Water	14,400	2,700	17,100	Metered	Variable[6]	Treated wastewater	M&I and agricultural
Total[7]	**237,400**	**44,600**	**282,000**				

[1] All water use values are rounded to the nearest hundred.

[2] Production from some smaller wells and raw surface water users is estimated using a table of average uses or crop factors.

[3] Groundwater use by sector is shown in Table 1.

[4] San Francisco Public Utilities Commission (SFPUC) supplies water to eight (8) retailers in Santa Clara County and NASA-AMES (https://sfwater.org/index.aspx?page=355).

[5] SFPUC primary sources are surface water reservoirs with runoff mainly from the Hetch Hetchy watershed and also from the Alameda and Peninsula watersheds. More information is available at: https://sfwater.org/index.aspx?page=355.

[6] Recycled water meter accuracy varies as each of the four producers within the county uses different methods to measure production and delivery of recycled water.

[7] Local water rights used by Stanford within the Santa Clara Subbasin are not reflected in the total because their local water rights have historically amounted to <3% of the total for the Santa Clara Subbasin.

In-Lieu Use of Surface Water Supplies

Valley Water's treated and raw surface water deliveries, SJWC raw surface water delivery, SFPUC supplies to local retailers, and recycled water play a critical role in maintaining groundwater elevations and storage by reducing demands on groundwater. Table 2 summarizes the supplies from these categories in areas that were historically primarily or solely served by groundwater.

3.3 Total Water Use

Total estimated water use in Santa Clara County in WY 2022 is summarized in Table 2, which includes water use categories, measurement methods and accuracy, water sources, and use sectors. While the county boundary extends beyond the subbasins, the vast majority of the population and water use coincides with the subbasins.

3.4 Change in Groundwater Storage

Due to increased recharge and decreased groundwater use starting in WY 2021 and continuing through WY 2022, Valley Water estimates a net increase in countywide groundwater storage of 2,200 AF in WY 2022 compared to WY 2021. Storage increased by 2,500 AF in the Santa Clara Subbasin and decreased by 300 AF in the Llagas Subbasin (Figure 8). Groundwater storage is the primary trigger for action under Valley Water's Water Shortage Contingency Plan, and storage remained within the low "Normal" stage in WY 2022.

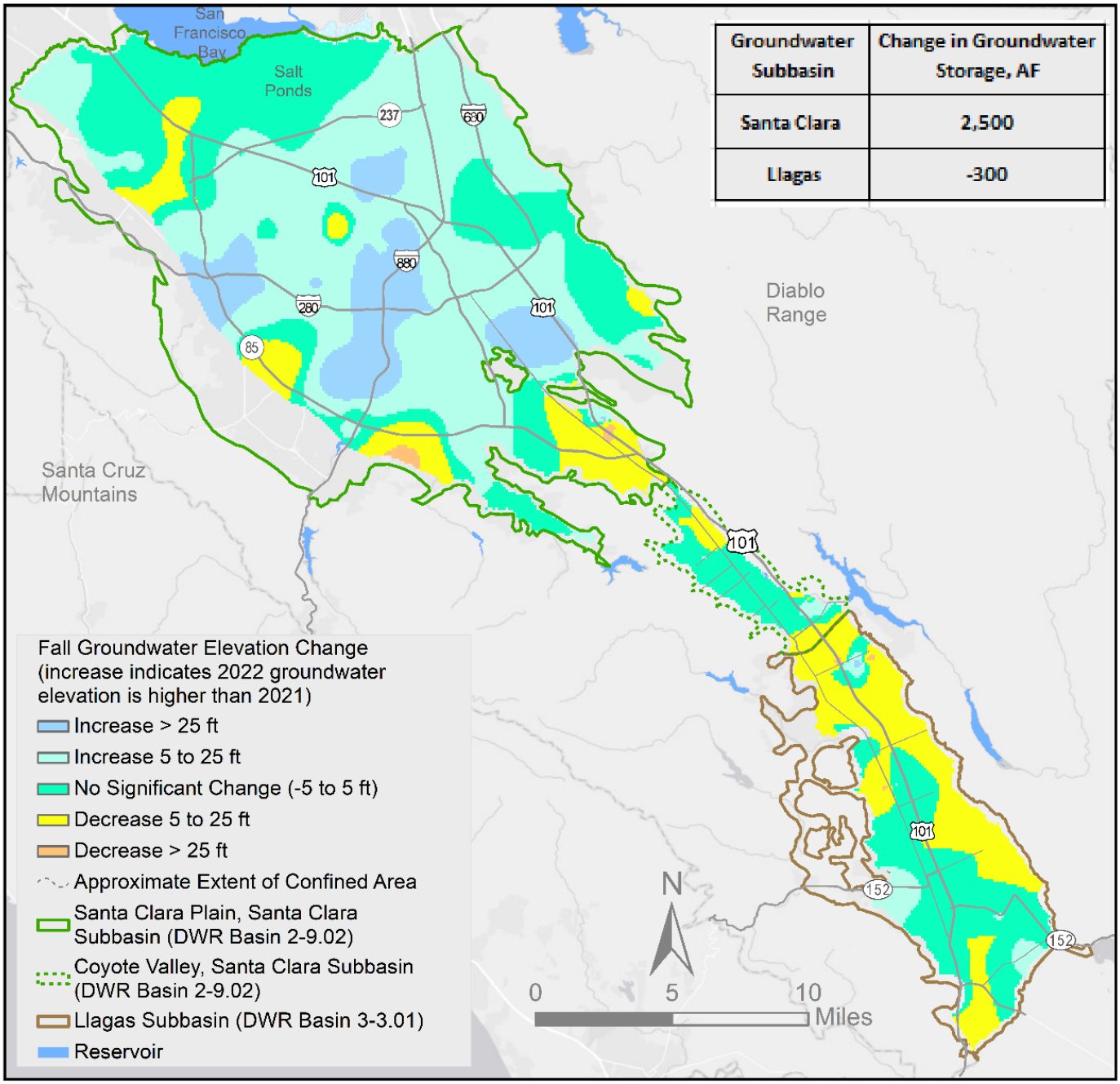
While groundwater conditions remain sustainable, the current drought and ten-year loss of storage in Valley Water's largest reservoir due to seismic retrofit pose significant near-term risks to local water supplies. In response to these risks, on June 9, 2021, Valley Water's Board declared a water shortage emergency condition in Santa Clara County. The Board also called for a mandatory 15% reduction in water use compared to 2019, which remained in effect for WY 2022. In addition to this call for conservation by the community, Valley Water worked to secure emergency imported water supplies to support managed recharge and treated water deliveries. These actions along with groundwater storage within the Normal stage at the end of WY 2021 have enabled groundwater storage to remain in the Normal stage in WY 2022.

Figure 8 depicts the change in groundwater elevation from October 2021 to September 2022 at more than 200 principal aquifer water level wells in the Santa Clara Subbasin and more than 55 wells in the Llagas Subbasin. The corresponding change in groundwater storage of 2,200 AF for the Santa Clara and Llagas subbasins (Figure 8) is estimated from Valley Water's calibrated groundwater flow models.

Figures 9 and 10 present the water year type, groundwater use, annual change in groundwater storage, and cumulative change in groundwater storage for the Santa Clara and Llagas subbasins, respectively, from WY 1991 through WY 2022. These figures show that over this period, the annual change within each basin has most frequently been an increase in groundwater storage. The most notable exceptions, also evident in hydrographs, occur during droughts, as expected. However, Valley Water programs to recharge and manage groundwater support

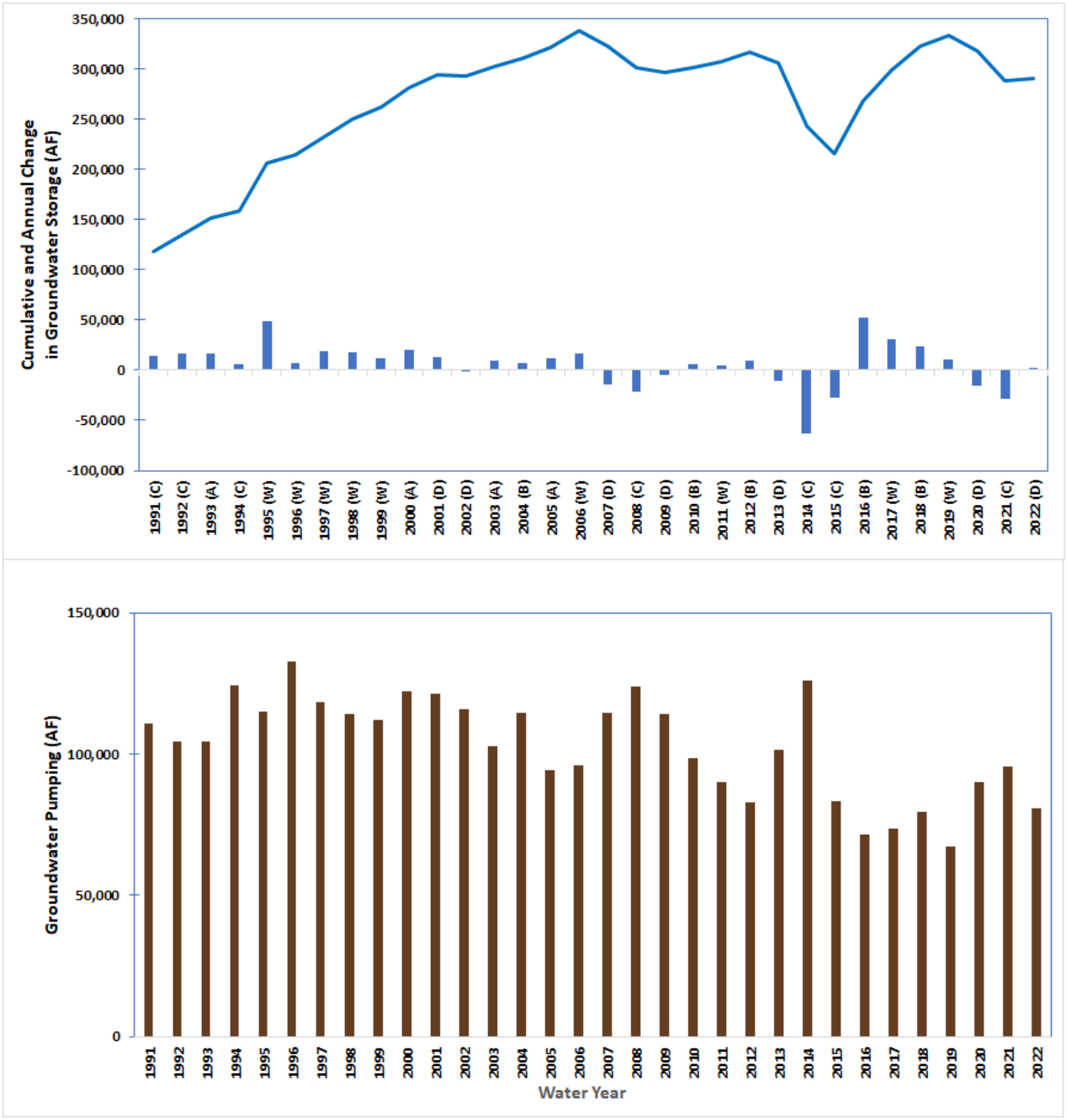
timely recovery of water levels and storage, helping ensure long-term sustainability. As mentioned previously, groundwater levels and storage in the Santa Clara and Llagas subbasins quickly recovered from the 2012-2016 drought, and Valley Water expects a similar recovery when the current drought ends. While dry conditions are resulting in decreased water levels and storage, Valley Water has demonstrated proactive shortage response and ability to ensure groundwater recovery.

Figure 8. Change in Groundwater Elevation and Storage from October 2021 to September 2022



Groundwater Subbasin	Change in Groundwater Storage, AF
Santa Clara	2,500
Llagas	-300

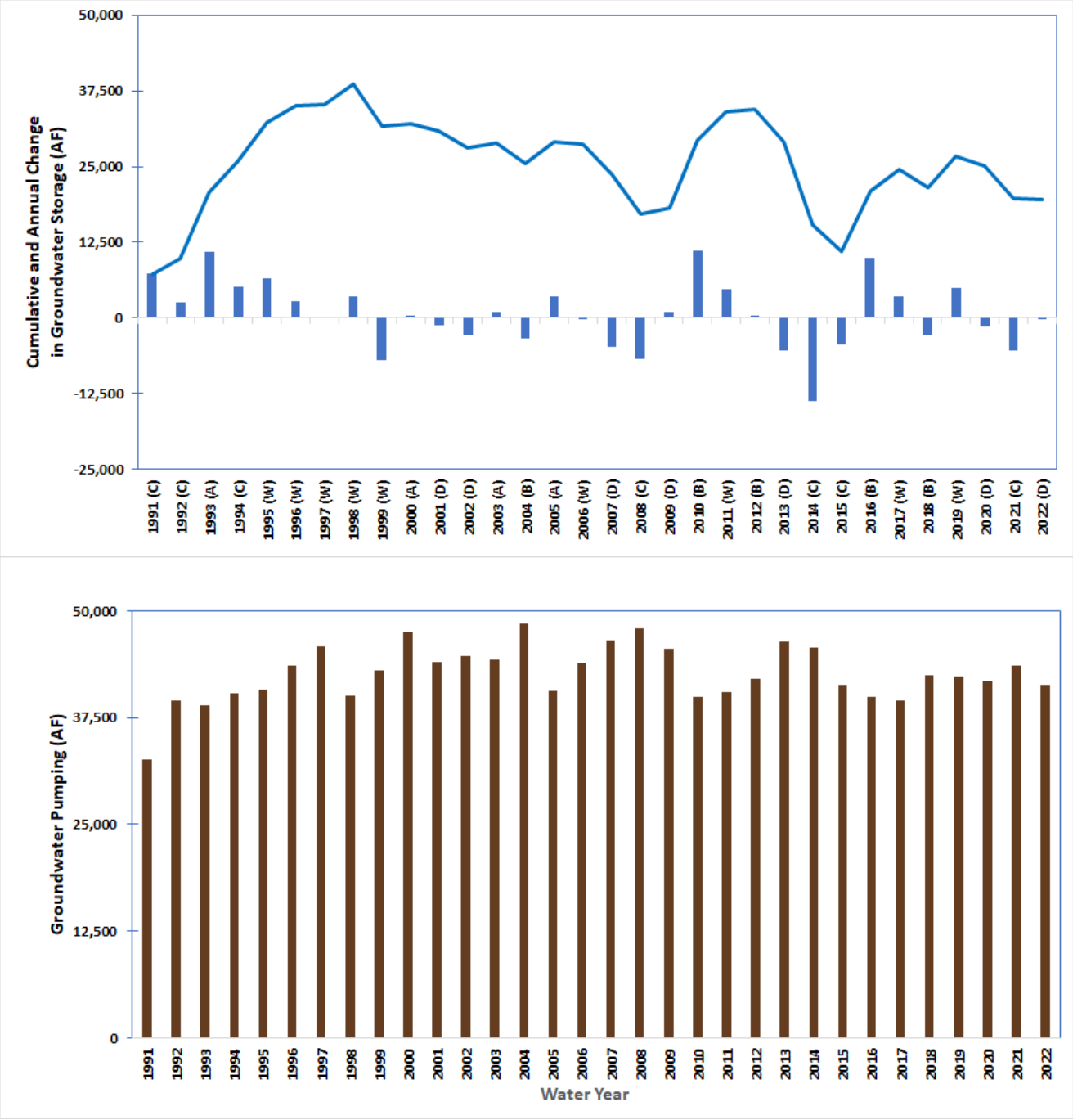
Figure 9. Groundwater Use and Change in Storage in the Santa Clara Subbasin



Notes:

- DWR SRI water year types are: Critical (C), Dry (D), Below Normal (B), Above Normal (A), and Wet (W).
- The storage graph begins in 1991 because Valley Water estimates Santa Clara Subbasin storage using two numerical models. The Santa Clara Plain model for the northern Santa Clara Valley begins in 1970 while the Coyote Valley model for the southern part of the subbasin begins in 1991 as Valley Water did not begin managing that area until the late 1980s.
- Most groundwater pumping is reported monthly and is reported here by water year. However, pumpers that report semi-annually or annually provide data based on the fiscal year (July 1 to June 30). For these reporters, groundwater pumping shown in this figure represents the fiscal year, which is presumed to be similar to the water year.

Figure 10. Groundwater Use and Change in Storage in the Llagas Subbasin



Notes:

- DWR SRI water year types are: Critical (C), Dry (D), Below Normal (B), Above Normal (A), and Wet (W).
- The storage graph begins in 1991 because Valley Water estimates Llagas Subbasin storage using a numerical model that begins in 1991 as Valley Water did not begin managing that area until the late 1980s.
- Most groundwater pumping is reported monthly and is reported here by water year. However, pumpers that report semi-annually or annually provide data based on the fiscal year (July 1 to June 30). For these reporters, groundwater pumping shown in this figure represents the fiscal year, which is presumed to be similar to the water year

CHAPTER 4 – PLAN IMPLEMENTATION

Valley Water continues to implement the comprehensive conjunctive management, groundwater monitoring, and groundwater protection programs described in the Plan. As a result, groundwater levels and storage in the Santa Clara and Llagas subbasins remain sustainable.

The Plan presents six major recommendations to maintain the long-term sustainability of groundwater resources. A summary of the status of each recommendation is below.

1. **Maintain existing conjunctive water management programs and evaluate opportunities for enhancement or increased efficiency.**

   This Plan recommendation has several sub-recommendations, including items related to infrastructure reliability, high-priority capital project implementation, and securing imported water sources, among others. Valley Water continues to focus on extensive groundwater recharge through direct replenishment and in-lieu recharge. Updates relative to this Plan recommendation are presented below.

   Capital Projects Supporting Conjunctive Management

   Valley Water continues to implement a comprehensive Capital Improvement Program (CIP). Valley Water's Fiscal Year 2023-27 Five-Year CIP was approved by the Board on May 10, 2022.[12] With a significant portion of Valley Water's water supply infrastructure approaching fifty to sixty years of age, maintaining and upgrading the existing infrastructure to ensure each facility functions as intended for its useful life became the focus of the Water Supply CIP in recent years. The 2023-27 Five-Year CIP includes 29 Water Supply projects totaling $6.1 billion. Other CIP projects focus on expanding in-lieu and direct recharge through recycled and purified water projects. Major water supply capital improvements identified in the CIP include, but are not limited to:

   Storage:
   - Almaden Dam Improvements
   - Anderson Dam Seismic Retrofit
   - Calero Dam Seismic Retrofit
   - Guadalupe Dam Seismic Retrofit
   - Pacheco Reservoir Expansion
   - Dam Seismic Stability Evaluation
   - Coyote Pumping Plant Adjustable Speed Drives (ASD) Replacement
   - Coyote Warehouse
   - Small Capital Improvements, San Felipe Reaches 1-3

[12] The Fiscal Year 2023-27 Five-Year CIP is available at: https://www.valleywater.org/how-we-operate/five-year-capital-improvement-program

Transmission:
- 10-Year Pipeline Rehabilitation
- Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) Implementation
- Vasona Pumping Station Upgrade
- Almaden Valley Pipeline Replacement
- Distribution System Master Plan Implementation
- IRP2 Additional Line Valves (A3)
- Pacheco/Santa Clara Conduit Right of Way Acquisition
- Supervisory Control and Data Acquisition (SCADA) Master Plan Implementation
- Small Capital Improvements, Raw Water Transmission
- Small Capital Improvements, Treated Water Transmission
- Treated Water Isolation Valves

Water Treatment Plants (WTP):
- Penitencia WTP Residuals Management
- Rinconada WTP Residuals Remediation
- Rinconada WTP Reliability Improvement
- Santa Teresa WTP Filter Media Replacement
- WTP Electrical Improvement
- Small Capital Improvements, Water Treatment
- WTP Implementation Project

Recycled Water:
- Purified Water Project
- South County Recycled Water Pipeline
- Land Rights – South County Recycled Water Pipeline

Detailed information on each of these water supply capital projects, including related description, costs, and schedule, is available in the CIP.

2. **Continue to aggressively protect groundwater quality through Valley Water programs and collaboration with land use agencies, regulatory agencies, and basin stakeholders.**

Sub-recommendations from the Plan include continued groundwater quality monitoring, action when potentially adverse trends are identified, and continued/enhanced collaboration with local partners and stakeholders.

Groundwater quality is typically very good in the county, with no treatment beyond disinfection required at major retailer wells. However, nitrate remains an ongoing groundwater protection challenge, particularly in the more rural Coyote Valley and Llagas Subbasin. Valley Water continues to conduct extensive groundwater

quality monitoring, evaluate long-term trends, and compare current conditions against regulatory standards and projected concentrations (such as from Salt and Nutrient Management Plans). Detailed information and analysis of all monitoring data is presented in Valley Water's Annual Groundwater Report, which is calendar-year based and published each summer.[13]

Long-term trends are favorable for nitrate, with about 90% of wells tested showing stable or decreasing concentrations. However, since a significant number of domestic wells in the Llagas Subbasin still contain nitrate above the drinking water standard, more work remains to be done. Valley Water will continue to engage with regulatory and land use agencies to address existing nitrate contamination. For nitrate and other water quality issues, Valley Water will work to build and enhance this collaboration to protect high-quality groundwater and expedite the restoration of impacted groundwater.

Valley Water has been proactive in evaluating the potential threat posed by per- and polyfluoroalkyl substances (PFAS), a large group of generally unregulated chemicals widely used in fire-fighting foams, industrial/manufacturing processes, and in consumer products. These "Forever Chemicals" are extremely stable in the environment and the human body, and scientific studies are increasingly documenting adverse health impacts. Voluntary sampling by Valley Water does not indicate the widespread presence of PFAS in groundwater, but some water supplier wells have been removed from service out of an abundance of caution. The presence of PFAS in local groundwater is concerning, and Valley Water is coordinating closely with local water retailers and regulatory agencies on this evolving issue.

Valley Water is working with municipalities to implement a Stormwater Resource Plan[14] that will increase infiltration while ensuring pollutants from urban runoff do not impact groundwater quality. Similarly, Valley Water continues to engage with various entities to ensure that recycled water expansion or the use of purified water for recharge will protect groundwater quality.

Engaging with land use and regulatory agencies on proposed policy, legislation, and projects that may impact groundwater remains a key strategy for protecting groundwater. For example, Valley Water tracks the progress of major contaminant release sites, interacting with regulatory agencies to promote expedited and thorough cleanup. Valley Water also engages with land use agencies on relevant projects and policies such as development, stormwater infiltration devices, septic systems, and small water systems.

Public outreach continues to be an important component of Valley Water's groundwater protection efforts. In WY 2022, Valley Water celebrated Groundwater Awareness Week by highlighting groundwater on the Valley Water website and posting related social media messages. Valley Water staff presented about our sustainable groundwater management practices during the annual UC Davis short course called Introduction to Groundwater, Watersheds, and Groundwater Sustainability Plans. Valley Water also maintained its status as a

[13] The comprehensive Annual Groundwater Report for each calendar year is available at www.valleywater.org/groundwater.
[14] Santa Clara Basin Stormwater Resource Plan, Final August 2019 is available at https://scvurppp.org/wp-content/uploads/2019/08/SCB_SWRP_FINAL_8-20-19.pdf

Groundwater Guardian through a program sponsored by the non-profit Groundwater Foundation. This is an annually earned designation for communities and affiliates that take voluntary, proactive steps toward groundwater protection.

To provide information on well sampling by Valley Water and local water suppliers, Valley Water sent the 2021 Groundwater Quality Summary to well owners within the groundwater benefit zones.[15] This annual report is similar to water retailer consumer confidence reports and provides basic groundwater quality information to domestic well owners who do not typically receive water from a water retailer.

Other groundwater-related public outreach conducted by Valley Water in WY 2022 included:

- Interaction with many students through the Education Outreach program.
- Direct communication with well owners on groundwater quality, well maintenance, and treatment systems under the Domestic Well Testing program.

3. Continue to incorporate groundwater sustainability planning in Valley Water planning efforts.

This Plan recommendation focuses on continued, thoughtful water supply planning and investments consistent with Valley Water's Water Supply Master Plan. In November 2019, Valley Water completed the Water Supply Master Plan 2040[16], which is the most recent update and establishes Valley Water's strategy for providing a reliable and sustainable water supply through 2040. The Water Supply Master Plan 2040 provides a framework for annually monitoring the water supply strategy to ensure it will meet the water needs of Santa Clara County.

The Valley Water investment strategy includes securing existing supplies and infrastructure, expanding water conservation and reuse, and optimizing the use of existing system. Projects approved by the Board for planning include pipeline maintenance, local dam retrofit, water treatment plant improvements, water conservation and demand management measures (i.e., advanced metering infrastructure, leak repair incentives, graywater program, and stormwater capture), potable reuse, the Delta Conveyance Project, expanding Pacheco Reservoir, and the Transfer-Bethany Pipeline. Details about each of these projects can be found in Appendix H of the Water Supply Master Plan 2040. Updates on project planning and Water Supply Master Plan 2040 implementation are completed annually through the Monitoring and Assessment Program (MAP). The MAP process allows the Board to make adjustments as needed to the Water Supply Master Plan 2040 investment strategy in response to new project or water supply conditions (e.g., lower than expected water demands, changes to imported water reliability, etc.). The most recent MAP report was presented to the Board in November 2022 and the next MAP report is expected to be completed in Fall 2023.

[15] The 2021 Groundwater Quality Summary Report is available at https://www.valleywater.org/your-water/groundwater/groundwater-quality

[16] Santa Clara Valley Water District, Water Supply Master Plan 2040 is available at https://www.valleywater.org/sites/default/files/Water%20Supply%20Master%20Plan%202040_11.01.2019_v2.pdf

Groundwater sustainability also remains an important factor during the planning and implementation of multi-benefit projects under Valley Water's One Water Plan[17]. The Sustainable Groundwater and Water Quality objectives of the One Water Plan align with the Plan outcome measures and include a process for identifying priority actions to sustain and improve groundwater on a watershed scale.

To support managed response to climate change, the Valley Water Board adopted the Climate Change Action Plan (CCAP)[18] on July 13, 2021, following input from both internal and external stakeholders. The CCAP is a comprehensive framework to guide Valley Water's responses to climate change. The CCAP framework includes goals, strategies, and possible actions to both mitigate Valley Water's contribution to climate change through reducing greenhouse gas emissions, and to adapt to climate change impacts that will affect Valley Water's mission areas. Valley Water is implementing an ongoing and adaptive program to implement the CCAP, which includes prioritizing, monitoring, and reporting out on actions, developing a greenhouse gas reduction plan, and coordinating with local and regional partners' climate plans. The strategies of the CCAP are being incorporated into existing Valley Water plans, budgets, and long-term financial forecasts as appropriate.

4. Maintain adequate monitoring programs and modeling tools.

This Plan recommendation focuses on improving monitoring networks by identifying and addressing gaps, redundancies, and access issues; identifying and implementing improvements to the numerical groundwater flow models; and improving Valley Water's understanding of surface water/groundwater interaction, groundwater dependent ecosystems (GDEs), and seawater intrusion. In addition to the comprehensive, calendar-year based Annual Groundwater Report, Valley Water produces high-level monthly Water Tracker[19] and groundwater condition reports[20] that help keep stakeholders informed about current groundwater conditions including groundwater pumping, recharge, and water levels.

Valley Water continues to offer free basic well testing for domestic well owners to supplement regional groundwater quality monitoring, which emphasizes the use of consistent wells. Through this voluntary program, Valley Water obtains valuable data on nitrate and other contaminants while providing important water quality data to about 200 private well owners each year.

Valley Water uses three calibrated groundwater flow models – one for each groundwater management area (Santa Clara Plain, Coyote Valley, and the Llagas Subbasin). These models are used to evaluate groundwater storage and levels to inform operational decisions and long-term planning efforts. Staff is assessing each model to identify improvements or enhancements that may be needed or desired to improve the use of these tools.

[17] https://www.valleywater.org/project-updates/one-water-plan
[18] https://www.valleywater.org/your-water/water-supply-planning/climate-change-action-plan
[19] https://www.valleywater.org/your-water/water-supply-planning/monthly-water-tracker
[20] https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater/groundwater-monitoring

Regarding surface water/groundwater interaction, Valley Water staff has begun to evaluate existing available data for stream gauging and groundwater levels. Valley Water is also evaluating whether existing wells adjacent to creeks may be useful in collecting additional data to better understand the interaction. Staff has attended workshops organized by DWR and reviewed both relevant literature and how other GSAs are working to better understand groundwater-surface water interaction. Valley Water will continue to explore the complex and dynamic interaction between surface water and groundwater and will engage interested stakeholders. Additional studies by Valley Water to characterize surface water/groundwater interaction were documented in the 2021 Plan.

5. **Continue and enhance groundwater management partnerships with water retailers and land use agencies.**

This Plan recommendation focuses on continued collaboration and strong partnerships with water retailers and land use agencies. Valley Water continues to interact regularly with water retailers through quarterly Water Retailer meetings, including the Groundwater Subcommittee. In addition to these regular meetings, Valley Water and water retailers collaborate on various issues that arise regarding groundwater, treated water, wells, and water measurement.

Valley Water also continues to coordinate with local land use agencies on General Plans, water supply assessments, Urban Water Management Plans, stormwater management, and various individual land use projects. Land use decisions fall under the authority of the local cities and the County of Santa Clara. Valley Water reviews land use and development plans related to Valley Water facilities and watercourses under Valley Water jurisdiction and provides technical review for other land use proposals as requested by the local agency. When provided by land use agencies, water supply assessments for new developments are also reviewed and evaluated in the context of Valley Water's long-term water supply plans. For all reviews, Valley Water's groundwater-related comments focus on potential impacts to groundwater quality and sustainability.

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Chapter 4 – Plan Implementation

NEXT STEPS

Valley Water will continue to submit annual reports required under SGMA to DWR by the April 1 deadline. In addition to this brief report, Valley Water will also continue to publish a comprehensive, calendar-year based Annual Groundwater Report each year with more detailed information on pumping, recharge, water balance, groundwater levels and storage, land subsidence and groundwater quality.[21]

Ensuring continued groundwater sustainability is central to the Valley Water mission to provide Silicon Valley a safe, clean water supply for a healthy life, environment, and economy. As such, Valley Water will continue to "manage groundwater to ensure sustainable supplies and avoid land subsidence" and "aggressively protect groundwater from the threat of contamination," in accordance with Board Ends policy.

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[21] https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater

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