Livermore Valley Groundwater Basin

Sustainable Groundwater Management Annual Report

2024 Water Year (October 2023 – September 2024)

Submitted by:

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Abbreviations

ACEH	Alameda County Environmental Health
AEM	Airborne Electromagnetic Surveys
AF	acre-feet
AFY	acre-feet per year
AN	Above Normal
AOC	Area of Concern
CCR	California Code of Regulations
CCWD	Contra Costa Water District
cfs	cubic feet per second
CIP	Capital Improvement Program
COC	Constituents of Concern
COL	Chain of Lakes
CWS	California Water Service
CY	Calendar Year
DSRSD	Dublin San Ramon Service District
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ERT	Electrical Resistivity Tomography
ft	feet
ft bgs	feet below ground surface
ft/ft	feet per linear foot
ft msl	feet above mean sea level
GPQ	Groundwater Pumping Quota
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWE	Groundwater Elevation
HCM	Hydrogeologic Conceptual Model
HI	Hydrologic Inventory
ICSW	Interconnected Surface Water
IDC	Integrated Water Flow Model Demand Calculator
InSAR	Interferometric Synthetic Aperture Radar
LAVWMA	Livermore-Amador Valley Water Management Agency
MCL	Maximum Contaminant Levels
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
MGDP	Mocho Groundwater Demineralization Plant
MNM	Monitoring Network Module
MO	Measurable Objective
MT	Minimum Threshold
NMP	Nutrient Management Plan
NO3	Nitrate Ion

OWTS	Onsite wastewater treatment system
PFAS	Per- and polyfluoroalkyl substances
PFOS	Perfluorooctane Sulfonate
P/MAs	Project and Management Actions
RMS	Representative Monitoring Site
SBA	South Bay Aqueduct
SFPUC	San Francisco Public Utilities Commission
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SMP	Salt Management Plan
sTEM	stationary Time-Domain Electromagnetics
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	thousand acre-feet
TDS	Total Dissolved Solid
UR	Undesirable Result
UWMP	Urban Water Management Plan
WMP	Well Master Plan
WY	Water Year

1. Executive Summary

The Livermore Valley Groundwater Basin (also referred to herein as "the Basin"), California Department of Water Resources (DWR) Basin No. 2-010, is classified as a "medium priority" basin (DWR, 2019). Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7 Water Agency or Zone 7) is the exclusive Groundwater Sustainability Agency (GSA) for the Basin and has managed local surface and groundwater resources for beneficial uses and users for more than 50 years.

Zone 7 submitted an Alternative Groundwater Sustainability Plan (Alternative GSP) for the Basin in December 2016. Subsequently, DWR reviewed and approved the Alternative GSP in July 2019. Zone 7 submitted the first Five-Year Periodic Evaluation to the Alternative GSP (2021 Alternative GSP; Zone 7 GSA, 2021, also referenced as the 2022 Alternative GSP in other reports) in December 2021. In June 2024, DWR approved the 2021 Alternative GSP.

This 2024 Water Year (WY) Annual Report for the Basin was prepared in compliance with California Code of Regulations (CCR) 23 §356.2 and is consistent with the DWR's October 2023 *GSP Implementation: A guide to Annual Reports, Periodic Evaluations, & Plan Amendments*[1]. The 2024 WY covers the period from 1 October 2023 through 30 September 2024. The GSP Annual Report Element Checklist provided with DWR's guideline is included in **Appendix A,** and identifies where each required element of the Annual Report is specifically addressed in this document. **Appendix B** through **Appendix E** provide supplemental data/information including groundwater levels and hydrographs, additional water storage and budget data, and water quality data.

General information about the Basin is provided in **Section 2**. The Basin encompasses approximately 69,600 acres (109 square miles) in Alameda and Contra Costa counties, and includes three Management Areas, defined by varying geologic, hydrogeologic, and groundwater conditions: the Main Basin Management Area (Main Basin), the Fringe Management Area (Fringe Area), and the Upland Management Area (Upland Area), as shown in **Figure 1**. Principal Aquifer units include the Upper Aquifer and Lower Aquifer within the Main Basin, the Fringe Aquifer within the Fringe Area, and the Upland Aquifer within the Upland Area.

Recent groundwater elevation trends within the Basin are detailed in **Section 3**. Groundwater elevation contours are shown for Spring 2024 (seasonal high) and Fall 2024 (seasonal low) groundwater conditions by Principal Aquifer unit on **Figure 3** through **Figure 8**. As indicated by the contours, groundwater flow directions and magnitudes did not vary greatly between the seasonal high to seasonal low periods in 2024 WY. Groundwater elevations within the Basin generally continued to increase after a significant increase in 2023 WY, owing to two consecutive years of significant groundwater recharge (from rainfall, stream, and imported surface water

[1] Groundwater Sustainability Plan Implementation: A Guide to Annual Reports, Periodic Evaluations, & Plan Amendments (ca.gov)

sources) and below-average municipal pumping. As further described in **Section 3**, water levels increased by as much as 25 feet (ft) in the Upper Aquifer and 25 ft in the Lower Aquifer within portions of the Main Basin from Fall 2023 to Fall 2024. In general, groundwater elevations in the Main Basin remained well above historic lows (up to about 130 ft) except in the central and southern portion of the Amador Subarea where two mining excavations have extended down into the Lower Aquifer. As indicated by the contours, groundwater flow directions and magnitudes did not vary greatly between the seasonal high to seasonal low periods in 2024 WY.

The 2021 Alternative GSP established 12 Representative Monitoring Sites for Chronic Lowering of Groundwater Levels (RMS-WL) and 14 Representative Monitoring Sites for Depletions of Interconnected Surface Water (RMS-ICSW), as further detailed in **Appendix B**. Hydrographs comparing recent groundwater elevations to the Sustainable Management Criteria (SMCs) defined at each RMS-WL and RMS-ICSW location are included in **Appendix C**. As shown in **Table 2** and **Table 3**, groundwater levels at all RMS-WL and RMS-ICSW wells locations remained above their respective Measurable Objectives (MOs) and Minimum Thresholds (MTs) throughout the 2024 WY.

Groundwater and surface water supplies and uses within the Basin during the 2024 WY are detailed in **Sections 4, 5, and 6.** Basin-wide groundwater extractions totaled approximately 6,918 acre-feet (AF) during the 2024 WY, 84% (5,805 AF) of which was used for municipal supplies. Zone 7 extracted 41% (2,807 AF, including 645 AF for Dublin San Ramon Service District [DSRSD]) of the total extraction (**Table 4** and **Table 5**). General locations of groundwater extractions are shown on **Figure 9**.

In addition to groundwater extraction, Zone 7 imported a total of 37,000 AF of surface water supplies to the Basin in the Calendar Year (CY) 2024 (**Table 6**). Total water use within the Basin for the 2024 WY consisted of 14% groundwater, 74% imported water, and 13% recycled water (**Table 10**, **Figure 10** and **Figure 11**). Zone 7 was also able to artificially recharge 7,812 AF of surplus imported supplies in the 2024 WY, thereby more than fully offsetting its groundwater pumping for the second consecutive water year. Since 1974, Zone 7 has artificially recharged 34,134 AF more than it has pumped.

Changes in groundwater storage over the 2024 WY were estimated using both the Groundwater Elevation (GWE) method and the Hydrologic Inventory (HI) method, as further described in **Section 7**. Taking an average of the two methods, the total groundwater in storage at the end of 2024 WY was calculated to be 254.4 thousand acre-feet (TAF), which is about 15.6 TAF more than the 2023 WY average total storage value (**Table 12**). **Figure 13** shows the change in storage from Fall 2023 to Fall 2024 for each Main Basin node. **Figure 14** shows the annual change in groundwater storage and cumulative change in groundwater storage for the Basin along with the water year type from 1974 WY through 2024 WY. Using the Water Year Type methodology developed by DWR (DWR, 2021), the 2024 WY is considered an Above Normal (AN) water year, and the change in groundwater storage for the Basin (+15.6 TAF) was more than that observed in other recent above normal years. The increase in storage may be attributed to two consecutive

years of significant artificial recharge coupled with two consecutive years of reduced municipal pumping.

Section 8 presents a summary of Alternative GSP Implementation during the 2024 WY. **Section 8.1** and **Table 13** summarize the Sustainable Groundwater Management Act (SGMA) Monitoring Activities performed and current conditions as of the 2024 WY relative to the SMCs defined for each Sustainability Indicator for the Basin. As further detailed in **Table 13**, no Undesirable Results (URs) occurred during the 2024 WY for any of the five Sustainability Indicators with SMCs defined in the 2021 Alternative GSP. A brief description of current conditions for each Sustainability Indicator is provided below; supplemental data and information including monitoring networks and measurements collected from each SGMA Representative Monitoring Site throughout the 2024 WY can be found in **Section 8.1** and **Appendix B** through **Appendix E**.

- **Chronic Lowering of Groundwater Levels.** As shown in **Table 2**, groundwater elevations in all RMS-WL wells either increased or generally remained stable relative to 2023 WY conditions and were measured above their respective MOs and MTs during both the seasonal high (Spring) and seasonal low (Fall) 2024 WY monitoring events. Therefore, no URs were observed within the Basin during the 2024 WY.

- **Reduction in Groundwater Storage.** Water Level SMCs are used as proxy for evaluating Reduction in Groundwater Storage. Therefore, no URs were observed within the Basin during the 2024 WY.

- **Degraded Water Quality.** As shown in **Table 14** through **Table 19**, no Constituents of Concern (COCs) for which SMCs are defined in the 2021 Alternative GSP (i.e., Total Dissolved Solids [TDS], Nitrate, Boron, and Chromium) were detected above their corresponding MTs at any of the 12 Representative Monitoring Sites for Water Quality (RMS-WQ) sampled during the 2024 WY. Therefore, no URs were observed within the Basin during the 2024 WY.

- **Land Subsidence.** Water levels at all applicable proxy RMS-WL sites for Land Subsidence remained above their respective MTs and MOs throughout 2024 WY. Furthermore, vertical displacement data obtained from DWR's Interferometric Synthetic Aperture Radar (InSAR) monitoring program indicates ground surface elevations fluctuated by -0.05 ft to +0.2 ft across the Basin throughout the 2024 WY. Therefore, no URs were observed within the Basin during the 2024 WY.

- **Depletion of Interconnected Surface Water.** As shown in **Table 3**, groundwater levels were measured above their MTs and MOs during both the seasonal high (Spring) and seasonal low (Fall) 2024 WY monitoring events. Therefore, no URs were observed within the Basin during the 2024 WY.

The 2021 Alternative GSP outlined potential Projects and Management Actions (P/MAs) currently being implemented or otherwise proposed for future implementation. The P/MAs identified in the 2021 Alternative GSP generally fall into the following four categories: (1) water supply augmentation, (2) water demand reduction, (3) improvement of groundwater quality, and (4) data gap-filling activities. A brief description of the status of each P/MA as through the 2024 WY is listed in **Section 8.2**. Progress made on addressing DWR's Recommended Corrective Actions in its Determination of the 2021 Alternative GSP is described in **Section 8.3**, and other information on plan implementation progress (e.g., ongoing stakeholder engagement efforts) is provided in **Section 8.4**.

To avoid duplication, material included in the 2021 Alternative GSP has not been repeated here, but specific sections are referenced when more background detail may be desired.

2. General Information

☑ *§ 356.2 (a)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(a) General information, including an executive summary and a location map depicting the basin covered by the report.

On 16 September 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA), the primary purpose of which is to achieve and/or maintain sustainability within the state's high and medium priority groundwater basins. The Livermore Valley Groundwater Basin (also referred to herein as "the Basin"), California Department of Water Resources (DWR) Basin No. 2-010, is classified as a "medium priority" basin (DWR, 2019) and is not subject to the critical conditions of overdraft. Under its authority as the Exclusive Groundwater Sustainability Agency (GSA) of the Basin, Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7 Water Agency or Zone 7) submitted an Alternative Groundwater Sustainability Plan (GSP) for the Basin in December 2016, which was approved by DWR in July 2019, and the first Five-Year Periodic Evaluation to the Alternative GSP in December 2021 (i.e., the 2021 Alternative GSP), which was approved by DWR in June 2024.

This 2024 Water Year (WY) Annual Report for the Basin has been prepared in compliance with California Code of Regulations (CCR) 23 § 356.2 and is consistent with the DWR's October *2023 GSP Implementation: A guide to Annual Reports, Periodic Evaluations, & Plan Amendments*[1]. The 2024 WY includes the period from October 1, 2023 through September 30, 2024. This report also contains available and appropriate historical information back to Calendar Year (CY) 2015, as required by CCR 23 §356.2 (b), to provide information and data related to Basin conditions through the current reporting year. All the data included in this report are conveyed based on the 2024 WY; however, due to other reporting obligations, some information in this report (e.g., retailer groundwater pumping quota and surface water supply volumes) is compiled and reported on a CY basis (i.e., January 1 through December 31, 2024).

Zone 7 conducts water management in the Basin as part of its mission to deliver safe, reliable, efficient, and sustainable water services, and more specifically addresses Strategic Plan initiatives *#11 – Manage the GSA and implement the groundwater sustainability plan*. Zone 7 has managed local surface and groundwater resources for beneficial uses for more than 50 years.

The Zone 7 service area is located about 40 miles southeast of San Francisco and encompasses an area of approximately 425 square miles of the eastern portion of Alameda County, including the Livermore-Amador Valley, Sunol Valley, and portions of the Diablo Range (**Figure 1**). Zone 7 also serves a portion of Contra Costa County (Dougherty Valley in San Ramon) through an out-of-service-area agreement with Dublin San Ramon Service District (DSRSD).

As shown on **Figure 1**, the Basin encompasses approximately 69,600 acres (109 square miles) in Alameda and Contra Costa counties, and includes three Management Areas based on varying geologic, hydrogeologic, and groundwater conditions: the Main Basin, Fringe Area, and Upland Area. The Basin is boarded on the northwest by the San Ramon Valley Basin (Basin No. 2-07), a very-low priority basin that extends to the northwest in Contra Costa County, and on the southwest by the Sunol Valley Basin (Basin No. 2-11), which is also a very-low priority basin.

Available hydrogeologic information indicates that the Basin is bounded by the Calaveras Fault on the west, the Greenville Fault on the east, and bedrock deposits of the Plio-Pleistocene Tassajara and Livermore Formations to the north and south, respectively. Principal Aquifer units include the Upper Aquifer and Lower Aquifer within the Main Basin, the Fringe Aquifer within the Fringe Area, and the Upland Aquifer within the Upland Area. The Upper Aquifer consists of recent (Holocene) alluvial fill materials and extends continually across the Main Basin at depths up to 190 feet below ground surface (ft bgs), containing groundwater typically under unconfined conditions. The Lower Aquifer exists below a confining aquitard with thicknesses ranging from less than 5.0 feet (ft) in the eastern parts of the Main Basin to up to 50 ft in the central and western parts of the Main Basin. The Lower Aquifer consists of Quaternary alluvial fill materials and the productive upper portion of the Livermore Formation, extending to depths of up to 800 ft bgs in the central Main Basin. A large majority of groundwater production occurs within the Lower Aquifer of the Main Basin. The Fringe Aquifer and Upland Aquifer are demonstrated to be of lower productivity and quality than the aquifers of the Main Basin, and groundwater production is limited to domestic and agricultural uses in these areas.

Sources of recharge to the Basin include rainfall recharge, applied water recharge, stream recharge, subsurface groundwater inflow, and pipe leakage. Groundwater outflows from the Basin include municipal pumping, agricultural pumping, mining use, and subsurface groundwater outflow. A historical water budget period (1974-2020 WYs) presented in the 2021 Alternative GSP shows that long-term sustainability has been maintained in the Basin for at least 45 years, as groundwater storage conditions have remained generally stable to increasing and have shown resilience following dry periods.

Detailed information regarding the Plan Area, Hydrogeologic Conceptual Model, and historical and recent Groundwater Conditions are provided in the 2021 Alternative GSP.

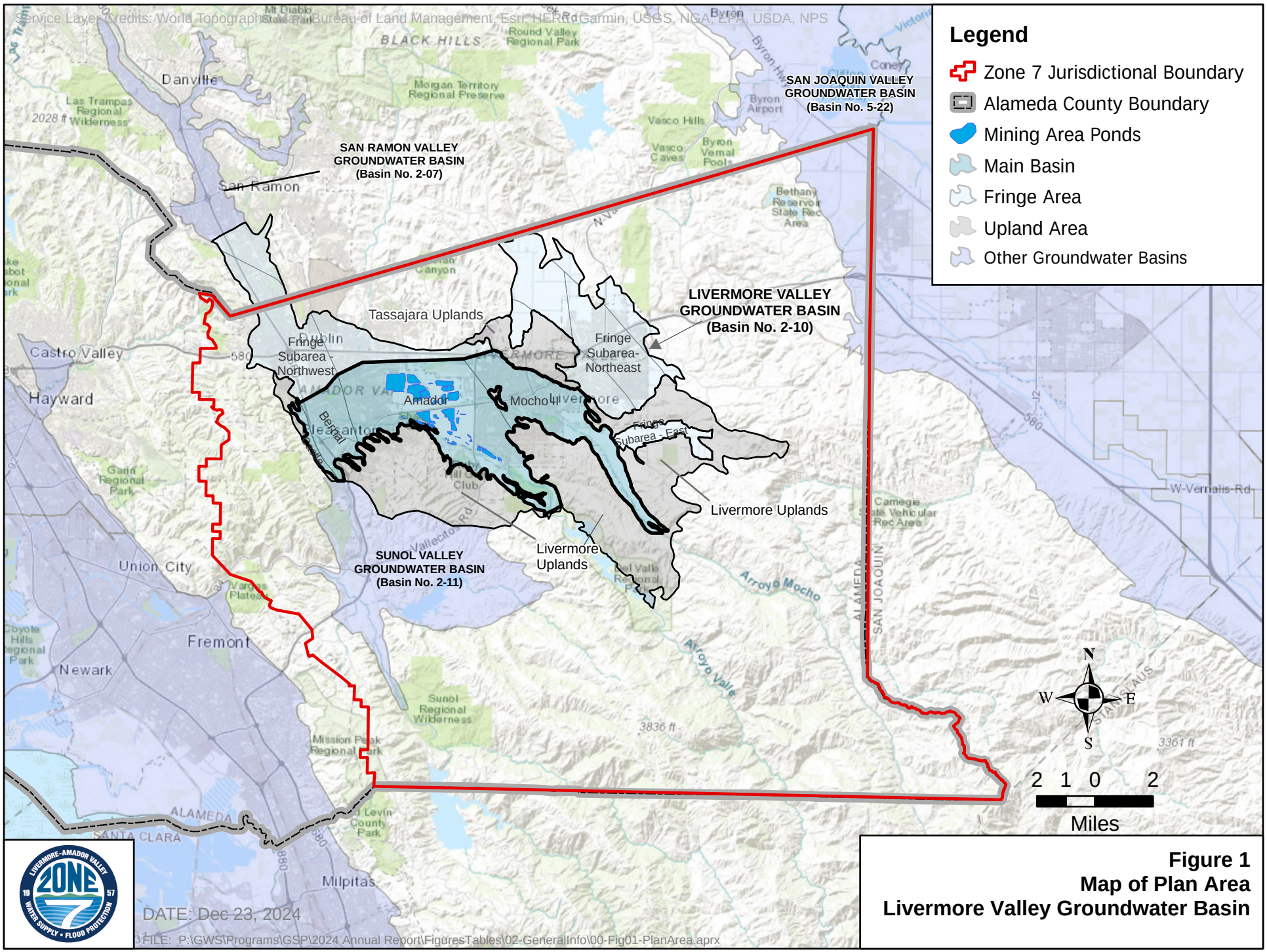


Figure 1
Map of Plan Area
Livermore Valley Groundwater Basin

3. Groundwater Elevation Data

3.1. Description

☑ *§ 356.2 (b) (1)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:

(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.

(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.

Zone 7 has conducted an extensive program of groundwater level monitoring throughout the Basin since the mid-1970s. Background information regarding the Groundwater Elevation Monitoring Program is provided in **Appendix B** and detailed in *Section 14.2.1 Monitoring Network for Chronic Lowering of Groundwater Levels* of the 2021 Alternative GSP. This program includes the measurement of groundwater levels in monitoring and production wells to confirm that management objectives are met, to assess groundwater supplies, and to define any new management objectives needed to maintain sustainability. The program focuses on the Main Basin, where groundwater is pumped for municipal uses; however, water levels are also measured in the Fringe and Upland Areas.

Approximately 252 wells were included in Zone 7's Groundwater Elevation Monitoring Program during the 2024 WY (**Figure 2**). Groundwater elevations in most of these wells were measured at least two times throughout the water year, during both seasonal high (Spring) and seasonal low (Fall) groundwater conditions. Seasonal high (Spring) and seasonal low (Fall) 2024 WY groundwater elevation contour maps are presented in **Section 3.3** for each Principal Aquifer[2] in the Basin using water level measurements from the wells in the Groundwater Elevation Monitoring Program.

As further detailed in **Table 1** below, five new wells were added to the Groundwater Elevation Monitoring Program during the 2024 WY.

[2] Insufficient monitoring wells currently exist in the Upland Area to prepare contour maps for the Upland Aquifer.

Table 1. Program Well Changes during the Water Year

Action	Reason	Note
Monitoring wells **3S1E23A005**, **3S1E23A006**, **3S1E23A007**, **3S1E08K002**, and **3S1E08K003** were added.	Fill existing monitoring network data gaps.	Wells 3S1E23A005, 3S1E23A006 and 3S1E23A007 are new nested monitoring wells constructed in the Lower Aquifer that will be used to monitor water levels near active mining operations near Lake B. Wells 3S1E08K002 and 3S1E08K003 are new nested monitoring wells constructed in the Lower Aquifer in the Bernal Subarea and were constructed near an existing shallow aquifer monitoring well (3S1E08K001).

Additionally, during the 2024 WY Zone 7 equipped six existing wells with telemetric monitoring devices that enable real-time, continuous monitoring of groundwater levels. All eight Representative Monitoring Sites for Chronic Lowering of Groundwater Levels (RMS-WLs) in the Main Basin are now equipped with telemetric monitoring equipment, expanding the total telemetric monitoring network to 16 wells across the Main Basin and Fringe Area. Zone 7 intends to continue expanding the telemetric monitoring system over the next several years across the Main Basin and Fringe Areas and in areas where uncertainties and/or data gaps have previously been identified.

3.2. Representative Monitoring Wells

The Basin currently has 12 RMS-WLs and 14 Representative Monitoring Sites for Depletions of Interconnected Surface Water (RMS-ICSW) which represent a subset of the Groundwater Elevation Monitoring Program. Updated hydrographs of groundwater elevations are presented in **Appendix C** for each of the wells in the RMS-WL and RMS-ICSW monitoring networks.

Table 2 and **Table 3** compare water level measurements from the seasonal high (Spring) and seasonal low (Fall) 2024 WY monitoring events to the Measurable Objectives (MOs) and Minimum Thresholds (MTs) and defined at RMS-WL and RMS-ICSW wells, respectively, in the 2021 Alternative GSP. The tables also show the change in elevation from the previous year's seasonal low to this year's seasonal low at each well. Water levels at all RMS-WL and RMS-ICSW wells continued to remain above their respective MOs and MTs throughout both the seasonal high (Spring) and seasonal low (Fall) monitoring events during the 2024 WY.

3.3. Groundwater Elevation Contour Maps

In general, groundwater levels for the 2024 WY followed a typical seasonal pattern observed from the historical data, rising in the beginning of the year with rainfall recharge and minimal

pumping occurring, levelling off in late spring, and then dropping during the second half of the water year as rainfall ceased and pumping demands increased.

Groundwater gradients in both the Upper and Lower Aquifers were generally from east to west and ranged from 0.005 to 0.025 feet per linear foot (ft/ft), except across the major groundwater barriers (e.g., across the Parks Boundary delineating the Main Basin and northwestern Fringe Areas and across the boundary between the Mocho 2 and Amador Subareas) where the gradients steepen substantially. In general, the groundwater gradient runs toward the center of the Basin where there are piezometric depressions created around several municipal wellfields and actively dewatered quarry excavations that extend into the Lower Aquifer.

3.3.1. Upper Aquifer and Fringe Aquifer

Figure 3 and **Figure 4** show 2024 WY groundwater elevation contours in the Upper Aquifer and Fringe Aquifer during seasonal high (Spring) and seasonal low (Fall) conditions, respectively. **Figure 5** shows the change in groundwater elevation across the Upper Aquifer between seasonal low (Fall) 2023 WY and 2024 WY monitoring events. Groundwater elevations in the Upper Aquifer generally continued to increase during the 2024 WY (e.g., by as much as 25 ft in the western portion of the Amador Subarea) owing to above-average recharge (from rainfall and stream sources) and below-average municipal pumping.

Quarry dewatering (mining) operations in the Amador Subarea create groundwater depressions in pits where water is pumped and mounds in pits that are not clay-lined and where excess water is stored. The water from the dewatering of MA-P042 and MA-P046 (future Lakes B and J, respectively) was discharged into other adjacent clay-lined mining pits. Normally, water from MA-R028 (future Lake D) is eventually discharged into Cope Lake after which it is conveyed into Lake I and recharged back into the Basin. Most of the groundwater elevation head change (the steepest groundwater gradient) occurs in the central area of the Basin, where the mining pits are being excavated, and did not appear to vary significantly between the seasonal low and seasonal high periods of the 2024 WY.

Water levels in wells in the southwestern portion of the Basin near the Arroyo de la Laguna (as indicated primarily by the Bernal Subarea Upper Aquifer Key Well 3S1E20C007 [20C7] and well 3S1E29M004 [29M4]) exceeded the upper threshold groundwater elevation at which Basin overflow occurs (i.e., about 295 feet above mean sea level [ft msl]). Consequently, groundwater overflowed from the Upper Aquifer into the Arroyo de la Laguna and exited the Basin during the 2024 WY.

In the Fringe Aquifer, water elevations stayed relatively constant throughout the 2024 WY, generally varying by less than 5 ft compared to groundwater levels in 2023 WY (see **Figure 5** and **Appendix C**). For more information regarding historic groundwater elevations and trends observed for the Fringe Area, refer to *Section 8.3 Current and Historical Groundwater Conditions* of the 2021 Alternative GSP.

3.3.2. Lower Aquifer

Figure 6 and **Figure 7** show 2024 WY groundwater elevation contours in the Lower Aquifer during seasonal high (Spring) and seasonal low (Fall) conditions, respectively. Flow directions and magnitudes indicated by the groundwater elevation contours did not vary greatly between the seasonal low and seasonal high conditions during the 2024 WY. In general, the groundwater gradient runs toward the center of the Basin where there are piezometric depressions created around two mining pits (MA-P042 [Lake B] and MA-R028 [Lake D]) that extend into the Lower Aquifer. The lowest groundwater elevation in the Lower Aquifer was observed near the MA-R028 (Lake D) mining excavation pond (183 ft msl).

Figure 8 shows the change in groundwater elevation across the Lower Aquifer between seasonal low (Fall) 2023 WY and 2024 WY monitoring events. For the second consecutive year, groundwater elevations in the Lower Aquifer continued to increase from the previous year due to above-average groundwater recharge (from rainfall and stream sources) and below-average municipal pumping. Lower Aquifer water levels increased by as much as 25 ft within portions of the Main Basin from Fall 2023 to Fall 2024. In general, groundwater elevations in the western (Bernal Subarea) and eastern (Mocho II Subarea) portions of the Main Basin remained well above historic lows (up to about 130 ft) except in the central and southern portion of the Amador Subarea where two mining excavations have extended down into the Lower Aquifer (see **Figure 8** and **Appendix C**).

For more information on general groundwater gradient and water level trends, see *Section 8 Current and Historical Groundwater Conditions* of the 2021 Alternative GSP.

3.4. Groundwater Elevation Hydrographs

Groundwater levels for the 2024 WY followed a typical seasonal pattern observed from the historical data, rising in the beginning of the year with rainfall recharge and minimal pumping occurring, levelling off in late spring, and then dropping during the second half of the water year as rainfall ceased and pumping demands increased. Groundwater elevations generally increased at RMS-WL wells in the Main Basin compared to water levels during the 2023 WY. Groundwater elevations continued to increase significantly in the Bernal and Amador East Subareas while increasing modestly in the Amador East Subarea. Groundwater elevations dropped slightly in the Mocho II Subarea. For reference, Zone 7 identified the 2024 WY as an above-normal WY based on the methodology developed by DWR (DWR, 2021). Historical water year types are provided in **Figure 14**.

Hydrographs of historical and recent groundwater elevations at all RMS-WL and RMS-ICSW wells are included in **Appendix C**. These hydrographs further demonstrate the seasonal trends observed in both the Upper/Fringe Aquifers and the Lower Aquifer. The seasonal fluctuations are greater in the Lower Aquifer where more pumping occurs to meet seasonal demands in the warmer months, and when surface water treatment plant outages occur. Groundwater elevations will continue to be monitored at all RMS-WL and RMS-ICSW sites per the monitoring plans described in *Section 14 Monitoring Network* of the 2021 Alternative GSP.

TABLE 2
GROUNDWATER ELEVATIONS AT REPRESENTATIVE MONITORING SITES
FOR CHRONIC LOWERING OF GROUNDWATER ELEVATIONS
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		*Management Area/Unit*			*2024 Water Year (in ft)*					*SMCs for GWE (ft above Mean Sea Level)*				
Well Name	*Map*	*Area*	*Subarea*	*Aquifer*	*Season High GWE*	*Season Low GWE*	*Change from 2023**	*Height above MT*	*Height above MO*	*MT*	*IM-5*	*IM-10*	*IM-15*	*MO*
3S1E20C007	20C7	Main	Bernal	Upper	335.8	301.7	+23.5	157.0	122.3	144.8	153.4	162.1	170.8	179.5
3S1E20C008	20C8	Main	Bernal	Lower	336.6	300.1	+22.8	155.4	120.7	144.8	153.4	162.1	170.8	179.5
3S1E09P005	9P5	Main	Amador West	Upper	349.0	304.7	+17.7	124.9	98.0	179.8	186.5	193.2	199.9	206.7
3S1E09P010	9P10	Main	Amador West	Lower	349.6	304.7	+16.4	124.9	98.0	179.8	186.5	193.2	199.9	206.7
3S1E11G001	11G1	Main	Amador East	Upper	369.9	327.2	+9.9	146.2	107.3	181.0	190.7	200.4	210.2	219.9
3S1E12K003	12K3	Main	Amador East	Lower	406.7	299.5	+4.6	118.5	79.6	181.0	190.7	200.4	210.2	219.9
3S2E08K002	8K2	Main	Mocho II	Upper	464.4	431.3	-3.4	176.1	138.1	255.1	264.6	274.1	283.6	293.1
3S2E08H003	8H3	Main	Mocho II	Lower	475.1	420.5	-5.6	165.4	127.4	255.1	264.6	274.1	283.6	293.1
3S1E06F003	6F3	Fringe	Northwest	Upper	333.8	324.4	+0.2	19.4	9.8	305.0	307.4	309.8	312.2	314.6
2S2E34E001	34E1	Fringe	Northeast	Upper	500.0	494.7	+0.7	6.4	3.4	488.2	489.0	489.7	490.5	491.2
3S2E24A001	24A1	Fringe	East	Upper	718.5	698.7	-0.6	23.2	20.4	675.5	676.2	676.9	677.6	678.3
3S2E21K009	21K9	Upland	Upland	Upper	566.5	478.5	+2.1	8.4	8.4	470.1	470.1	470.1	470.1	470.1

RMS = Representative Monitoring Site
GWE = Groundwater Elevation (in ft above Mean Sea Level)
SMC = Sustainable Management Criteria
IM = Interim Milestone
MO = Measurable Objective
MT = Minimum Threshold
NA = Not Available
* = 2024 Seasonal Low minus 2023 Seasonal Low

Main
Fringe
Upland

TABLE 3
GROUNDWATER ELEVATIONS AT REPRESENTATIVE MONITORING SITES
FOR INTERCONNECTED SURFACE WATER
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		*Management Area/Unit*			*2024 Water Year (in ft)*					*SMCs for ICSW (ft above MSL)*				
Well Name	*Map*	*Area*	*Subarea*	*Aquifer*	*Season High GWE*	*Season Low GWE*	*Change from 2023**	*Height above MT*	*Height above MO*	*MT*	*IM-5*	*IM-10*	*IM-15*	*MO*
3S2E30D002	30D2	Main	Amador	Upper	409.72	409.07	0.35	8.07	2.57	401	403.8	404.7	405.6	406.5
3S1E16P005	16P5	Main	Amador	Upper	321.44	320.2	-1.18	35	35	285.2	285.2	285.2	285.2	285.2
3S2E33G001	33G1	Main	Amador	Upper	502.73	502.16	-0.57	1.16	0.86	501	501.1	501.2	501.2	501.3
3S2E29F004	29F4	Main	Amador	Upper	449	448.55	-0.2	10.75	3.95	437.8	441.2	442.3	443.5	444.6
3S2E33C001	33C1	Main	Amador	Upper	489.41	488.77	-0.46	6.67	2.57	482.1	484.2	484.8	485.5	486.2
3S1E02N006	2N6	Main	Camp	Upper	341.59	339.24	0.75	7.74	5.34	331.5	333.9	333.9	333.9	333.9
3S2E16E004	16E4	Main	Mocho II	Upper	491.48	487.41	-2.88	20.51	20.41	466.9	466.9	466.9	466.9	467
3S2E23E001	23E1	Main	Mocho II	Upper	598.16	596.85	-0.42	1.45	1.45	595.4	595.4	595.4	595.4	595.4
4S2E01A001	1A1	Main	Mocho II	Upper	801.81	799.66	1.69	18.46	18.46	781.2	781.2	781.2	781.2	781.2
2S2E27P002	27P2	Fringe	Spring	Upper	504.73	502.91	0.3	1.91	1.91	501	501	501	501	501
2S2E34E001	34E1	Fringe	May	Upper	496.83	494.68	0.69	3.48	1.68	491.2	492.1	492.4	492.7	493
3S1E05K006	5K6	Fringe	Camp	Upper	334.16	332.56	1.22	6.56	4.36	326	328.2	328.2	328.2	328.2
3S1E02R001	2R1	Fringe	Camp	Upper	365.29	360.79	-1.5	15.49	7.19	345.3	349.4	350.8	352.2	353.6
3S2E32E007	32E7	Upland	Upland	Upper	603.52	602.61	9.62	11.21	11.21	591.4	591.4	591.4	591.4	591.4

RMS = Representative Monitoring Site
GWE = Groundwater Elevation (in ft above Mean Sea Level)
SMC = Sustainable Management Criteria
ICSW = Interconnected Surface Water
MSL = Mean Sea Level
IM = Interim Milestone
MO = Measurable Objective
MT = Minimum Threshold
* = 2024 Seasonal Low minus 2023 Seasonal Low

Main
Fringe
Upland

LEGEND

- Upper Aquifer
- Lower Aquifer
- Deep Aquifer
- Supply
- Monitor
- Nested
- Representative (RMS)
- Streams
- Township-Range Line
- Mining Area Ponds

ABBREVIATIONS FOR MUNI WELLS
CWS= California Water Service
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
St = Stoneridge (Zone 7)
P = Pleasanton
SF = San Francisco Public Utilities Commission

2S/1W
2S/1E
2S/2E
2S/3E
3S/1W
3S/1E
3S/2E
3S/3E

FRINGE SUBAREA - NORTH
FRINGE SUBAREA - NORTHEAST
FRINGE SUBAREA - EAST
UPLAND SUBAREA
UPLAND SUBAREA
UPLAND SUBAREA
MAIN BASIN

DOUGHERTY HILLS
PLEASANTON RIDGE
LIVERMORE VALLEY
AMADOR VALLEY

N
W
E
S

0 2 4
Miles

DATE: Jan 22, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig02-GMProgramWell2024.aprx

Figure 2
Map of Wells in
Water Level Monitoring Network
Livermore Valley Groundwater Basin

LEGEND

Gradient Contours

- Contours (Interval = 10')
- Hatch pattern towards lower elevation

Wells - Upper Spring 2024

- Supply
- Monitor
- Nested
- Ponds
- SGMA Representative Well

Mining Pond Areas 2024

- In Flux
- Pumped From
- Pumped Into
- Static
- Not In Contact With Groundwater

Stream Recharge Rates (cfs)

- < 0
- 0
- 0 to 1
- 1 to 3
- 3 to 5
- > 5

- Township-Range
- Main Basin
- Fringe Area
- Upland Area

N
W E
S

0 2 4
Miles

DATE: Mar 20, 2024
FILE: \\ZONE7-FILE\public files\GWS\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig03-05-GradientsUpper2024.aprx

Figure 3
Groundwater Gradient Map
Upper Aquifer, Seasonal High, Spring 2024
Livermore Valley Groundwater Basin

LEGEND

Gradient Contours

- Contours (Interval = 10')
- Hatch pattern towards lower elevation

Wells - Upper Fall 2024

- Supply
- Monitor
- Nested
- Ponds
- SGMA Representative Well

Mining Pond Areas 2024

- In Flux
- Pumped From
- Pumped Into
- Static
- Not In Contact With Groundwater

- Streams
- Township-Range
- Main Basin
- Fringe Area
- Upland Area

N
W E
S

0 2 4
Miles

DATE: Feb 18, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig03-05-GradientsUpper2024.aprx

Figure 4
Groundwater Gradient Map
Upper Aquifer; Seasonal Low, Fall 2024
Livermore Valley Groundwater Basin

Service Layer Credits: World Topographic Map, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

LEGEND

Elevation Difference (ft) 23-24

- Elevation Difference (ft) 23-24
- < -45
- -45 to -35
- -35 to -25
- -25 to -15
- -15 to -5
- -5 to 5
- 5 to 15
- 15 to 25
- 25 to 35
- 35 to 45
- 45 to 55
- Mining Area Ponds
- Streams
- Main Basin
- Fringe Area
- Upland Area
- SubBasins

N
W E
S

0 2 4
Miles

* Fall 2024 Minus Fall 2023 so negative numbers represent a drop from 2023WY to 2024WY.

DATE: Feb 20, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig03-05-GradientsUpper2024.aprx

Figure 5
Change in Groundwater Elevation
Upper Aquifer; Fall 2023 to Fall 2024
Livermore Valley Groundwater Basin

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
St = Stoneridge (Zone 7)
CWS = Cal Water Service
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

Wells - Lower Spring 2024
- Supply
- Monitor
- Nested
- Ponds
- SGMA Representative Well
- Mining Area Ponds
- Streams
- Township-Range Line
- Main Basin
- Fringe Area
- Upland Area

Gradient Contours

For Display
- Contours (Interval = 10')
- Hatch pattern towards lower elevation

N
W E
S

0 4,000 8,000
Feet

DATE: Mar 6, 2024
FILE: P:\GWSP\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig06-08-GradientsLower2024.aprx

Figure 6
Groundwater Gradient Map
Lower Aquifer; Seasonal High, Spring 2024
Livermore Valley Groundwater Basin

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
St = Stoneridge (Zone 7)
CWS = Cal Water Service
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

Gradient Contours
- Contours (Interval = 10')
- Hatch pattern towards lower elevation

Wells - Lower Fall 2024
- Supply
- Monitor
- Nested
- Ponds
- SGMA Representative Well
- Mining Area Ponds
- Streams
- Township-Range Line
- Main Basin
- Fringe Area
- Upland Area
- Active Muni Well (no water level)

N
W E
S

0 4,000 8,000
Feet

DATE: Feb 14, 2025
FILE: R:\GSP\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig06-08-GradientsLower2024.aprx

Figure 7
Groundwater Gradient Map
Lower Aquifer; Seasonal Low, Fall 2024
Livermore Valley Groundwater Basin

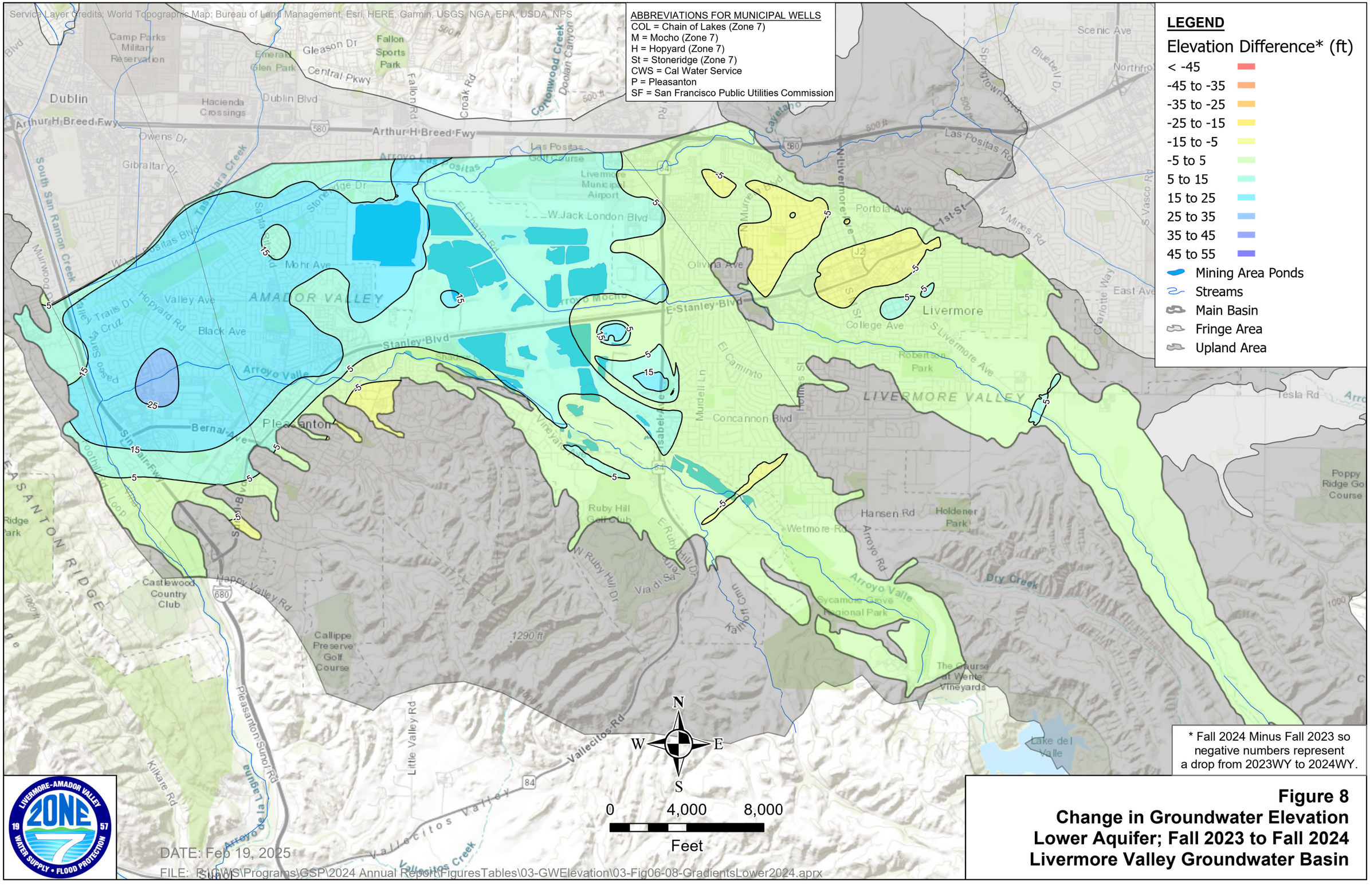


Figure 8
Change in Groundwater Elevation
Lower Aquifer; Fall 2023 to Fall 2024
Livermore Valley Groundwater Basin

4. Groundwater Extraction Data

☑ *§ 356.2 (b) (2)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.

Since the 1960s, Zone 7 has actively managed the Basin by applying a conjunctive water management approach that integrates local and imported surface water supplies with the local conveyance, storage, and groundwater recharge features. Zone 7's annual groundwater production and artificial recharge operations vary with the availability of surface water, treatment plant capacity, and the available groundwater storage space.

After two consecutive years of favorable allocation from the State Water Project (100% in 2023 and 40% in 2024), Zone 7 reduced its pumping to 2,347 acre-feet (AF) for the 2024 WY, of which 2,162 AF was delivered to Zone 7's retailers[3]. These totals do not include the water Zone 7 pumps for DSRSD (usually 645 acre-feet per year [AFY]), which is considered part of the "natural" demand (i.e., basin outflow allocated to natural recharge) as further described in *Section 9 Water Budget Information* of the 2021 Alternative GSP. During that same time, Zone 7 was able to artificially recharge 7,812 AF in the 2024 WY. Since 1974, Zone 7 has artificially recharged 34,134 AF more than it has pumped.

Table 4 below shows the Basin-wide, 2024 WY groundwater extraction data by water use sector and measurement method; reported units are in AF. Groundwater extractions within the Basin totaled approximately 6,918 AF during the 2024 WY, of which 84% was for the municipal sector.

[3] The remaining 185 AF of Zone 7's gross groundwater pumping during the 2024 WY is accounted for in system losses and exported brine from Zone 7's Mocho Groundwater Demineralization Plant (MGDP), and thus is not included Table 4.

Table 4. Summary of Groundwater Extractions by Source and Sector

Water Use Sector / Entity	2024 WY Groundwater Extractions (AF)	Measurement Method	Estimated Accuracy (AF)
Total Municipal Pumping	**5,805**	**See below**	**See below**
Zone 7 Production (i.e., excluding DSRSD, waste, brine)	2,162	Metered by Zone 7	10
Zone 7 Pumping for DSRSD	645	DSRSD Groundwater Pumping Quota	1
City of Pleasanton	0	Metered by Pleasanton	10
California Water Service – Livermore (CWS)	2,574	Metered by CWS	10
San Francisco Public Utilities Commission (SFPUC)	136	Metered by SFPUC	10
Fairgrounds*	288	**Estimated**	50
Domestic Pumping	**59**	**Estimated**	**50**
Pumping for Ag/Golf	**1,054**	**Estimated**	**100**
Total	***6,918***	**-**	**-**

*For 2024 Water Year, metered groundwater extractions were not provided to Zone 7 from Fairgrounds. Estimated value is based on similar water year (2010)
AF = acre-feet; Ag = Irrigated Agriculture; DSRSD = Dublin San Ramon Service District; WY = Water Year

Approximately 55% of the municipal pumping comes from groundwater pumped by Zone 7's retailers (i.e., the City of Pleasanton, City of Livermore, CWS, and DSRSD). The retailers are permitted by contract to pump a Groundwater Pumping Quota (GPQ) (accounted for on a CY basis) without having to pay a replenishment fee to Zone 7. They can carry forward any unpumped GPQ (up to 20% of their GPQ). The retailer's GPQ and total pumping for the 2024 CY (in AF) are shown in **Table 5** below. None of the retailers pumped more than their respective GPQ in 2024 CY.

Table 5. Retailer Groundwater Extractions vs. Groundwater Pumping Quota (GPQ)*

Retailer	GPQ (AF)	Carryover from 2023 CY (AF)	Pumped in 2024 CY (AF)	Carryover to 2025*** (AF)
City of Pleasanton	3,500	700	0	700
Cal Water Service	3,069	614	2,648	614
DSRSD (pumped by Zone 7)	645	0	645	0
City of Livermore (not used)**	31	-	0	-
Total	**7,214**	**1,314**	**3,296**	**1,314**

* = All values accounted for and reported on a Calendar Year (CY) basis
** = Livermore no longer pumps groundwater, GPQ not included in totals or carryover.
*** = Maximum of 20% of GPQ can be carried over
AF = acre-feet; CY = Calendar Year; DSRSD = Dublin San Ramon Service District

Figure 9 shows the general location and volume of groundwater extractions occurring throughout the Basin in 2024 WY. A large majority of groundwater production is municipal pumping and occurs within the Lower Aquifer of the Main Basin. There are no municipal supply wells within the Fringe and Upland Areas. There are domestic wells within the Basin, but the pumping volumes from these domestic wells are minimal (i.e., less than 2.0 AFY per well). Agricultural pumping is estimated by the Integrated Water Flow Model Demand Calculator (IDC) detail in *Section 9 Water Budget Information* of the 2021 Alternative GSP.

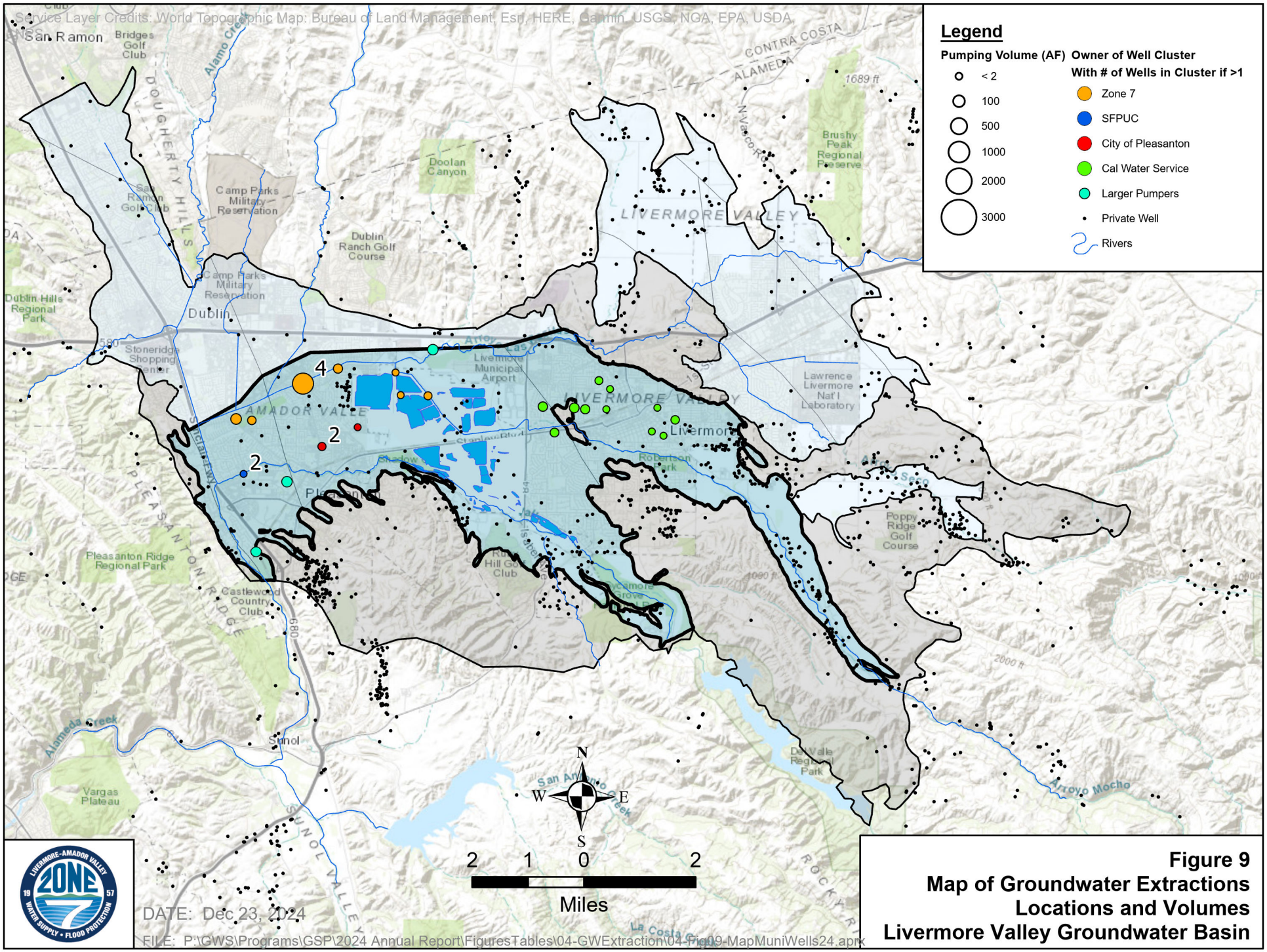


Figure 9
Map of Groundwater Extractions Locations and Volumes
Livermore Valley Groundwater Basin

5. Surface Water Data

☑ *§ 356.2 (b) (3)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.

5.1. Surface Water Supply

Zone 7 ensures that local water supplies (e.g., groundwater) are not depleted by importing approximately 80% of the Basin's water supply from the State Water Project (SWP) to be delivered to Zone 7's retailers and agricultural customers, and by recharging the Main Basin with surplus surface water when available ("artificial recharge"). Details regarding the surface water supply sources and contract amounts are provided in *Section 7.7.6 Source and Point of Delivery for Imported Water Supplies* of the 2021 Alternative GSP.

In accordance with DWR's accounting time-interval of SWP water, the allocation totals are accounted for by Calendar Year. **Table 6** shows Zone 7's water supplies (imported and local water supplies) and demands for 2024 CY and the amounts being carried over to the 2025 CY. All deliveries of imported surface water are measured with electromagnetic flow meters and are accurate to within 1%.

Zone 7 had a total of 125,800 AF available surface water supplies as carryover from 2023 CY. New supplies include the 40% (32,250 AF) of Zone 7's maximum SWP Table A allocation, water previously stored in Kern County Groundwater Subbasin ("Kern Subbasin") water banking facilities, and Local Water. Total available surface water supplies for the 2024 CY were 171,850 AF. Zone 7 used 42,300 AF of these available supplies and banked an additional 11,250 AF, for a total surface water demand of 53,550 AF in the 2024 CY. The remaining unused supply of 118,300 AF was carried over for the 2025 CY.

Table 6. Imported and Local Surface Water Supplies by Source and Sector (AF)*

Source	2023 Carryover (Storage Beginning 2024)	New Water Available	Water Used	Water Banked	2024 Carryover (Storage Available in 2025)
State Water Project	**25,200**	**32,250**	**37,000**	**11,250**	**9,200**
Table A (40% Allocation)	0	32,250	11,800	11,250	9,200
Article 56	25,200	0	25,200	0	0
Article 21	0	0	0	0	0
Kern Subbasin Water Banks	**95,600**	**5,000**	**0**	**0**	**100,600**
Semitropic	74,900	0	0	0	74,900
Cawelo	20,700	5,000	0	0	25,700
Other Imported	**0**	**0**	**0**	**0**	**0**
Yuba/Dry Year Transfer	0	0	0	0	0
Mojave Water Agency	0	0	0	0	0
SUBTOTAL	**120,800**	**37,250**	**37,000**	**11,250**	**109,800**
TOTAL LOCAL: Lake Del Valle (AV Water Rights)	**5,000**	**8,800**	**5,300**	**0**	**8,500**
TOTAL	**125,800**	**46,050**	**42,300**	**11,250**	**118,300**
2024 CY TOTALS	**SUPPLY (2023 Carryover + New Water Available)**		**DEMAND (Water Used + Water Banked)**		**UNUSED (Carryover to 2025)**
TOTAL	**171,850**		**53,550**		**118,300**

* = All values accounted for and reported on a Calendar Year (CY) basis
AF = acre-feet; AV = Arroyo Valle

5.2. Surface Water Monitoring

There were no changes to the Surface Water Monitoring Program during the 2024 WY. Background information regarding the Surface Water Monitoring Program is provided in **Appendix B** and further detailed in *Section 5.2.1: Existing Monitoring and Management Programs* and *Section 14.2.7.2: Other Monitoring Networks – Surface Water Monitoring Program* of the 2021 Alternative GSP.

Table 7 summarizes the natural flows that flowed from the upper watershed into the three recharging stream reaches for the 2024 WY. In February 2024, DWR released 11,250 AF from Lake del Valle into Arroyo Valle to prevent flooding in the lake (a.k.a. "flood release"). **Table 8** summarizes the South Bay Aqueduct (SBA) releases to the recharging streams for "artificial" (or "conservation") recharge during the 2024 WY. "Live stream" conditions were maintained in the Arroyo Valle with natural and artificial flows throughout the entire water year. Zone 7 provided approximately 604 AF to East Bay Regional Parks District (EBRPD) for Shadow Cliffs Lake recharge. A total of 44,414 AF of water flowed out of the Valley past Station Arroyo de la Laguna at Verona (ADLLV); 89% of average. Peak flows and average flows for the 2024 WY are shown in **Table 9.** Water quality results from all stations sampled during the 2024 WY are used to identify and monitor the quality of water recharging and discharging from the Basin and are presented in **Appendix E.**

Table 7. Natural Flows from Upper Watershed, 2024 WY

Station	Stream	Natural Flow (AF)	Percent of Average
AVBLC*	Arroyo Valle	28,182	111%
AMNL	Arroyo Mocho	1,941	55%
ALPL	Arroyo Las Positas	4,824	87%
TOTAL Natural Inflow		**34,947**	**101%**

* Natural flow into Lake del Valle
AF = acre-feet; WY = Water Year

Table 8. South Bay Aqueduct Releases, 2024 WY

Station	Stream	Released (AF)	Percent of Average
SBA_TO2_AV	Arroyo Valle	5,392	175%
SBA_AM	Arroyo Mocho	5,874	166%
SBA_ALTC	Arroyo Las Positas	0	0%
TOTAL SBA Releases		**11,266**	**161%**

AF = acre-feet; SBA = South Bay Aqueduct; WY = Water Year

Table 9. Peak and Annual Mean Flows, 2024 WY

Stream	Station	Peak (cubic feet per second, cfs)	Annual Mean (cfs)
Arroyo Valle	AVNL	885	23.9
Arroyo Mocho	AMHAG	477	5.5
Arroyo Las Positas	ALPL	838	6.6
Arroyo de la Laguna	ADLLV	2,310	67.9

cfs = cubic feet per second; WY = Water Year

6. Total Water Use

☑ *§ 356.2 (b) (4)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

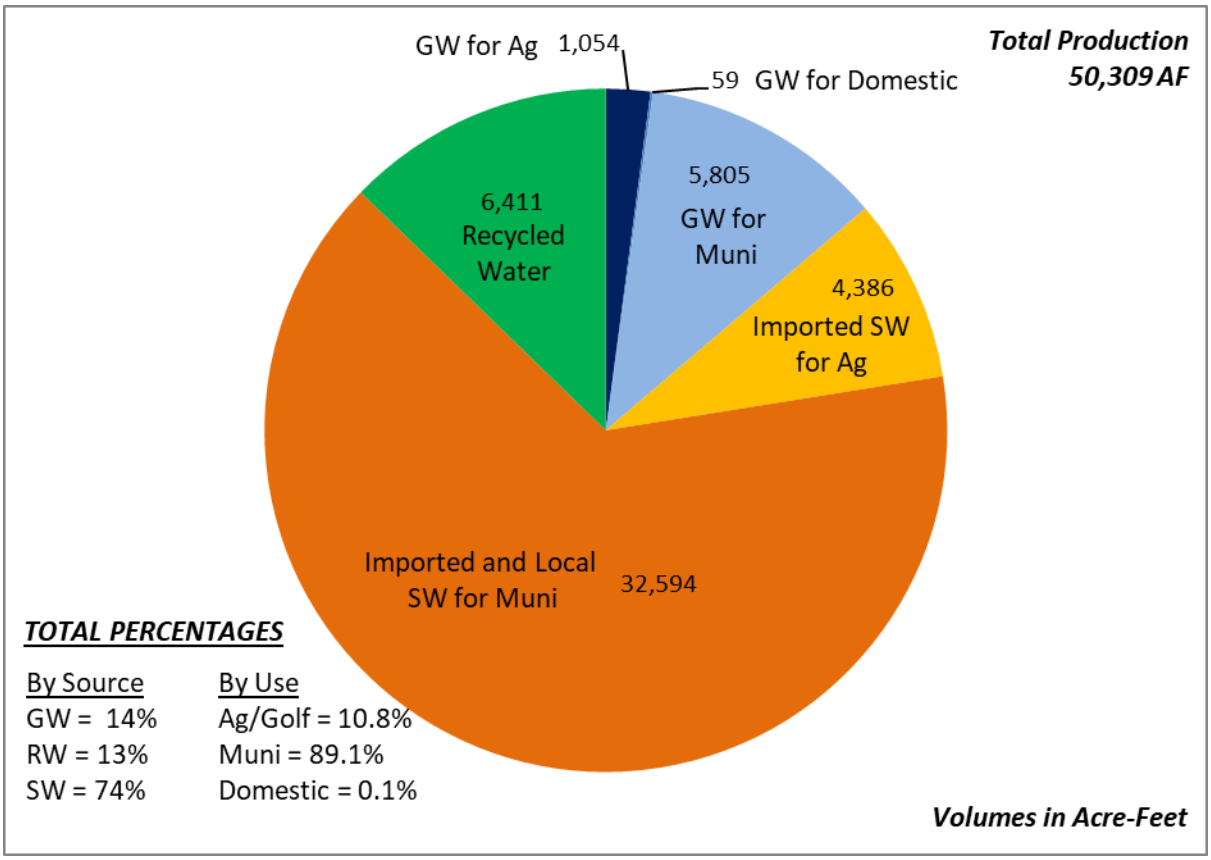
(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.

The volume of water produced and used in the Basin over the 2024 WY is shown by water source type and by water use sector in **Figure 10** and **Table 10** below.

Total groundwater production in the Basin (including by Zone 7, retailers, agriculture, domestic, etc.) supplied about 14% of the total Basin-wide water demand in the 2024 WY. Total surface water used in the Basin supplied about 74% of the total Basin-wide water demand, which allowed 36,980 AF of groundwater to be conserved instead of being pumped to meet this demand. The final 13% of water demands were satisfied by recycled water supplies, 100% of which were used for urban irrigation.

Of the total water use within the Basin during the 2024 WY (including groundwater, surface water, and recycled water), about 89.1% was used by the municipal sector, 10.8% was used by the agricultural sector (including golf courses), and 0.1% was used by the domestic sector. A more detailed breakdown of water supply and uses by source and sector within the Basin is provided in **Figure 11**. The historical Basin-wide production and relative percentage of groundwater production from the 1974 to 2024 WYs are show in **Figure 12.**

Figure 10: Pie-Chart Summary of Total Water Use by Source and Sector



Ag = Agriculture; Muni = Municipal; GW= Groundwater; RW = Recycled Water; SW = Surface Water

Total groundwater production in the Basin (including by Zone 7, retailers, agriculture, domestic, etc.) supplied about 14% of the total Basin-wide water demand in the 2024 WY. Total surface water used in the Basin supplied about 74% of the total Basin-wide water demand, which allowed 36,980 AF of groundwater to be conserved instead of being pumped to meet this demand. The final 13% of water demands were satisfied by recycled water supplies, 100% of which were used for urban irrigation.

Of the total water use within the Basin during the 2024 WY (including groundwater, surface water, and recycled water), about 89.1% was used by the municipal sector, 10.8% was used by the agricultural sector (including golf courses), and 0.1% was used by the domestic sector. A more detailed breakdown of water supply and uses by source and sector within the Basin is provided in **Figure 11**. The historical Basin-wide production and relative percentage of groundwater production from the 1974 to 2024 WYs are show in **Figure 12**.

Table 10. Summary of Total Water Use by Source and Sector

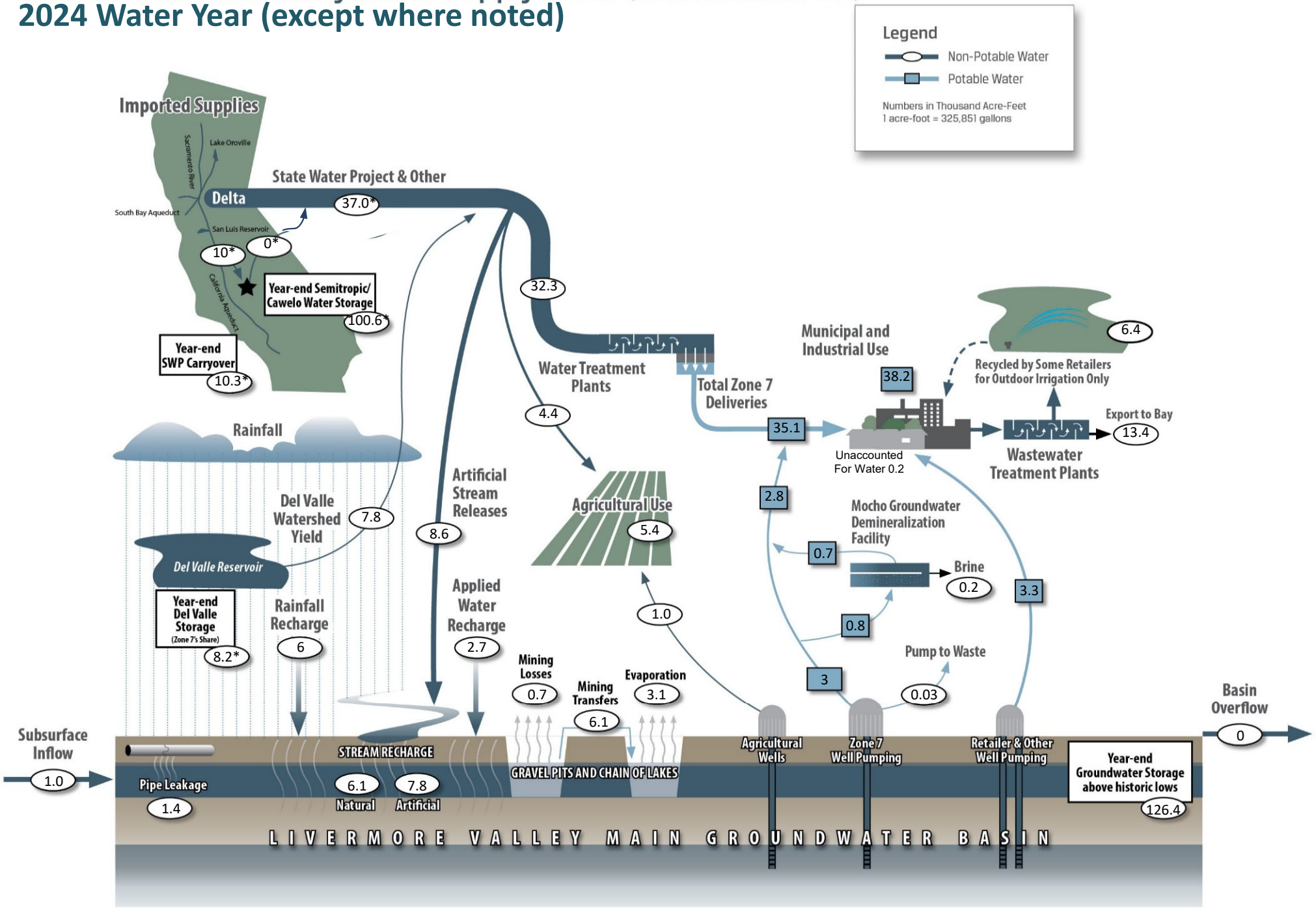
Water Use Sector	Water Source	2024 WY Water Use (AF)
Municipal	Groundwater	5,805
	Imported and Local Surface Water	32,594
	Recycled Water	6,149
Agriculture/Golf	Groundwater	1,054
	Imported Surface Water	4,386
	Recycled Water	262
Domestic	Groundwater	59
Total		**50,309**

AF = acre-feet; WY = Water Year

Methods of measurement and accuracy of measurements for groundwater extraction and surface water data are summarized in **Section 4** and **Section 5**, respectively.

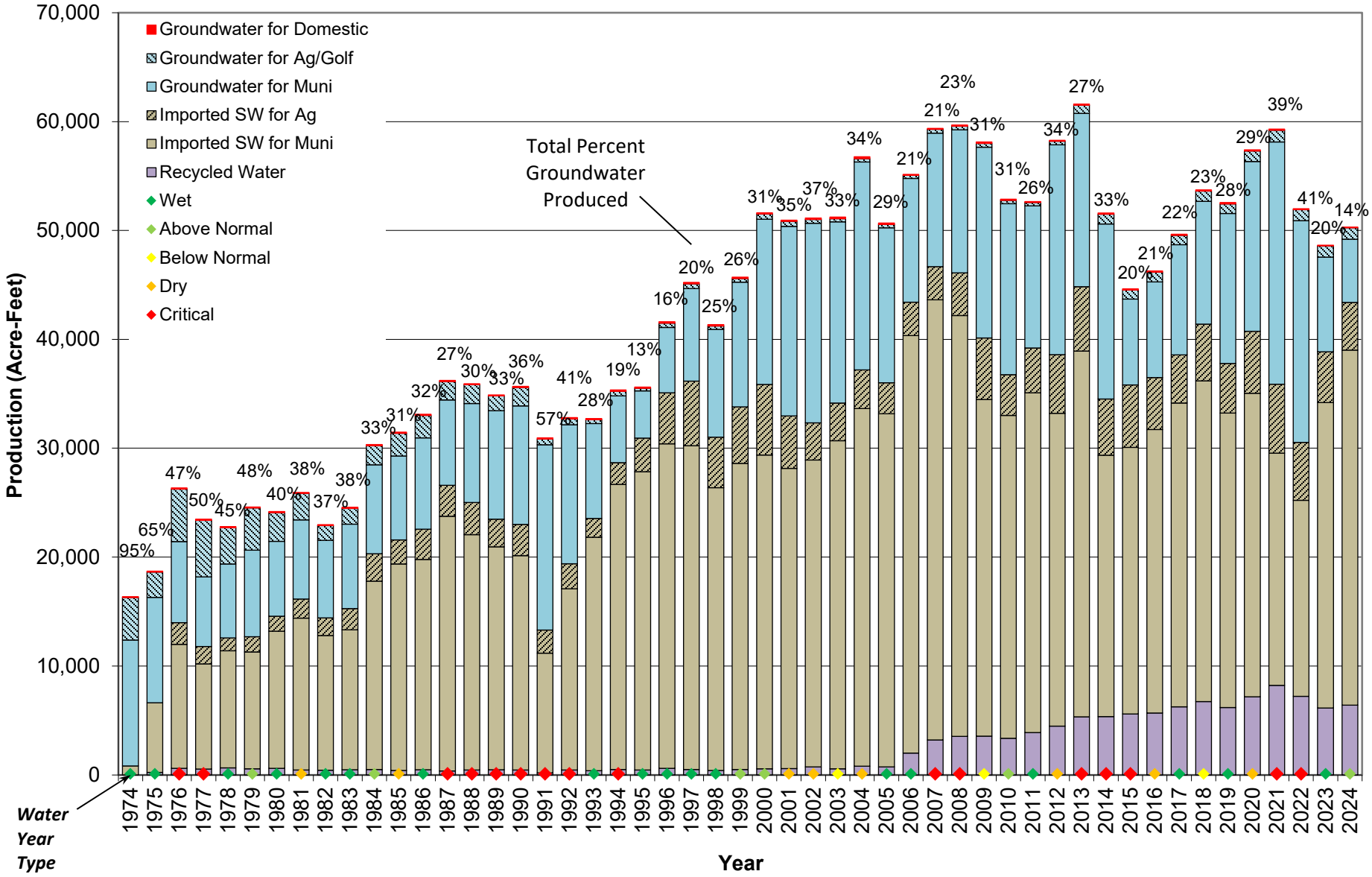
Figure 11

Livermore-Amador Valley Water Supply & Use (in Thousands of Acre-Feet)
2024 Water Year (except where noted)



* 2024 Calendar Year

FIGURE 12
VALLEY WATER PRODUCTION FROM IMPORTED WATER AND GROUNDWATER
1974 TO 2024 WATER YEARS



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7. Change in Groundwater Storage

☑ *§ 356.2 (b) (4)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(4) Change in groundwater in storage shall include the following:

(A) Change in groundwater in storage maps for each principal aquifer in the basin.

(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.

To avoid significant depletion of groundwater storage, Zone 7 operates the Basin such that groundwater storage remains between the historic full Basin volume (254 thousand acre-feet, TAF) and the historic low storage volume (128 TAF), or about one half of total storage volume. This 126 TAF (254 TAF – 128 TAF) is considered the Operational Storage. Groundwater below this historic low storage volume is regarded as Reserve Storage that is unavailable during nonemergency conditions. Most of the groundwater storage is contained in the Main Basin, which is characterized by the largest saturated thickness of aquifer materials.

Zone 7 currently uses two methods for calculating groundwater storage in the Basin: The Groundwater Elevation (GWE) method and the Hydrologic Inventory (HI) method. The GWE method uses groundwater level data and storage coefficients for "nodes" (originally developed by DWR in 1974) to estimate the total volume of water in the Basin (see *Section 8.4 Groundwater Storage* of the 2021 Alternative GSP). Zone 7 is currently updating its Hydrogeologic Conceptual Model (HCM) and numerical groundwater flow model as part of its ongoing *Livermore Valley Hydrogeologic Investigations and Groundwater Model Update Project* (see **Section 8.4.4** for further details). As part of the next Five-Year Periodic Evaluation of the Alternative GSP, Zone 7 will assess the feasibility of using the updated HCM and numerical groundwater flow model to calculate groundwater storage either as a replacement for or to supplement the existing GWE and HI methods.

The HI method, also known as the Water Budget, involves an accounting of all inflows and outflows and derivation of the change in storage as the residual of the water budget equation (see *Section 8.4 Groundwater Storage* of the 2021 Alternative GSP). Storage volumes from the two methods are averaged to quantify the total storage of the Basin. The GWE method was adjusted this year by re-calculating corrections for changes to active mining pits and lakes for each node from the 2018 WY to the 2024 WY so the previous year's totals presented in this year's report may be different than those presented in last year's report.

The GWE method yielded a total storage of 249.5 TAF at the end of 2024 WY, which is 17.0 TAF more than the GWE value calculated for the 2023 WY. **Figure 13** shows the change in groundwater storage for each node calculated from groundwater elevations and the change in storage from Fall 2023 to Fall 2024 for each Main Basin node.

The HI method produced a total storage value of 259.2 TAF for the end of 2024 WY, which is 14.0 TAF more than the end of 2023 WY HI value. Results of the HI method for the 2024 WY are summarized in **Table 11** below. All HI components are listed in **Appendix D**. **Figure 14** shows the annual change in groundwater storage and cumulative change in groundwater storage for the Basin along with the water year type from 1974 WY to 2024 WY.

Table 11: HI Method Groundwater Storage Supply and Demand Volumes, 2024 WY (AF)

CATEGORY	Sustainable Avg	2024	% of Avg
SUPPLIES	**19,800**	**25,012**	**126%**
Stream Recharge Artificial	5,300	7,812	147%
Stream Recharge Natural	6,600	6,087	92%
Rainfall Recharge	4,300	5,998	139%
Applied Water Recharge	1,600	2,750	172%
Pipe Leakage	1,000	1,365	137%
Subsurface Inflow	1,000	1,000	100%
DEMANDS	**18,800**	**10,954**	**58%**
Zone 7 Pumping excluding DSRSD	5,300	2,347	44%
Other Pumping	8,175	3,702	45%
Agricultural and Golf Pumping	625	1,054	169%
Mining Losses	1,400	700	50%
Evapotranspiration (Eto)	3,200	3,137	98%
Subsurface Outflow	100	13	13%
NET CHANGE (SUPPLY – DEMAND)	**1,000**	**14,058**	-
TOTAL STORAGE (HI Method)	-	**259,222**	-

AF = acre-feet; Avg = average; DSRSD = Dublin San Ramon Services District; HI = Hydrologic Inventory

The total groundwater storage for the Basin is computed by averaging the storage estimates from the GWE and HI methods. As shown in **Table 12** below, the average total groundwater in storage at the end of 2024 WY was calculated to be 254.4 TAF, which is about 15.6 TAF more than the 2023 WY average total storage value of 238.8 TAF. This equates to approximately 126.4 TAF of groundwater available as Operational Storage, which is just over 100% of the total operational storage capacity (i.e., 126 TAF). The increase in storage can be attributed to reduced municipal pumping and above normal groundwater recharge over the last two consecutive years. The "historic full" Basin volume (i.e., 254 TAF) may be revised as part of the next Five-Year Periodic Evaluation of the Alternative GSP based on updated calculations from the GWE and HI method and relevant information obtained from Zone 7's ongoing *Livermore Valley Hydrogeologic Investigations and Groundwater Model Update Project* (see **Section 8.4.4** for further details).

Table 12: Groundwater Storage Summary, 2024 WY (in TAF)*

Storage Calculation Method	End of 2023 WY	End of 2024 WY	Change in Storage
GWE Method	232.5	249.5	17.0
HI Method	245.2	259.2	14.0
TOTAL STORAGE (Average of GWE and HI Methods)	238.8	254.4	15.6
Operational Storage*	110.8	126.4	15.6

*Numbers rounded to nearest tenth TAF
** Operational Storage = Total Storage - Reserve Storage (i.e., 128 TAF)
GWE = Groundwater Elevation; HI = Hydrologic Inventory; TAF = Thousand acre-feet

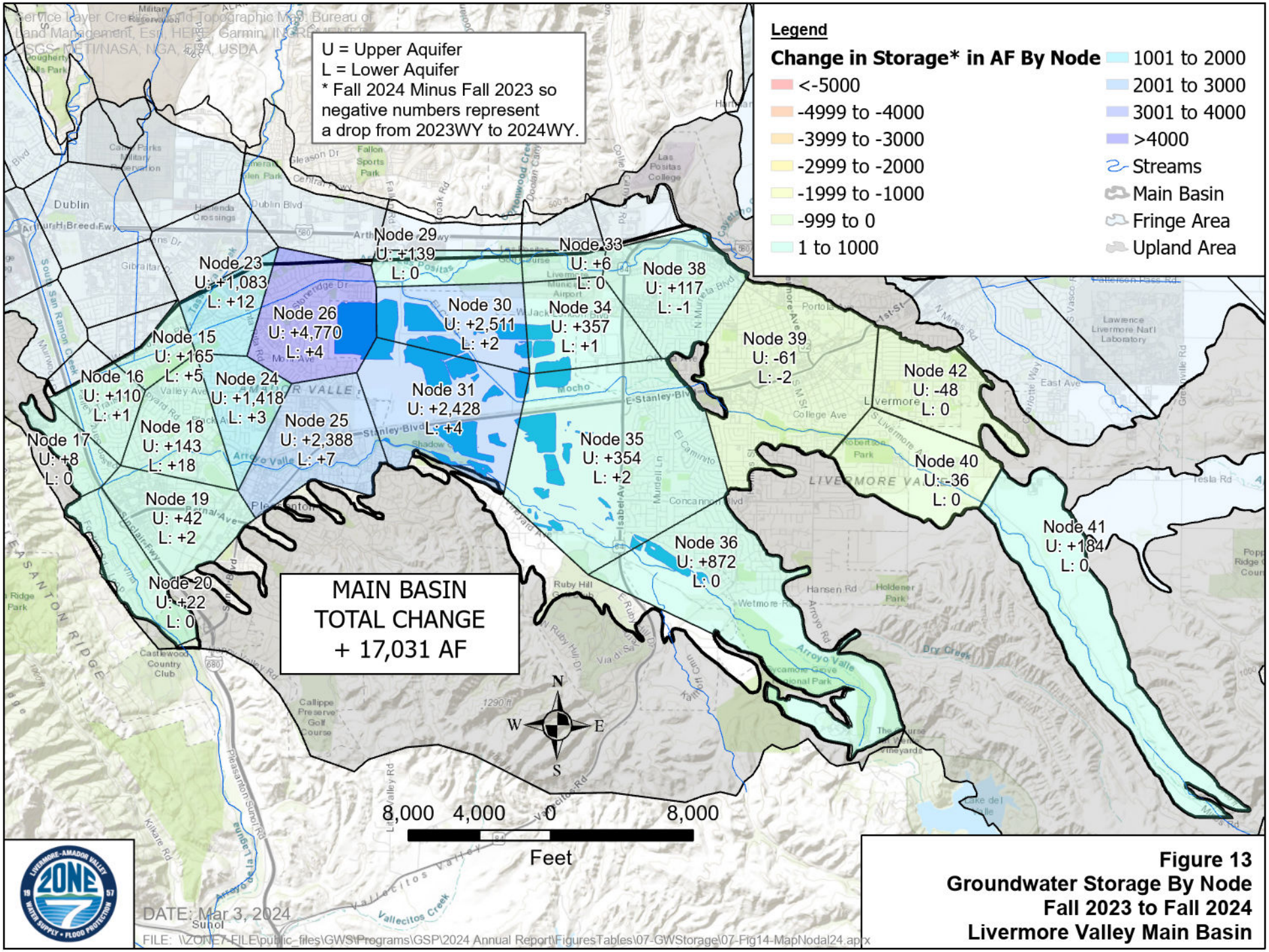
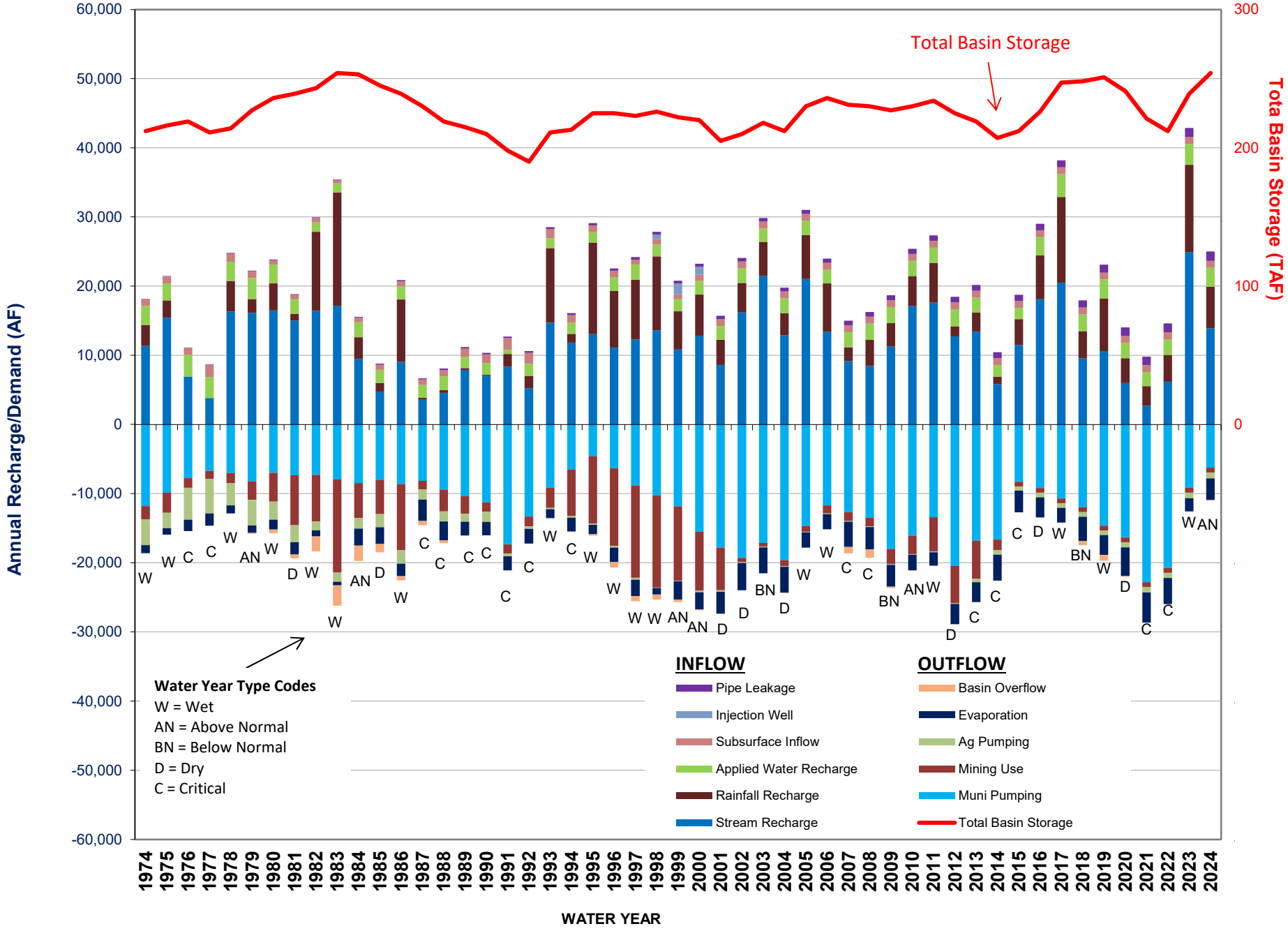


Figure 13
Groundwater Storage By Node
Fall 2023 to Fall 2024
Livermore Valley Main Basin

FIGURE 14
GRAPH OF GROUNDWATER STORAGE 1974 - 2024 WATER YEARS
LIVERMORE VALLEY GROUNDWATER BASIN



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3/3/2025

8. Plan Implementation

☑ *§ 356.2 (b) (4)*

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.

8.1. SGMA Monitoring Activities and Current Conditions

8.1.1. Description

The 2021 Alternative GSP established and defined Undesirable Results (URs), MTs, and MOs for each applicable Sustainable Management Criteria (SMC). For more information on how these were established, refer to the 2021 Alternative GSP. **Table 13** summarizes the five Sustainability Indicators for which SMCs are defined within the Basin[4], their associated URs, and MTs. The table also includes the 2024 WY status for each indicator and any action taken in the 2024 WY or planned for the upcoming water year. Additionally, each SMC is discussed in detail below. **Figure 15** shows the location of Representative Monitoring Sites (RMS) for groundwater levels (RMS-WL), groundwater quality (RMS-WQ), and Interconnected Surface Water (RMS-ICSW) monitoring networks, referred to collectively as the "SGMA Representative Monitoring Network". Background information regarding the SGMA Representative Monitoring Networks is provided in **Appendix B** and detailed in *Section 14. Monitoring Network* of the 2021 Alternative GSP.

8.1.2. Chronic Lowering of Groundwater Levels

As described in **Section 3.2** and shown in **Table 2**, water levels at all RMS-WL wells continued to remain above their respective MOs and MTs in all RMS-WL wells throughout both the seasonal high (Spring) and seasonal low (Fall) monitoring events during the 2024 WY. Updated hydrographs of groundwater elevations are presented in **Appendix C** for each of the wells in the RMS-WL monitoring network.

8.1.3. Depletion of Groundwater Storage

As described in *Section 13.2 Reduction of Groundwater Storage* of the 2021 Alternative GSP, the wells and criteria used to define URs for Depletion of Groundwater Storage are consistent with those used to define URs for Chronic Lowering of Groundwater. As described above in **Section 8.1.2**, water levels at all RMS-WL wells continued to remain above their respective MTs and MOs in both the season high (Spring) and seasonal low (Fall) 2024 WY monitoring events. Therefore, no URs were observed within the Basin during the 2024 WY. More information on groundwater storage may be found in **Section 7** above and in **Appendix D**.

[4] Seawater intrusion is not occurring in the Basin and thus no SMCs have been defined for this Sustainability Indicator.

8.1.4. Seawater Intrusion

The Basin is not a coastal basin subject to seawater intrusion. Therefore, this sustainability indicator is not applicable, and no monitoring activities were conducted.

8.1.5. Degradation of Groundwater Quality

Zone 7's 2021 Alternative GSP also established the SMCs for Degraded Water Quality as shown in **Table 13**. Results of the 2024 WY Groundwater Quality Program are discussed below for each Constituent of Concern (COC). Additional information on groundwater quality may be found in **Appendix E.**

Three wells were added to the groundwater quality monitoring program. A new dual-nested monitoring well was added to the program to fill a data gap and monitor for per- and polyfluoroalkyl substances (PFAS) migration between the Mocho and Hopyard well fields (3S1E08K002 [8K2] and 3S1E08K003 [8K3]). Additionally, one well was added to the program near Arroyo Valle in Sycamore Grove Park (3S2E29L001 [29L1]), an area identified as a Groundwater Dependent Ecosystem (GDE) in the 2021 Alternative GSP.

8.1.5.1. Total Dissolved Solids (TDS)

Table 14 shows TDS results for the 2024 WY RMS-WQ and their relative to the MOs and MTs defined in the 2021 Alternative GSP. Concentrations were below the MTs in all wells during the 2024 WY monitoring period. Five wells had concentrations above the MOs including two wells in the Main Basin Upper Aquifer (3S1E11G001 [11G1] and 3S2E08K002 [8K2]), two in the Main Basin Lower Aquifer (3S1E20C008 [20C8] and 3S2E08H003 [8H3]), and one in the Fringe Area (3S1E06F003 [6F3]).

As described in *Section 13.4.1 Undesirable Results for Degraded Water Quality* of the 2021 Alternative GSP, *URs for Degraded Water Quality are defined to occur within the Basin if and when MTs are exceeded for any of the identified COCs in greater than 25% the RMS-WQs at least two (2) consecutive years as a result of groundwater recharge or extraction, such that they cannot be managed to provide drinking water supply (i.e., that treatment or blending is not possible or practicable).* Thus, no URs were observed for TDS for the 2024 WY.

8.1.5.2. Nitrates

Table 15 shows nitrate (as nitrogen, NO_3-N) results for the 2024 WY in RMS-WQ and their relative to the MOs and MTs defined in the 2021 Alternative GSP. Concentrations were below the MTs in all wells and above the MOs in two wells, one in the Main Basin Upper Aquifer (3S1E11G001 [11G1]) and one in the Fringe Area (3S2E24A001 [24A1]). Thus, no URs were observed for Nitrate for the 2024 WY.

8.1.5.3. Boron

Boron exists at elevated concentrations in several areas of the Basin. These localized concentrations of boron have been relatively stable for many years. **Table 16** shows boron results for the 2024 WY in RMS-WQ relative to the MOs and MTs defined in the 2021 Alternative GSP.

Concentrations were below the MTs in all wells but were above the MOs in one well in the Fringe Area (3S1E06F003 [6F3]). Thus, no URs were observed for Boron for the 2024 WY.

8.1.5.4. Chromium

Table 17 shows total Chromium (Cr) results for the 2024 WY in RMS-WQ relative to the MOs and MTs defined in the 2021 Alternative GSP. Concentrations were below the MTs and MOs in all wells. Thus, no URs were observed for Chromium for the 2024 WY. Chromium concentrations did not exceed the 50 micrograms per Liter (µg/L) threshold in any wells for the 2024 WY, however there are two areas that historically have had concentrations above the 50 µg/L threshold and continue to be monitored.

8.1.5.5. Per- and Polyfluoroalkyl Substances (PFAS)

On April 10, 2024, the Environmental Protection Agency (EPA) announced the finalized Maximum Contaminant Levels (MCLs) for six PFAS compounds as shown in **Table 18**. Zone 7 is currently meeting the new MCLs ahead of the EPA's compliance date in 2029 which are more stringent than the current Response Levels established by the State Water Resources Control Board's (SWRCB's) Division of Drinking Water. In addition, Zone 7 has developed a PFAS management strategy for which more information may be found in **Section 8.2.4.5.**

The SMCs for PFAS have not been established in the current approved 2021 Alternative GSP. Zone 7 will continue to sample for PFAS compounds, identify possible sources, and perform PFAS mobilization modeling. The SMCs for PFAS will be addressed in the next Five-Year Periodic Evaluation of the Alternative GSP. **Table 19** shows 2024 WY PFAS results from the designated RMS-WQ wells. Additional information on PFAS may be found in **Appendix E**.

Table 18: PFAS Regulatory Limits (Established by EPA)

PFAS Compound	Maximum Contaminant Level*
PFOA	4.0 ppt
PFOS	4.0 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (GenX Chemicals)	10 ppt
Mixtures of two of more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index

*Enforceable level determined by running annual averages at the sampling point
EPA = Environmental Protection Agency; ppt = parts per trillion;
PFAS = Per- and polyfluoroalkyl substances; PFOA = Perfluorooctanoic acid;
PFOS = Perfluorooctane sulfonate; PFHxS = Perfluorohexanesulfonic acid; PFNA = Perfluorononanoic acid;
HFPO-DA = Hexafluoropropylene oxide dimer acid; PFBS = Perfluorobutane sulfonate

The majority of wells with Perfluorooctane Sulfonate (PFOS) concentrations that were above the EPA's 4 parts per trillion (ppt) MCL appear to be within an area in both the Upper and Lower

Aquifers that stretches from the east of the airport (north of the mining area) to Pleasanton's Wellfield (west of the mining area) and to Zone 7's Mocho Wellfield (northwest of the mining area). Zone 7 continues to sample for and manage PFAS in accordance with its PFAS management strategy (**Section 8.2.4.5**).

8.1.6. Land Subsidence

For land subsidence monitoring, MTs were not exceeded at any applicable proxy RMS-WL sites, and ground surface elevations generally rose up to 0.2 ft throughout the 2024 WY.

Figure 16 shows the land surface elevation change (approximately 100-meter resolution) from Fall 2023 to Fall 2024. The figure illustrates that land surface elevations generally rose (light grey and blue) within 0.2 ft in the western area of the Basin and dropped within 0.05 ft (dark grey) in the eastern area of the Basin. These elevation changes are within the range Zone 7 considers to be "elastic deformation" (i.e., rebounds to the original elevation when groundwater levels return to previous levels). Some areas in the Fringe Area appear to have dropped more than 0.10 ft (indicated by orange). The location of these changes and proximity to points of increased surface elevation change indicates that these areas are likely a reflection of vegetation or crop changes and not land subsidence.

8.1.7. Depletion of Interconnected Surface Waters

As described in **Section 3.2** and shown in **Table 3**, water levels remained above MOs and MTs at all RMS-ICSW wells during the seasonal low (Fall) and the seasonal high (Spring) monitoring events during the 2024 WY. Therefore, no URs were observed within the Basin during the 2024 WY. Updated hydrographs of groundwater elevations are presented in **Appendix C** for each of the wells in the RMS-ICSW monitoring network. Groundwater Dependent Ecosystems are actively being studied, and SMCs for Depletion of Interconnected Surface Waters at each RMS-ICSW may be re-evaluated during the next Five-Year Periodic Evaluation of the Alternative GSP.

Table 13: Sustainable Management Criteria Status, 2024 WY

Sustainability Indicator	Undesirable Results Criteria	Minimum Threshold	2024 WY Status	Action Taken
Chronic Lowering of Groundwater Levels	Water levels in greater than 25% of the RMS-WLs decline below their respective MTs for two consecutive years.	Historic low minus maximum annual rate of groundwater level change, or historic low if maximum annual rate of groundwater level change is not available.	MOs and MTs were not exceeded at any RMS-WLs, see **Table 2**.	Continue to monitor.
Depletion of Groundwater Storage	Water levels in greater than 25% of the RMS-WLs decline below their respective MTs for two consecutive years. Not applicable to Upland Management Area.	Water Level SMCs used as proxy.	MOs and MTs were not exceeded at any RMS-WLs, see **Table 2**.	Continue to monitor.
Degradation of Groundwater Quality	If MTs are exceeded for any of the identified constituents of concern in greater than 25% of the RMS-WQs at least two (2) consecutive years as a result of SGMA-related groundwater management activities such that they cannot be managed to provide drinking water supply (i.e., that treatment or blending is not possible or practicable).	TDS > 1,000 milligrams per liter (mg/L) or 2015 Baseline concentration plus maximum deviation, whichever is greater.	TDS was not detected above the MT in any RMS-WQs; however, TDS was detected above the MO in five RMS-WQs (3S1E20C008, 3S1E11G001, 3S1E08K002, 3S2E08H003, and 3S1E06F003), see **Table 14**. No URs have been triggered within the Basin.	Continue to monitor and increase municipal supply pumping, implement SMP, increase operation of Mocho Groundwater Demineralization Plant (MGDP), and conduct artificial groundwater recharge with low TDS water.
		NO3 (as N) > 10 mg/L or 2015 Baseline concentration plus maximum deviation, whichever is greater.	Nitrate was not detected above the MT in any RMS-WQs; however, nitrate was detected above the MO in two RMS-WQs (3S1E11G001 and 3S2E24A001), see **Table 15**. No URs have been triggered within the Basin.	Continue to monitor and implement NMP.
		Boron > 1.4 mg/L, or 2015 Baseline concentration plus maximum deviation, whichever is greater.	Boron was not detected above the MT in any RMS-WQs; however, Boron was detected above the MO in one RMS-WQ (3S1E06F003), see **Table 16**.	Continue to monitor.

Sustainability Indicator	Undesirable Results Criteria	Minimum Threshold	2024 WY Status	Action Taken
Degradation of Groundwater Quality (continued)			No URs have been triggered within the Basin.	
		Total Chromium > 0.050 mg/L, or 2015 Baseline concentration plus maximum deviation, whichever is greater.	Chromium was not detected above the MT in any RMS-WQs, see **Table 17**. No URs have been triggered within the Basin.	Continue to monitor.
		SMCs for PFAS in development.	Zone 7 continued to sample for PFAS compounds (see **Table 19**), worked to implement PFAS management strategy, adjusted pumping to meet new regulations, investigated treatment options, and performed PFAS groundwater modeling.	Continue to monitor.
Land Subsidence	Water Level SMCs used as proxy for Main Basin and Fringe Management Area, and no more than 0.4 ft of irreversible land surface elevation decrease in one year. Not applicable to Upland Management Area.	Water Level SMCs used as proxy and irreversible land surface elevation decrease of 0.4 ft.	MTs were not exceeded at any applicable RMS-WLs and Elastic fluctuations were detected at rates within 0.2 ft throughout the 2024 WY, see **Figure 16**.	Continue to monitor.
Depletion of Interconnected Surface Waters	If groundwater levels decline below their MTs in greater than 40% of the RMS-ICSWs for more than two consecutive years.	Historic low water levels or to be determined if historical water levels are not available.	MOs and MT were not exceeded at any applicable RMS-ICSWs, see **Table 3**.	Continue to monitor.

8.2. Implementation of Projects and Management Actions

8.2.1. Overview

This section provides an update on the Projects and Management Actions (P/MAs) described in *Section 15 Projects and Management Actions* of the 2021 Alternative GSP. As demonstrated in the 2021 Alternative GSP and in this Annual Report, Zone 7 continues to sustainably manage the Basin through numerous interrelated programs to assess, manage, monitor, and protect groundwater supplies. Using the data collected from its robust monitoring programs, Zone 7 adaptively manages its groundwater supplies by considering current hydrologic conditions, municipal/industrial and agricultural water demands, water quality conditions, and future water supply/demand forecasts. In addition to continuing the monitoring programs that are critical to Zone 7's sustainable groundwater management, Zone 7 is also working to implement its PFAS management strategy as well as Salt and Nutrient management plans, improve long-term surface water supply reliability, seek conjunctive use opportunities, provide watershed protection, and support water recycling operations.

8.2.2. Water Supply Augmentation Projects

8.2.2.1. Existing Imported Water Supplies

Imported surface water supplies secured by Zone 7 for the 2024 WY are shown in **Table 6** and **Figure 11** and are summarized below:

- The SWP (deliveries via the SBA) allocation for the 2024 CY was 40% of Zone 7's maximum allocation (80,619 AF) or 32,248 AF. Approximately 11,900 AF of this was imported via the SBA for the 2024 CY, 11,250 AF was transferred, and the remaining 9,200 AF was carried over for the 2025 CY. Zone 7 also imported 25,200 AF of water from its Article 56 allocation (previous year's carryover). Zone 7 did not import any water that was banked at San Luis Reservoir (Article 21) during the 2024 CY.

- Zone 7 did not recover any water that was previously stored in the Kern Subbasin water banks (via Semitropic and Cawelo Water Districts) but did add 5,000 AF to its storage accounts during the 2024 CY. Zone 7 had a total of 100,600 AF stored in the Kern Subbasin at the end of the 2024 CY.

- Zone 7 did not import any water from the Lower River Yuba Accord (Yuba) or the Mojave Water Agency during the 2024 CY.

- Total imported surface water supplies in the 2024 CY (37,000 AF) supplied 74% of regional water demands.

- Total groundwater production in the Basin (including by Zone 7, retailers, agriculture, domestic, etc.) supplied about 14% of the total Basin-wide water demand in the 2024 WY.

- Of the 2,992 AF of groundwater pumped by Zone 7 (including pumped by Zone 7 for DSRSD) during the 2024 WY, about 2,807 AF went into production; the remainder of which is accounted for in pumping losses and exported brine from the groundwater demineralization process.

- Zone 7's total produced groundwater was about 8% of the total treated water production that Zone 7 delivered to its retailers during the 2024 WY (on average, groundwater makes up about 16% of Zone 7's annual treated water deliveries).

8.2.2.2. Future Water Supply Projects

Zone 7 continued its strategy of securing the long-term reliability of the water supply system to meet the needs of both existing and future customers as summarized below:

- In the 2024 WY, Zone 7 filed a petition to split its water right permit to license water previously put to beneficial use and continue diverting surface water captured in Lake Del Valle from the upper Arroyo Valle. Under the existing permit, Zone 7's average annual yield from the upper Arroyo Valle is about 7,300 AFY. A pipeline and pump station connecting Lake A to the South Bay Aqueduct are included in Zone 7's Capital Improvement Plan (CIP, 2018-2028). Once in service, these projects will augment and capture storage of water from the Del Valle Watershed.

- Zone 7 continues to participate in the Delta Conveyance Project, the DWR-proposed project to upgrade the State Water Project system infrastructure and improve its long-term reliability while protecting the Sacramento-San Joaquin Delta (Delta) ecosystem. The Delta Conveyance Project is estimated to be in-service by 2045.

- Zone 7 has participated in the Los Vaqueros Reservoir Expansion Project since 2016 and considered the project as an option for new storage capacity. In late 2024, Contra Costa Water District (CCWD), the owner and operator of the project's key facilities, began taking steps to end their participation in the project. The project could no longer continue without CCWD's participation; therefore, the project has effectively ended.

- Zone 7 is continuing to evaluate other alternative water supply and storage options such as the Chain of Lakes Conveyance System, Bay Area Regional Desalination Project, potable reuse, Sites Reservoir, and water transfers. Ultimately, Zone 7 may choose to implement one or several of these options depending on the results of the studies and planning efforts, the amount and timing of development and conservation, and the determination of costs and benefits.

- Finally, Zone 7 continues to invest in planning and modeling tools to improve its long-term water supply reliability in the face of future hydrologic and water supply uncertainties. For example, Zone 7 continues to make improvements to its water supply risk model to enhance its capabilities to evaluate potential water supply portfolios and

water supply shortage risks. The water supply risk model was developed on the RiverWare modeling platform and runs on a monthly timestep to simulate the seasonal availability of supplies in an integrated manner. Simulated supply sources include local runoff, imported surface water, recovered water from groundwater banks, and local groundwater. The water supply risk model can also be used in conjunction with Zone 7's updated groundwater model to further analyze the impacts of variable conjunctive use operations on groundwater conditions and SGMA compliance.

8.2.2.3. Conjunctive Use

Zone 7 implements conjunctive use practices within the Basin to the greatest extent possible given current hydrologic conditions and imported water supply availability. During the 2024 WY, Zone 7 released 11,266 AF from the SBA into the Arroyo Valle and Arroyo Mocho for artificial recharge and water rights, of which 7,812 AF was recharged.

Additionally, Zone 7 recently commissioned a technical study to assess the potential to increase conjunctive use in the Basin, including expansion of artificial recharge operations within the Chain of Lakes (COL), and an Update to its Water Supply Evaluation (Zone 7, 2022).

8.2.2.4. Well Master Plan (WMP, Zone 7, 2003)

During the 2024 WY, Zone 7 continued the process of reevaluating Zone 7's supply well needs. Site specific evaluation and future well construction will depend on the outcome of water supply needs, PFAS investigations, and future regulatory requirements. Once the evaluation is complete, Zone 7 plans to begin the WMP update in 2025.

8.2.2.5. Chain of Lakes Recharge Projects

During the 2024 WY, Zone 7 continued to work with Lehigh Hanson Aggregates (former quarry operator for Lakes H, I, and Cope) while they continue to finalize reclamation on Lake H and work toward closing out surface mining permit (SMP) 31/36.

One of the conditions of approval in CEMEX's 2021 amendment to SMP 23 is to install up to three new monitoring wells with guidance from Zone 7 on location and screened intervals. CEMEX completed one nested monitoring well location consisting of three wells screened at intervals corresponding to Zone 7's existing nested monitoring wells installed in 2010.

8.2.3. Water Demand Reduction Management Actions

8.2.3.1. Existing and Future Non-Potable Recycled Water Use

Both the City of Livermore and DSRSD plan to expand the use of recycled water for turf and landscape irrigation projects over the next few years. The City of Pleasanton purchases recycled water from DSRSD and/or Livermore for irrigation of city parks and landscapes located within the Main Basin. In 2024 WY, Livermore and DSRSD recycled about 6,411 AF, approximately 13% of the total water use for the Basin.

8.2.3.2. Water Conservation

Throughout the 2024 WY, Zone 7 continued its regional coordination and promotion of conservation programs, including community workshops and other education/training events, school education programs, and rebates and water-saving giveaway programs.

8.2.3.3. Groundwater Pumping Quota Program

The retailers are permitted by contract to pump a GPQ (accounted for on a CY basis) without having to pay a replenishment fee to Zone 7. They can carry forward any un-pumped GPQ (up to 20% of their GPQ). The retailer's GPQ, along with their groundwater pumping volumes for the 2024 CY, are shown in **Table 5**. None of the retailers pumped more than their respective GPQ in 2024 CY.

8.2.4. Projects to Improve Drinking Water Quality in Zone 7 Service Area

8.2.4.1. Well Ordinance Program

During the 2024 WY, Zone 7 issued 112 drilling permits, thirteen permits less than in the 2023 WY. Eleven water supply well permits were issued in the 2024 WY. About 66% of the permitted well work was physically inspected by Zone 7 permit compliance staff; the remaining 34% proceeded with self-monitoring and reporting efforts when a licensed professional was supervising the project.

8.2.4.2. Toxic Site Surveillance Program

In the 2024 WY, Zone 7 tracked the progress of 102 open sites in or nearby the Livermore and Sunol groundwater basins. Twenty-eight of these cases have identified groundwater as a potential media of concern due to their impact or threat of impact on potable groundwater supplies. Another 312 contamination cases have been classified as either "Closed" or "No Action Required" because they have been sufficiently cleaned up and/or pose minimal threat to drinking water supplies.

8.2.4.3. Salt Management & Groundwater Demineralization Program

Zone 7's long-term salt management strategy includes monitoring and increasing municipal supply pumping, increasing operation of the Mocho Groundwater Demineralization Plant (MGDP), and conducting artificial groundwater recharge with low TDS water. **Table 20** below shows the salt loading summary for the 2024 WY.

Table 20: Salt Loading Summary for 2024 WY

Category	Volume (AF)	Salt Mass (Tons)	TDS Concentration (mg/L)	Change in Concentration from 2023 WY (mg/L)
Inflow	24,798	13,341	396	14
Outflow	10,954	5,250	353	-71
Net (In – Out)	13,845	8,091	-	-
Basin Total	**259,222**	**249,970**	**710**	**-16**

AF = acre-feet
mg/L = milligrams per Liter

- In the 2024 WY, the total salt mass added to the Main Basin by all the inflow (Supply) components was approximately 13,341 tons, whereas the total mass of salts removed from the Basin by all the outflow (Demand) components is estimated at 5,250 tons; a net increase of 8,091 tons.

- The salt load increase was accompanied by a significant groundwater storage increase during the 2024 WY, which caused the end-of-water-year theoretical average TDS concentration for the Main Basin to decrease by -16 mg/L from the previous WY average.

Zone 7 continued operating the MGDP throughout the 2024 WY:

- During the 2024 WY, the MGDP produced 151 AF of brine (compared to 155 AF in the 2023 WY) that resulted in the export of about 441 tons of salt from the Main Basin through the Livermore-Amador Valley Water Management Agency (LAVWMA) pipeline (compared to 510 tons in the 2023 WY).

- Since its inception, the MGDP has exported over 19,596 tons of salt from the Livermore Valley.

8.2.4.4. Nutrient Management

The Nutrient Management Plan (NMP) (*Zone 7, 2015b*) identified ten local high nitrate Areas of Concern (AOC) where nitrate concentrations persist above the Basin Objective (which is the MCL, 10 mg/L NO_3-N).

During the 2024 WY, Zone 7 continued working with Alameda County Environmental Health (ACEH) to implement the NMP measures. One of these measures is that Zone 7 regulates commercial onsite wastewater treatment systems (OWTS, a.k.a., septic systems) to manage nitrate loading in the groundwater. In the 2024 WY, Zone 7 received three applications for nonresidential OWTS. Zone 7 is working with ACEH to process the applications.

8.2.4.5. PFAS Management Strategy

On April 10, 2024, the Environmental Protection Agency (EPA) announced the final National Primary Drinking Water Regulation (NPDWR) for six PFAS compounds. With this regulation, EPA established legally enforceable Maximum Contaminant Levels (MCLs) and a Hazard Index as shown in **Table 18**. The regulations include:

- By 2027, monitor for these PFAS with initial monitoring completed within three years followed by ongoing compliance monitoring.
- In 2027, provide the public with information on the levels of these PFAS in their drinking water.
- By 2029, implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed these MCLs.
- Beginning in 2029, take action to reduce levels of these PFAS in drinking water and provide notification to the public of such a violation.

Zone 7 is already in compliance with the EPA's MCLs and the Hazard Index ahead of the 2029 due date in addition to complying with the SWRCB's orders concerning PFAS and meeting Response Levels established by the SWRCB Division of Drinking Water. In addition, Zone 7 has developed a PFAS management strategy consisting of PFAS monitoring, blending and treating, managing water quality, and diversifying groundwater resources. Zone 7 continues to expand and refine its PFAS monitoring network.

On September 4, 2024, Zone 7 held a Special Board Meeting where staff gave a comprehensive update on the Agency's PFAS management strategy.

Several municipal wells, primarily in the western portion of the Main Basin, have been impacted by PFAS compounds over the last few years. For example, elevated PFAS concentrations have been detected at the City of Pleasanton's three active municipal wells. As a result, Pleasanton has ceased pumping from all three of their wells and is studying options to acquire water from Zone 7 and/or drill additional municipal wells elsewhere in the Basin. At least seven of Zone 7's ten municipal wells have also been detected with elevated PFAS concentrations. To meet the latest regulatory limits, Zone 7 has implemented the following management activities:

- Ceased pumping from the Mocho 1 Well in 2020;
- Diverted pumped groundwater from the Mocho 2 and 3 Wells through the existing MGDP and/or blended with low-PFAS groundwater pumped from the Mocho 4 Well;
- Ceased pumping from the COL wells in 2022 and is currently installing a PFAS treatment system that is scheduled to be operational in early 2025; and

- Installed a new ion-exchange PFAS treatment facility at the Stoneridge Well; and
- Installed a new PFAS Sentinel monitoring well in between the Mocho and Hopyard well fields to fill monitoring data gaps and to detect any PFAS that may migrate towards the Hopyard well field.

In 2023 Zone 7 was awarded $16M in grant funding from DWR (Proposition 68, Round 2 Sustainable Groundwater Management Implementation) for the Stoneridge and Chain of Lakes Wells' ion-exchange PFAS Treatment Facilities. The Stoneridge facility was completed in September 2023 and a special Board meeting/ribbon cutting ceremony was held at the facility on September 13, 2023. The Stoneridge facility is currently operational.

8.2.5. Data Gap-Filling and Other Alternative GSP Implementation Projects

In 2024 Zone 7 conducted the following implementation and data gap filling activities and/or projects and will be seeking grant funding to fill additional data gaps:

- **Livermore Valley Hydrogeologic Investigations and Groundwater Model Update:** In November 2023, Zone 7 began a project to update its hydrogeologic conceptual model (HCM) and numerical groundwater flow model. New geophysical surveys using seismic refraction, electrical resistivity tomography (ERT), and stationary time-domain electromagnetics (sTEM) were conducted in December 2023 along areas of interest and uncertainty. Aquifer pumping tests were conducted in the Mocho well field and at CWS Well # 31 during Q1 2024 to evaluate aquifer characteristics in the Amador West and Bernal Subareas, respectively. The results of the geophysical surveys and pumping tests, in conjunction with DWR's Airborne Electromagnetic (AEM) Survey data (from December 2022) and Zone 7's existing well construction, e-log and geology databases were used to build a new HCM during Q2 2024 using Leapfrog geologic modeling software. Refinements to the new HCM will be discussed in detail for the next 5-Year Periodic Evaluation of the Alternative GSP. The refined HCM was used as a basis to build a new numerical groundwater flow model using MODFLOW6, which is currently under development. The new model consists of nine layers and 500x500-foot grid spacing across the Basin, including the Fringe and Upland Areas. The new model is expected to be completed in 2025. The updated HCM and numerical groundwater flow model will be used to evaluate and refine storage calculation methods in the next Five-Year Periodic Evaluation of the Alternative GSP.
- **Water Supply Risk Model:** Zone 7 continues to make improvements to its new robust risk model using RiverWare software. This model runs on a monthly time step, and simulates the seasonal availability of supplies including local runoff, imported surface water, recovered water from groundwater banks and local groundwater in an integrated manner. Additionally, the risk model is expected to be used in conjunction with the

updated numerical groundwater model to further analyze the impacts of variable conjunctive use operations on groundwater and sustainable management of the Basin.

- **Isotopic Recharge Pathway Study:** Zone 7 collaborated with research scientists at Lawrence Livermore National Laboratory (LLNL) who used stable water isotopes (δ18O and δ2H) in conjunction with naturally occurring radioactive isotopic tracers, sulfur- 35 (35S, t½ = 87 days) and tritium (3H, t½ = 12.3 years) to delineate where local and imported water recharges along arroyos and throughout the basin. The paper, titled *How Rains and Floods Become Groundwater: Understanding Recharge Pathways With Stable and Cosmogenic Isotopes*, was submitted to the journal of *Hydrologic Processes* in July 2024 and was accepted in November 2024. Zone 7 and LLNL plan to build off this study in the future.
- **Installation of Nested Well Set (3S1E08K002 and 3S1E08K003) Between Mocho and Hopyard Wellfields:** In January 2024, Zone 7 completed a nested well set to act as sentinel wells to detect if PFAS compounds migrate southwest of the Mocho wellfield towards the Hopyard wellfield. These wells were incorporated into Zone 7's monitoring network for groundwater elevations and quality in 2024 WY (see **Appendix B** and **Appendix E**).
- **Livermore Valley Groundwater Basin Sustainable Management Annual Report, 2023 Water Year:** Submitted to DWR on 27 March 2024, prior to the 1 April 2024 deadline.

8.3. Progress Made on Addressing Recommended Corrective Actions in the Department's 2021 Alternative GSP Determination

Zone 7 submitted the first Five-Year Periodic Evaluation of the Alternative GSP (2021 Alternative GSP; Zone 7 GSA, 2021, also referenced as 2022 Alternative GSP in other reports) in December 2021. As part of that submittal, Zone 7 addressed all recommended corrective actions from DWR on the original (2016) Alternative GSP (see 2021 Alternative GSP Section 1.2 – Summary of Major Plan Updates). The 2021 Alternative GSP was approved by DWR on June 27, 2024. Recommended corrective actions from DWR's review include:

- *Recommended Corrective Action #1:* Ensure that the monitoring network details in the Alternative GSP are consistent with the information contained in DWRs SGMA Portal Monitoring Network Module (MNM).

In response to this recommended corrective action, Zone 7 is reviewing its monitoring reporting data format to ensure compatibility with the SGMA Portal MNM.

8.4. Other Information on Implementation Progress

8.4.1. Stakeholder Outreach and Engagement

During the 2024 WY, Zone 7 continued to conduct outreach to various stakeholders on a variety of platforms as summarized below.

- **Livermore Valley Hydrogeologic Investigations and Groundwater Model Update**
    - Presentation to Zone 7 Water Resources Committee of Directors, The Livermore Valley Hydrogeologic Investigations and Groundwater Model Update, April 30, 2024
        - Agenda Item 3: https://portal.laserfiche.com/Portal/DocView.aspx?id=33386&repo=r-35dfdee4
    - Presentation to Zone 7 Water Resources Committee of Directors, The Livermore Valley Hydrogeologic Investigations and Groundwater Model Update, October 8, 2024
        - Agenda Item 3: https://portal.laserfiche.com/Portal/DocView.aspx?id=36598&repo=r-35dfdee4
        - Minutes of Meeting: https://portal.laserfiche.com/Portal/DocView.aspx?id=38904&repo=r-35dfdee4

- **PFAS Management Strategy**
    - Special Board meeting on September 4, 2024, to present updated PFAS management strategy by Regional Water Quality Control Board and Zone 7 staff
        - Agenda Item 5: https://portal.laserfiche.com/Portal/DocView.aspx?id=35379&repo=r-35dfdee4
        - Supplemental material item 5: https://portal.laserfiche.com/Portal/DocView.aspx?id=35472&repo=r-35dfdee4
        - Approved board meeting minutes: https://portal.laserfiche.com/Portal/DocView.aspx?id=37507&repo=r-35dfdee4

- **Desktop Groundwater Contaminant Study**
    - Staff presented the findings of Desktop Groundwater Contaminant Mobilization Study to the Zone 7 Water Resources Committee on January 23, 2024, and the Board of Directors on February 21, 2024:
        - *Water Resources Committee, January 23, 2024:*
            - Agenda Item 3: https://portal.laserfiche.com/Portal/DocView.aspx?id=32909&repo=r-35dfdee4

- Supplemental Material Item 3: https://portal.laserfiche.com/Portal/DocView.aspx?id=32954&repo=r-35dfdee4

▪ *Board Meeting, February 21, 2024:*

- Agenda Item 9: https://portal.laserfiche.com/Portal/DocView.aspx?id=33034&repo=r-35dfdee4
- Minutes of Meeting (see Pages 2 to 4 for comments): https://portal.laserfiche.com/Portal/DocView.aspx?id=32954&repo=r-35dfdee4

8.4.2. Public Comments Received

During the 2024 WY, public comments were received by Zone 7 in the following forms: letters, emails, and verbal comments at the monthly Zone 7 Board of Directors meetings. **Section 8.4.1** above includes links to the minutes of the Zone 7 Board meetings where public comments were solicited and/or received.

8.4.3. Additional Information or Accomplishments

The following describes additional information and/or accomplishments Zone 7 has made related to implementation efforts that are being used to achieve the Basin's Sustainability Goal:

- Optimized groundwater production operations to ensure consistent compliance with SMCs. For example, during the recent 2020 WY – 2022 WY drought, Zone 7 shut down groundwater pumping when groundwater levels at nearby RMS-WL wells temporarily dropped below MTs;
- Continued to implement Executive Orders for well permitting and SGMA compliance;
- Continued studying contaminant mobilization to protect Basin water quality objectives;
- Reviewed and commented on various California Environmental Quality Act documents with respect to potential impacts on the Basin's ability to meet SGMA compliance; and
- Reviewed and commented on various project development documents to ensure project proponents comply with requirements specified in the 2021 Alternative GSP.

8.4.4. Anticipated WY 2025 Implementation Activities

The following describes the planned and/or anticipated implementation activities to be undertaken by Zone 7 and associated Basin stakeholders for the upcoming 2025 WY.

- **Livermore Valley Hydrogeologic Investigations and Groundwater Model Update:** Zone 7 completed its refined HCM in 2024 and continues to update its Basin-wide geologic model using Leapfrog geologic modeling software as new well and hydrogeologic data become available. Zone 7 expects to complete its new groundwater model in 2025. The model will

be used to support existing and future SGMA planning and implementation efforts, including evaluating P/MAs, water supply and operations alternatives, climate change scenarios, and contaminant fate and transport simulations.

- **Joint Regional Groundwater Development Project:** Zone 7 and the City of Pleasanton agreed to investigate the feasibility of constructing new production wells in the Bernal Subarea to enhance groundwater supply reliability. Phase I, which began in November 2024, consists of constructing three test wells at strategic locations within the Bernal Subarea, performing well and water quality testing, conduct groundwater model simulations, and complete a basis of design for new facilities and infrastructure for new wells and transmission pipeline. A feasibility report is expected to be completed in late 2025.
- **Urban Water Management Plan Update:** Zone 7 is required to prepare an Urban Water Management Plan (UWMP) every five years to assess water supply availability and reliability. The current report, the 2020 Zone 7 UWMP, was published in 2021. Zone 7 will be developing the 2025 UWMP beginning in 2025 and is expected to be completed by July 1, 2026.
- **Livermore Valley Groundwater Basin Sustainable Management Annual Report, 2024 Water Year:** Submittal to DWR by 1 April 2025 deadline; accompanying appendices to be reviewed for approval at the April 16, 2025 Zone 7 Board of Directors meeting.

TABLE 14
TOTAL DISSOLVED SOLIDS (TDS) AT REPRESENTATIVE MONITORING SITES
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		Management Area/Unit			TDS (mg/L)			SMCs for TDS (mg/L)				
Well Name	Map	Area	Subarea	Aquifer	2024 WY	Below MT	Below MO	MT	IM-5	IM-10	IM-15	MO
3S1E20C007	20C7	Main	Bernal	Upper	410	390	90	800	725	650	575	500
3S1E20C008	20C8	Main	Bernal	Lower	539	215	-39	754	691	627	564	500
3S1E09P005	9P5	Main	Amador West	Upper	436	872	64	1,308	1,106	904	702	500
3S1E09P010	9P10	Main	Amador West	Lower	483	134	17	617	588	559	529	500
3S1E11G001	11G1	Main	Amador East	Upper	736	226	-236	962	847	731	616	500
3S1E12K003	12K3	Main	Amador East	Lower	350	246	150	596	572	548	524	500
3S2E08K002	8K2	Main	Mocho II	Upper	641	55	-141	696	647	598	549	500
3S2E08H003	8H3	Main	Mocho II	Lower	666	52	-166	718	664	609	555	500
3S1E06F003	6F3	Fringe	Northwest	Upper	2,929	726	-84	3,655	3,453	3,250	3,048	2,845
2S2E34E001	34E1	Fringe	Northeast	Upper	483	517	517	1,000	1,000	1,000	1,000	1,000
3S2E24A001	24A1	Fringe	East	Upper	985	194	39	1,179	1,140	1,102	1,063	1,024
3S2E21K009	21K9	Upland	Upland	Upper	670	330	330	1,000	1,000	1,000	1,000	1,000

RMS	Representative Monitoring Sites
TDS	Total Dissolved Solids
mg/L	milligrams per liter
MT	Minimum Threshold
IM-#	Interim Milestone at # years
MO	Measurable Objective
SMC	Sustainable Management Criteria

TABLE 15
NITRATE (as NO_3N) AT REPRESENTATIVE MONITORING SITES
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		Management Area/Unit			Nitrate (mg/L)			SMCs Nitrate (mg/L)				
Well Name	Map	Area	Subarea	Aquifer	2024 WY	Below MT	Below MO	MT	IM-5	IM-10	IM-15	MO
3S1E20C007	20C7	Main	Bernal	Upper	1.31	8.7	8.7	10	10	10	10	10
3S1E20C008	20C8	Main	Bernal	Lower	4.99	5.0	5.0	10	10	10	10	10
3S1E09P005	9P5	Main	Amador West	Upper	0.1	9.9	9.9	10	10	10	10	10
3S1E09P010	9P10	Main	Amador West	Lower	0.14	9.9	9.9	10	10	10	10	10
3S1E11G001	11G1	Main	Amador East	Upper	10.8	8.5	-0.8	19	17	15	12	10
3S1E12K003	12K3	Main	Amador East	Lower	1.16	8.8	8.8	10	10	10	10	10
3S2E08K002	8K2	Main	Mocho II	Upper	8.49	7.7	1.5	16	15	13	12	10
3S2E08H003	8H3	Main	Mocho II	Lower	9.08	5.6	0.9	15	14	12	11	10
3S1E06F003	6F3	Fringe	Northwest	Upper	ND	10.0	10.0	10	10	10	10	10
2S2E34E001	34E1	Fringe	Northeast	Upper	ND	10.0	10.0	10	10	10	10	10
3S2E24A001	24A1	Fringe	East	Upper	28.5	9.0	-18.5	38	31	24	17	10
3S2E21K009	21K9	Upland	Upland	Upper	5.43	4.6	4.6	10	10	10	10	10

RMS	Representative Monitoring Sites
Nitrate	Nitrate as Nitrogen
mg/L	milligrams per liter
MT	Minimum Threshold
IM-#	Interim Milestone at # years
MO	Measurable Objective
SMC	Sustainable Management Criteria
ND	Not Detected (i.e., below lab detection limits). Assumed 0 for calculations.

TABLE 16
BORON (B) AT REPRESENTATIVE MONITORING SITES
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		Management Area/Unit			Boron (ug/L)			SMCs Boron (ug/L)				
Well Name	Map	Area	Subarea	Aquifer	2024 WY	Below MT	Below MO	MT	IM-5	IM-10	IM-15	MO
3S1E20C007	20C7	Main	Bernal	Upper	320	1,080	1,080	1,400	1,400	1,400	1,400	1,400
3S1E20C008	20C8	Main	Bernal	Lower	240	1,160	1,160	1,400	1,400	1,400	1,400	1,400
3S1E09P005	9P5	Main	Amador West	Upper	510	890	890	1,400	1,400	1,400	1,400	1,400
3S1E09P010	9P10	Main	Amador West	Lower	470	930	930	1,400	1,400	1,400	1,400	1,400
3S1E11G001	11G1	Main	Amador East	Upper	750	650	650	1,400	1,400	1,400	1,400	1,400
3S1E12K003	12K3	Main	Amador East	Lower	210	1,190	1,190	1,400	1,400	1,400	1,400	1,400
3S2E08K002	8K2	Main	Mocho II	Upper	450	950	950	1,400	1,400	1,400	1,400	1,400
3S2E08H003	8H3	Main	Mocho II	Lower	420	980	980	1,400	1,400	1,400	1,400	1,400
3S1E06F003	6F3	Fringe	Northwest	Upper	3,030	1,560	-1,630	4,590	3,793	2,995	2,198	1,400
2S2E34E001	34E1	Fringe	Northeast	Upper	720	4,000	680	4,720	3,890	3,060	2,230	1,400
3S2E24A001	24A1	Fringe	East	Upper	1,100	1,300	300	2,400	2,150	1,900	1,650	1,400
3S2E21K009	21K9	Upland	Upland	Upper	110	1,290	1,290	1,400	1,400	1,400	1,400	1,400

RMS	Representative Monitoring Sites
ug/L	micrograms per liter
MT	Minimum Threshold
IM-#	Interim Milestone at # years
MO	Measurable Objective
SMC	Sustainable Management Criteria

TABLE 17
CHROMIUM (Cr) AT REPRESENTATIVE MONITORING SITES
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		Management Area/Unit			Chromium (ug/L)			SMCs Chromium (ug/L)				
Well Name	Map	Area	Subarea	Aquifer	2024 WY	Below MT	Below MO	MT	IM-5	IM-10	IM-15	MO
3S1E20C007	20C7	Main	Bernal	Upper	3.2	47	47	50	50	50	50	50
3S1E20C008	20C8	Main	Bernal	Lower	4.9	45	45	50	50	50	50	50
3S1E09P005	9P5	Main	Amador West	Upper	2.2	48	48	50	50	50	50	50
3S1E09P010	9P10	Main	Amador West	Lower	3.4	47	47	50	50	50	50	50
3S1E11G001	11G1	Main	Amador East	Upper	7.5	43	43	50	50	50	50	50
3S1E12K003	12K3	Main	Amador East	Lower	ND	50	50	50	50	50	50	50
3S2E08K002	8K2	Main	Mocho II	Upper	5.2	45	45	50	50	50	50	50
3S2E08H003	8H3	Main	Mocho II	Lower	4.3	46	46	50	50	50	50	50
3S1E06F003	6F3	Fringe	Northwest	Upper	19	31	31	50	50	50	50	50
2S2E34E001	34E1	Fringe	Northeast	Upper	ND	50	50	50	50	50	50	50
3S2E24A001	24A1	Fringe	East	Upper	3.6	46	46	50	50	50	50	50
3S2E21K009	21K9	Upland	Upland	Upper	3.8	46	46	50	50	50	50	50

RMS	Representative Monitoring Sites
Chromium	Total Chromium
ug/L	micrograms per liter
MT	Minimum Threshold
IM-#	Interim Milestone at # years
MO	Measurable Objective
SMC	Sustainable Management Criteria
ND	Not Detected (i.e., below lab detection limits). Assumed 0 for calculations.

TABLE 19
PFAS AT REPRESENTATIVE MONITORING SITES
2024 WATER YEAR
LIVERMORE VALLEY GROUNDWATER BASIN

RMS Well		Management Area/Unit							
Well Name	Map	Area	Subarea	Aquifer	PFOA (ng/L)	PFOS (ng/L)	PFHxS (ng/L)	PFNA (ng/L)	HFPO-DA (GenX; ng/L)
3S1E20C007	20C7	Main	Bernal	Upper	5.2	7.5	15	ND	ND
3S1E20C008	20C8	Main	Bernal	Lower	ND	ND	ND	ND	ND
3S1E09P005	9P5	Main	Amador West	Upper	8.3	26	17	ND	ND
3S1E09P010	9P10	Main	Amador West	Lower	5.6	34	23	ND	ND
3S1E11G001	11G1	Main	Amador East	Upper	19	110	110	ND	ND
3S1E12K003	12K3	Main	Amador East	Lower	3.7	6.4	2.5	ND	ND
3S2E08K002	8K2	Main	Mocho II	Upper	24	22	7.8	2.3	ND
3S2E08H003	8H3	Main	Mocho II	Lower	ND	ND	ND	ND	ND
3S1E06F003	6F3	Fringe	Northwest	Upper	ND	ND	ND	ND	ND

RMS	Representative Monitoring Sites
PFAS	Per- and Polyfluoralkyl Substances
ng/L	nanograms per liter
ND	Not Detected (i.e., below lab detection limits).

RMS = Representative Monitoring Sites
ICSW = Interconnected Surface Water
GDE = Groundwater Dependent Ecosystem

Legend
- RMS Wells - Levels / Water Quality
- RMS Wells - ICSW/GDE
- RMS Wells - Quality
- RMS-ICSW/GDEs Stream Gauges
- Rivers
- Mining Area Ponds
- Township-Range
- Main Basin
- Fringe Area
- Upland Area
- SubBasins

2S/1W
2S/1E
2S/2E
2S/3E
3S/1W
3S/1E
3S/2E
3S/3E

6F3
5K6
2N6
2R1
ALP_ELCH
27P2
34E1
ALTC_BD
8H3
12K3
8K2
11G1
9P10
9P5
AMHAG
16E4
ADVP
20C8
20C7
16P5
AV_DIV_SC
23E1
24A1
21K9
30D2
29F4
SBA_AM
32E7
33C1
33G1
AMNL
AVNL
SBA_TO1_AV
1A1

N
W
E
S

2 1 0 2
Miles

DATE: Jan 22, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\03-GWElevation\03-Fig02-GMProgramWell2024.aprx

Figure 15
Representative Monitoring Sites
2024 Water Year
Livermore Valley Groundwater Basin

LEGEND

Land Surface Elevation Change (ft)
- -0.20 - -0.10
- -0.10 - -0.05
- -0.05 - 0
- 0 - 0.05
- 0.05 - 0.10
- 0.10 - 0.20

- Municipal Well
- RMS Well
- Mining Area
- Mining Area Ponds
- Upland Area
- Fringe Area
- Main Basin

Municipal Wells: Stoneridge, Mocho 4, Mocho 3, Mocho 1, Mocho 2, Hopyard 6, Hopyard 9, Pleas 6, Pleas 8, Pleas 5, SFWD North (A), SFWD South (B), COL 5, COL 1, COL 2, CWS 24, CWS 31, CWS 10, CWS 19, CWS 8, CWS 9, CWS 5, CWS 14, CWS 20, CWS 15

RMS Wells: 6F3, 11G1, 9P5/P10, 12K3, 20C7/C8, 34E1, 8H3, 8K2, 21K9, 24A1

N W E S

0 2 4 Miles

DATE: Jan 10, 2025

FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\08-PlanImplementation\08-Fig16-LandSurfaceChange.aprx

Figure 16
Land Surface Elevation Change
Fall 2023 to Fall 2024
Livermore Valley Groundwater Basin

9. References and Technical Studies

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Zone 7, 2015, Nutrient Management Plan, Livermore Valley Groundwater Basin. Prepared by Zone 7, July 2015.

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Zone 7, 2021, Alternative Groundwater Sustainability Plan 2021 Update for the Livermore Valley Groundwater Basin. Zone 7 Water Agency. December 2021. https://www.zone7water.com/alternative-groundwater-sustainability-plan-and-updates

APPENDICES

Appendix A. Annual Report Submittal Checklist

Appendix B. Monitoring Network Supplemental Information

Appendix C. Groundwater Elevation Supporting Data & Hydrographs

Appendix D. Groundwater Storage Supplemental Data

Appendix E. Groundwater Quality Supplemental Data

Appendix A

Annual Report Submittal Checklist

Groundwater Sustainability Plan Annual Report Elements Guide

Basin Name	Livermore Valley Groundwater Basin (DWR No. 2-010)		
GSP Local ID			
California Code of Regulations - GSP Regulation Sections	***Groundwater Sustainability Plan Elements***	**Document *page number(s) that address the applicable GSP element.***	***Notes: Briefly describe the GSP element does not apply.***
Article 5	**Plan Contents**		
Subarticle 4	***Monitoring Networks***		
§ 354.40	**Reporting Monitoring Data to the Department**		
	Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.	19:20	
	Note: Authority cited: Section 10733.2, Water Code. Reference: Sections 10728, 10728.2, 10733.2 and 10733.8, Water Code.		
Article 7	**Annual Reports and Periodic Evaluations by the Agency**		
§ 356.2	**Annual Reports**		
	Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:		
	(a) General information, including an executive summary and a location map depicting the basin covered by the report.	8:14	
	(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:		
	(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:		
	(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.	22:23, 25:26	
	(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.	95:119	
	(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.	28:31	
	(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.	32:33	
	(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.	36:40	

California Code of Regulations - GSP Regulation Sections	*Groundwater Sustainability Plan Elements*	Document *page number(s) that address the applicable GSP element.*	*Notes: Briefly describe the GSP element does not apply.*
	(5) Change in groundwater in storage shall include the following:		
	(A) Change in groundwater in storage maps for each principal aquifer in the basin.	41:44	
	(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.	45	
	(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.	46:69	

Appendix B

Monitoring Network
Supplemental Information

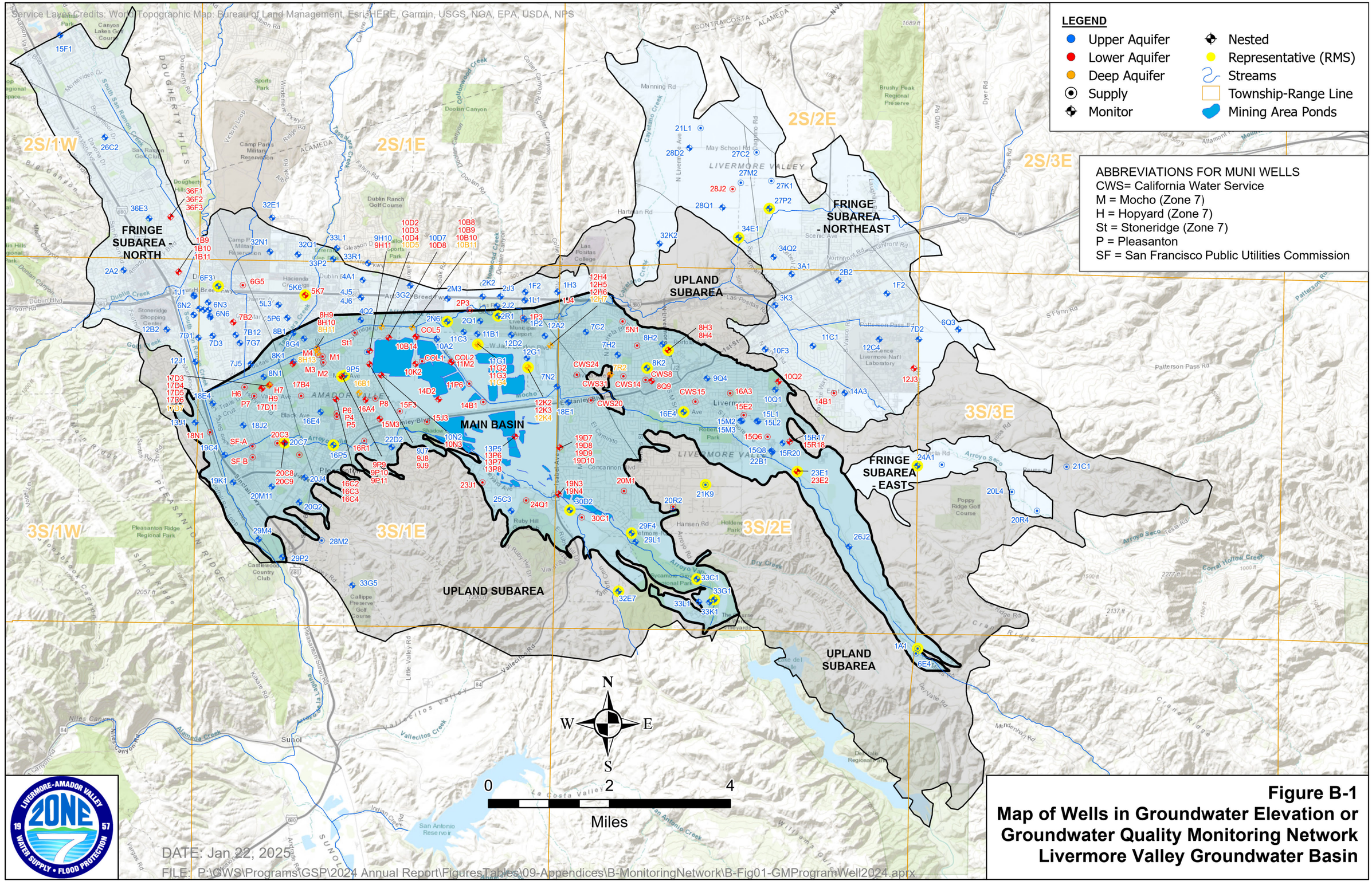

Figure B-1
Map of Wells in Groundwater Elevation or Groundwater Quality Monitoring Network
Livermore Valley Groundwater Basin

TABLE B-1
WELL CONSTRUCTION DETAILS
2024 WATER YEAR

Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
2S1E32E001	32E1	None	Upper	Static-Monitor	Active	392.56	70	2	55 - 70	12/28/2000	37.71957854	-121.8925664
2S1E32N001	32N1	Fringe-Camp	Upper	Static-Monitor	Active	360.79	44	2.5	34 - 39	7/1/1976	37.7114049	-121.8930952
2S1E32Q001	32Q1	Fringe-Camp	Upper	Static-Monitor	Active	367.55	45	2	30 - 45	12/29/2000	37.71083835	-121.8846424
2S1E33L001	33L1	None	Upper	Static-Monitor	Active	389.46	80	2	65 - 80	12/27/2000	37.71246704	-121.8729086
2S1E33P002	33P2	Fringe-Camp	Upper	Static-Monitor	Active	370.05	55	2	45 - 55	12/20/2000	37.709849	-121.8739996
2S1E33R001	33R1	None	Upper	Static-Monitor	Active	358.5	60	2	40 - 60	10/23/2001	37.70901099	-121.8633039
2S1W15F001	15F1	Fringe-Bishop	Upper	Static-Monitor	Active	439.44	60	2.5	50.3 - 55.3	9/28/1976	37.76263400	-121.9573902
2S1W26C002	26C2	Fringe-Dublin	Upper	Static-Monitor	Active	406.53	50	2.5	40 - 45	9/28/1976	37.7382566	-121.9434198
2S1W36E003	36E3	Fringe-Dublin	Upper	Static-Monitor	Active	346.51	60	2.5	50 - 55	9/13/1977	37.71896015	-121.9296811
2S1W36F001	36F1	Fringe-Dublin	Lower	Static-Nested	Active	342.71	190	2	140 - 180	5/8/1996	37.71940058	-121.9231834
2S1W36F002	36F2	Fringe-Dublin	Lower	Static-Nested	Active	342.71	320	2	270 - 310	5/8/1996	37.71940058	-121.9231834
2S1W36F003	36F3	Fringe-Dublin	Lower	Static-Nested	Damaged	342.71	520	2	440 - 510	5/8/1996	37.71940058	-121.9231834
2S2E21L001	21L1	Fringe-May	Upper	Supply-Domestic	Active	563	168	10	49 - 168	5/1/1973	37.74254338	-121.7635204
2S2E27C002	27C2	Fringe-Spring	Upper	Supply-Domestic	Active	542.14	108	8	41 - 56	10/7/1969	37.73688958	-121.7465468
2S2E27K001	27K1	Fringe-Spring	Upper	Supply-Livestock	Inactive	524.46	96	8	49 - 88	4/28/1954	37.73010073	-121.7419604
2S2E27M002	27M2	Fringe-May	Upper	Supply-Domestic	Active	524.52	112	6	0 - 0	7/16/1975	37.729571	-121.7511641
2S2E27M002	27M2	Fringe-May	Upper	Supply-Domestic	Active	524.52	112	6	0 - 0	7/16/1975	37.729571	-121.7511641
2S2E27P002	27P2	Fringe-Spring	Upper	Static-Monitor	Active	505.43	68	4	35 - 63	6/18/1979	37.72345406	-121.7424964
2S2E28D002	28D2	Fringe-May	Upper	Static-Monitor	Active	555.15	55	2.5	44 - 49	11/2/1976	37.73773636	-121.7668496
2S2E28J002	28J2	Fringe-May	Lower	Supply-Industrial	Active	522.29	230	6	50 - 230	7/26/1984	37.72801831	-121.7536325
2S2E28Q001	28Q1	Fringe-May	Upper	Static-Monitor	Active	513.04	28	2.5	17.6 - 22.6	11/2/1976	37.72355394	-121.7566371
2S2E32K002	32K2	Fringe-Cayetano	Upper	Static-Monitor	Active	507.43	43	2.5	33 - 38	12/20/1977	37.71465576	-121.7754901
2S2E34E001	34E1	Fringe-May	Upper	Static-Monitor	Active	499.73	49	2.5	40 - 45	12/21/1977	37.71637658	-121.7516373
2S2E34Q002	34Q2	Fringe-Spring	Upper	Static-Monitor	Active	507.24	50	2	25 - 50	12/12/2001	37.71185103	-121.7410134
3S1E01F002	1F2	Fringe-Camp	Upper	Static-Monitor	Active	428.44	40	2	25 - 40	12/18/2000	37.70261358	-121.8157835
3S1E01H003	1H3	Fringe-Camp	Upper	Static-Monitor	Active	422.8	80	2.5	70 - 75	12/20/1977	37.70273077	-121.8060709
3S1E01J004	1J04	Fringe-Camp	Lower	Supply-Irrigation	Active	420.1	300	12	260 - 280	2/6/2018	37.70153516	-121.8063237
3S1E01L001	1L1	Fringe-Camp	Upper	Static-Monitor	Active	403.04	70	2	60 - 70	12/19/2000	37.70062709	-121.8158546
3S1E01P002	1P2	Main-Amador	Upper	Static-Monitor	Active	389.64	50	2.5	40 - 45	12/11/1975	37.69615154	-121.8159161
3S1E01P003	1P3	Main-Amador	Lower	Supply-Unspecified	Inactive	394.44	480	12	245 - 460	7/28/1988	37.69641495	-121.8163241
3S1E02J002	2J2	Fringe-Camp	Upper	Static-Monitor	Active	380.89	41	2	31 - 41	7/16/2003	37.69915575	-121.8242677
3S1E02J003	2J3	Fringe-Camp	Upper	Static-Monitor	Active	406.35	65	2	55 - 65	7/16/2003	37.70147188	-121.8232244
3S1E02K002	2K2	Fringe-Camp	Upper	Static-Monitor	Active	397.04	46	2.5	36.5 - 41.5	12/10/1975	37.70136562	-121.8286062
3S1E02M003	2M3	Fringe-Camp	Upper	Static-Monitor	Active	365.04	50	2	35 - 50	11/13/2000	37.70077863	-121.8391537
3S1E02N006	2N6	Main-Amador	Upper	Static-Monitor	Active	366.14	55	2	40 - 55	11/13/2000	37.69526639	-121.839172
3S1E02P003	2P3	Fringe-Camp	Lower	Supply-Domestic	Active	371.73	380	10	340 - 372	9/26/1977	37.6980521	-121.8324031

TABLE B-1
WELL CONSTRUCTION DETAILS
2024 WATER YEAR

Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S1E02Q001	2Q1	Main-Amador	Upper	Static-Monitor	Active	369.92	45	2	35 - 45	7/16/2003	37.69550867	-121.8292606
3S1E02R001	2R1	Main-Amador	Upper	Static-Monitor	Active	376.29	33	2.5	21 - 26	11/1/1975	37.69678774	-121.8238396
3S1E03G002	3G2	Fringe-Camp	Upper	Static-Monitor	Active	354.24	50	2.5	40 - 45	1/18/1978	37.70378281	-121.850466
3S1E04A001	4A1	Fringe-Camp	Upper	Static-Monitor	Active	350.67	49.5	2	29.5 - 49.5	10/23/2001	37.70494727	-121.8649313
3S1E04J005	4J5	Fringe-Camp	Upper	Static-Monitor	Active	345.2	47	2	22 - 47	10/25/2001	37.70074309	-121.8653726
3S1E04J006	4J6	Fringe-Camp	Upper	Static-Monitor	Active	345.55	110	2	65 - 110	10/24/2001	37.70072117	-121.8653748
3S1E04Q002	4Q2	Main-Amador	Upper	Static-Monitor	Active	345.42	90	2.5	80 - 85	12/13/1977	37.69534088	-121.8653882
3S1E05K006	5K6	Fringe-Camp	Upper	Static-Monitor	Active	346.05	75	4	40 - 70	6/7/1990	37.70112772	-121.8822743
3S1E05K007	5K7	Fringe-Camp	Lower	Static-Monitor	Active	346.19	150	4	134 - 144	6/8/1990	37.70112666	-121.882237
3S1E05L003	5L3	Fringe-Camp	Upper	Static-Monitor	Active	339.43	40	2	15 - 40	12/11/2001	37.69870795	-121.8902261
3S1E05P006	5P6	Fringe-Camp	Upper	Static-Monitor	Active	336.65	35	2	25 - 35	12/19/2000	37.69559774	-121.8875303
3S1E06F003	6F3	Fringe-Dublin	Upper	Static-Monitor	Active	329.82	36	2.5	27 - 32	9/29/1976	37.70295396	-121.908554
3S1E06G005	6G5	Fringe-Dublin	Lower	Supply-Industrial	Intent to Use	332.22	200	8	103 - 178	8/31/1977	37.70329332	-121.9010917
3S1E06M002	6M2	Fringe-Dublin	Upper	Static-Monitor	Unknown	334.65	26		13 - 26	1/16/1991	37.69902605	-121.9115084
3S1E06N002	6N2	Fringe-Dublin	Upper	Static-Monitor	Active	335.2	67	4	47 - 67	3/20/1985	37.69749378	-121.9141082
3S1E06N003	6N3	Fringe-Dublin	Upper	Static-Monitor	Active	340.74	72		52 - 72	12/4/1984	37.69719889	-121.9112851
3S1E06N004	6N4	Fringe-Dublin	Upper	Static-Monitor	Unknown	341.06	26		13 - 26	1/16/1991	37.69722299	-121.9127732
3S1E06N005	6N5	Fringe-Dublin	Upper	Static-Monitor	Unknown	333.47	35	2	20 - 35	11/9/2007	37.69576289	-121.9108258
3S1E06N006	6N6	Fringe-Dublin	Upper	Static-Monitor	Active	333.58	75	2	50 - 70	11/9/2007	37.69545188	-121.9107896
3S1E07B002	7B2	Fringe-Dublin	Lower	Static-Monitor	Active	327.77	152	4	143 - 149	5/17/1979	37.69435449	-121.9038312
3S1E07B012	7B12	Fringe-Dublin	Upper	Static-Monitor	Active	327.82	70	2	50 - 70	7/31/2002	37.69131374	-121.9030294
3S1E07D001	7D1	Fringe-Dublin	Upper	Static-Monitor	Unknown	330.09	75	2	54 - 74	11/6/2007	37.69051332	-121.9142604
3S1E07D003	7D3	Fringe-Dublin	Upper	Static-Monitor	Unknown	332.28	70	2	45 - 65	11/2/2007	37.69100972	-121.9099772
3S1E07D004	7D4	Fringe-Dublin	Upper	Static-Monitor	Unknown	332.55	35	2	20 - 35	11/2/2007	37.69104206	-121.9099778
3S1E07G007	7G7	Fringe-Dublin	Upper	Static-Monitor	Active	327.33	55	2	35 - 55	1/22/2002	37.68940513	-121.9017403
3S1E07J005	7J5	Fringe-Dublin	Upper	Static-Monitor	Active	326.78	50	2	30 - 50	7/10/2002	37.6844105	-121.8983365
3S1E08B001	8B1	Main-Amador	Upper	Static-Monitor	Active	338.28	148	4	55 - 82	5/31/1979	37.69195588	-121.8857078
3S1E08G004	8G4	Main-Amador	Upper	Static-Monitor	Active	341.47	85	2	60 - 85	12/19/2001	37.69068862	-121.8824326
3S1E08H009	8H9	Main-Amador	Lower	Static-Nested	Active	338.53	240	2	210 - 230	12/12/1996	37.6882223	-121.8785683
3S1E08H010	8H10	Main-Amador	Lower	Static-Nested	Active	339.26	440	2	290 - 430	12/12/1996	37.6882223	-121.8785683
3S1E08H011	8H11	Main-Amador	Deep	Static-Nested	Active	339.26	720	2	520 - 720	12/21/1996	37.6882223	-121.8785683
3S1E08H013	8H13	Main-Amador	Deep	Static-Monitor	Active	338.96	800	2	570 - 790	12/11/1998	37.68726452	-121.8782284
3S1E08H018	M4	Main-Amador	Lower	Supply-Municipal	Active	341.94	745	20	515 - 730	11/1/2000	37.68834051	-121.878448
3S1E08K001	8K1	Main-Amador	Upper	Static-Monitor	Active	332.37	99	2.5	89 - 94	1/23/1978	37.68512941	-121.8855166
3S1E08K002	8K02	Main-Amador	Lower	Static-Monitor	Active	332.02	235	2.5	210 - 230	1/2/2024	37.68461394	-121.8857046
3S1E08K003	8K03	Main-Amador	Lower	Static-Monitor	Active	331.88	390	2.5	365 - 385	1/2/2024	37.68461293	-121.8857045

TABLE B-1
WELL CONSTRUCTION DETAILS
2024 WATER YEAR

Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S1E08N001	8N1	Main-Bernal	Upper	Static-Monitor	Damaged	323.68	72	2.5	62 - 67	8/27/1976	37.68134858	-121.8943945
3S1E09B001	St1	Main-Amador	Lower	Supply-Municipal	Active	349.23	810	20	250 - 800	1/28/1992	37.69231936	-121.8671488
3S1E09H010	9H10	Main-Amador	Upper	Static-Nested	Active	352.89	145	2	120 - 140	11/22/2004	37.68799342	-121.8623821
3S1E09H011	9H11	Main-Amador	Lower	Static-Nested	Active	353.04	190	2	165 - 185	11/22/2004	37.68799342	-121.8623821
3S1E09H013	9H13	Main-Amador	Upper	Supply-Domestic	Active	354	145	8	0 - 0		37.6877128	-121.8632055
3S1E09J007	9J7	Main-Amador	Upper	Static-Nested	Active	357.36	145	2	120 - 140	11/23/2004	37.68478321	-121.8624034
3S1E09J008	9J8	Main-Amador	Lower	Static-Nested	Active	357.55	305	2	280 - 300	11/23/2004	37.68478321	-121.8624034
3S1E09J009	9J9	Main-Amador	Lower	Static-Nested	Active	357.68	505	2	480 - 500	11/23/2004	37.68478321	-121.8624034
3S1E09M002	M1	Main-Amador	Lower	Supply-Municipal	Active	343.95	530	16	150 - 510	4/6/1964	37.68646501	-121.8767331
3S1E09M003	M2	Main-Amador	Lower	Supply-Municipal	Active	347.47	575	18	250 - 570	5/4/1967	37.68504544	-121.8764517
3S1E09M004	M3	Main-Amador	Lower	Supply-Municipal	Active	342.89	498	20	315 - 493	11/1/2000	37.68689578	-121.8780313
3S1E09P005	9P5	Main-Amador	Upper	Static-Monitor	Active	349.4	105	2.5	95 - 100	12/6/1977	37.68196889	-121.870072
3S1E09P009	9P9	Main-Amador	Lower	Static-Nested	Active	349.44	210	2	185 - 205	3/23/2005	37.68172231	-121.8708385
3S1E09P010	9P10	Main-Amador	Lower	Static-Nested	Active	349.66	310	2	285 - 305	3/23/2005	37.68172231	-121.8708385
3S1E09P011	9P11	Main-Amador	Lower	Static-Nested	Active	349.44	425	2	405 - 420	3/23/2005	37.68172231	-121.8708385
3S1E10A002	10A2	Main-Amador	Upper	Static-Monitor	Active	367.35	88	4	70 - 80	5/10/1979	37.6911284	-121.8422623
3S1E10B008	10B8	Main-Amador	Lower	Static-Nested	Active	353.6	200	2	100 - 190	6/18/1997	37.69370509	-121.8497063
3S1E10B009	10B9	Main-Amador	Lower	Static-Nested	Active	353.49	294	2	244 - 284	6/18/1997	37.69370509	-121.8497063
3S1E10B010	10B10	Main-Amador	Lower	Static-Nested	Unknown	353.52	600	2	400 - 590	6/18/1997	37.69370509	-121.8497063
3S1E10B011	10B11	Main-Amador	Deep	Static-Nested	Active	353.52	810	2	660 - 800	6/18/1997	37.69370509	-121.8497063
3S1E10B014	COL5 Mon	Main-Amador	Lower	Static-Monitor	Unknown	355.59	690	2	390 - 690	2/26/2014	37.6915386	-121.848583
3S1E10B016	COL5	Main-Amador	Lower	Supply-Municipal	Active	357.58	690	18	390 - 690	7/19/2014	37.69152201	-121.8483297
3S1E10D002	10D2	Main-Amador	Lower	Static-Nested	Active	349.32	212	2	182 - 212	9/10/1998	37.69376676	-121.8589291
3S1E10D003	10D3	Main-Amador	Lower	Static-Nested	Active	349.28	322	2	262 - 312	9/10/1998	37.69376676	-121.8589291
3S1E10D004	10D4	Main-Amador	Lower	Static-Nested	Active	349.3	616	2	366 - 606	9/10/1998	37.69376676	-121.8589291
3S1E10D005	10D5	Main-Amador	Deep	Static-Nested	Active	349.32	790	2	720 - 780	9/10/1998	37.69376676	-121.8589291
3S1E10D007	10D7	Main-Amador	Upper	Static-Nested	Active	361.06	145	2	118 - 138	12/10/2004	37.69119492	-121.8567241
3S1E10D008	10D8	Main-Amador	Lower	Static-Nested	Active	361.02	215	2	190 - 210	12/10/2004	37.69119492	-121.8567241
3S1E10K002	COL1 Mon	Main-Amador	Lower	Static-Monitor	Active	358.68	590.6	4	195.5 - 585.6	1/17/2007	37.68501255	-121.8485413
3S1E10K003	COL1	Main-Amador	Lower	Supply-Municipal	Active	363.79	530	18	205 - 530	2/27/2008	37.68568239	-121.8465536
3S1E10N002	10N2	Main-Amador	Upper	Static-Nested	Active	357.92	195	2	125 - 145	12/2/2004	37.68215154	-121.8588009
3S1E10N003	10N3	Main-Amador	Lower	Static-Nested	Active	358	195	2	170 - 190	12/2/2004	37.68215154	-121.8588009
3S1E11B001	11B1	Main-Amador	Upper	Static-Monitor	Active	369.35	43	2.5	33 - 38	12/11/1975	37.69239923	-121.8300444
3S1E11C003	11C3	Main-Amador	Upper	Static-Monitor	Active	364.82	55	2	35 - 55	12/22/2003	37.69283014	-121.8341717
3S1E11G001	11G1	Main-Amador	Upper	Static-Nested	Active	371.62	120	2	100 - 110	4/8/1997	37.68989005	-121.8298545
3S1E11G002	11G2	Main-Amador	Lower	Static-Nested	Active	371.61	350	2	230 - 340	4/8/1997	37.68989005	-121.8298545

TABLE B-1
WELL CONSTRUCTION DETAILS
2024 WATER YEAR

Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S1E11G003	11G3	Main-Amador	Lower	Static-Nested	Active	371.64	590	2	380 - 580	4/8/1997	37.68989005	-121.8298545
3S1E11G004	11G4	Main-Amador	Deep	Static-Nested	Active	371.68	790	2	620 - 780	4/8/1997	37.68989005	-121.8298545
3S1E11M002	COL2 Mon	Main-Amador	Lower	Static-Monitor	Active	365.96	700	4.5	199 - 699	9/25/2007	37.68556226	-121.837704
3S1E11M003	COL2	Main-Amador	Lower	Supply-Municipal	Active	369.24	684	18	345 - 684	2/14/2008	37.68566728	-121.8378935
3S1E11P006	11P6	Main-Amador	Lower	Supply-Domestic	Active	376.67	400	5	240 - 380	3/10/2000	37.68048085	-121.8322497
3S1E12A002	12A2	Main-Amador	Upper	Static-Monitor	Active	401.35	69	2.5	63.7 - 68.7	12/11/1975	37.69215584	-121.8096504
3S1E12D002	12D2	Main-Amador	Upper	Static-Monitor	Active	384.45	44.6		36 - 41		37.69227067	-121.8198301
3S1E12G001	12G1	Main-Amador	Upper	Static-Monitor	Active	404.47	73	2.5	63 - 68	12/12/1975	37.68680916	-121.8149596
3S1E12H004	12H4	Main-Amador	Lower	Static-Nested	Active	407.75	270	2	185 - 260	1/8/1998	37.68986417	-121.8079442
3S1E12H005	12H5	Main-Amador	Lower	Static-Nested	Active	407.78	400	2	360 - 390	1/8/1998	37.68986417	-121.8079442
3S1E12H006	12H6	Main-Amador	Lower	Static-Nested	Active	407.75	480	2	410 - 468	1/8/1998	37.68986417	-121.8079442
3S1E12H007	12H7	Main-Amador	Deep	Static-Nested	Active	407.67	684	2	609 - 674	1/8/1998	37.68986417	-121.8079442
3S1E12K002	12K2	Main-Amador	Lower	Static-Nested	Active	406.29	300	2	210 - 295	11/1/2005	37.68455972	-121.8145946
3S1E12K003	12K3	Main-Amador	Lower	Static-Nested	Active	406.83	475	2	355 - 470	11/1/2005	37.68455972	-121.8145946
3S1E12K004	12K4	Main-Amador	Deep	Static-Nested	Active	406.71	575	2	550 - 570	11/1/2005	37.68455972	-121.8145946
3S1E13P005	13P5	Main-Amador	Upper	Static-Nested	Active	393.7	135	2	110 - 130	11/2/2010	37.66793021	-121.8182036
3S1E13P006	13P6	Main-Amador	Lower	Static-Nested	Active	393.72	255	2	230 - 250	11/2/2010	37.66791839	-121.818219
3S1E13P007	13P7	Main-Amador	Lower	Static-Nested	Active	393.46	375	2	350 - 370	11/2/2010	37.6679184	-121.818218
3S1E13P008	13P8	Main-Amador	Lower	Static-Nested	Active	393.6	605	2	580 - 600	11/2/2010	37.66791385	-121.8182082
3S1E14B001	14B1	Main-Amador	Lower	Supply-Industrial	Active	384.2	435	8	200 - 410		37.67610494	-121.8279187
3S1E14D002	14D2	Main-Amador	Lower	Static-Monitor	Active	371.83	740	14.5	170 - 740	8/30/2006	37.67657604	-121.8414452
3S1E15F003	15F3	Main-Amador	Lower	Supply-Unspecified	Inactive	368.99	625	14	195 - 615	7/20/1965	37.67360746	-121.8530645
3S1E15J003	15J3	Main-Amador	Lower	Supply-Unspecified	Unknown	344.59	196	8	154 - 184	12/2/1980	37.67117486	-121.8448453
3S1E15M003	15M3	Main-Amador	Lower	Static-Monitor	Active	362.09	600	2	280 - 590	12/15/1998	37.67169168	-121.8590916
3S1E16A002	P8	Main-Amador	Lower	Supply-Municipal	Active	358.2	500	20	200 - 495	3/27/1992	37.67657734	-121.8604764
3S1E16A004	16A4	Main-Amador	Lower	Static-Monitor	Active	359.36	603	2	280 - 580	12/3/1998	37.67621793	-121.8635022
3S1E16B001	16B1	Main-Amador	Deep	Static-Monitor	Active	355.81	805	2	605 - 800	12/18/1998	37.67784418	-121.8655189
3S1E16C002	16C2	Main-Amador	Lower	Static-Nested	Active	344.38	190	2	165 - 185	4/14/2005	37.67624109	-121.8724721
3S1E16C003	16C3	Main-Amador	Lower	Static-Nested	Active	344.27	305	2	280 - 300	4/14/2005	37.67624109	-121.8724721
3S1E16C004	16C4	Main-Amador	Lower	Static-Nested	Active	344.16	375	2	355 - 370	4/14/2005	37.67624109	-121.8724721
3S1E16E004	16E4	Main-Amador	Upper	Static-Monitor	Active	351.69	105	2.5	95 - 100	12/15/1977	37.67312563	-121.8770896
3S1E16L002	P4	Main-Amador	Lower	Supply-Municipal	Inactive	355.86	151	12	56 - 136	4/6/1949	37.672083	-121.8721526
3S1E16L005	P5	Main-Amador	Lower	Supply-Municipal	Active	358.05	685	18	149 - 650	4/4/1962	37.67205842	-121.8721569
3S1E16L007	P6	Main-Amador	Lower	Supply-Municipal	Active	354.47	647	18	165 - 647	6/1/1966	37.67284862	-121.8722088
3S1E16P005	16P5	Main-Amador	Upper	Static-Monitor	Active	354.51	75	2.5	64 - 69	10/8/1976	37.66524595	-121.8731113
3S1E16R001	16R1	Main-Amador	Lower	Supply-Unspecified	Unknown	362.5	239	10	70 - 226	3/5/1958	37.66640502	-121.863729

TABLE B-1
WELL CONSTRUCTION DETAILS
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Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S1E17B004	17B4	Main-Amador	Lower	Supply-Unspecified	Unknown	337.69	248	8	0 - 248	1/1/1950	37.67696479	-121.8830231
3S1E17D003	17D3	Main-Bernal	Lower	Static-Nested	Active	325.13	108	4	92 - 98	8/6/1996	37.67933322	-121.8927527
3S1E17D004	17D4	Main-Bernal	Lower	Static-Nested	Active	325.14	236	4	206 - 226	8/6/1996	37.67933322	-121.8927527
3S1E17D005	17D5	Main-Bernal	Lower	Static-Nested	Active	325.13	308	4	266 - 286	8/6/1996	37.67933322	-121.8927527
3S1E17D006	17D6	Main-Bernal	Lower	Static-Nested	Active	325.12	408	4	378 - 398	8/6/1996	37.67933322	-121.8927527
3S1E17D007	17D7	Main-Bernal	Deep	Static-Nested	Active	325.13	684	4	654 - 674	8/6/1996	37.67933322	-121.8927527
3S1E17D010	H7	Main-Bernal	Lower	Static-Monitor	Active	328.13	425	24	150 - 415	9/20/1996	37.6794648	-121.8925897
3S1E17D011	17D11	Main-Bernal	Lower	Static-Monitor	Active	324.84	603	2	340 - 505	12/16/1998	37.67853597	-121.8949212
3S1E17D012	H9	Main-Bernal	Lower	Supply-Municipal	Active	327.9	315	18	235 - 310	11/5/1999	37.67863057	-121.894969
3S1E18A005	P7	Main-Bernal	Lower	Supply-Municipal	Inactive	329.05	454	18	120 - 440	2/15/1968	37.67674805	-121.8971746
3S1E18A006	H6	Main-Bernal	Lower	Supply-Municipal	Active	326.74	500	18	158 - 490	2/1/1987	37.67883507	-121.9001384
3S1E18E004	18E4	Main-Bernal	Upper	Static-Monitor	Active	320.21	83	4	69 - 79	5/31/1979	37.67481704	-121.9096357
3S1E18J002	18J2	Main-Bernal	Upper	Static-Monitor	Active	323.02	71	2.5	61 - 66	10/20/1977	37.66966319	-121.9003532
3S1E18N001	18N1	Main-Bernal	Lower	Supply-Irrigation	Unknown	319.43	708	12	229 - 708	12/13/1962	37.66789814	-121.9103243
3S1E19A010	SF-B	Main-Bernal	Lower	Supply-Municipal	Active	337.02	331		189 - 327		37.66204642	-121.8973684
3S1E19A011	SF-A	Main-Bernal	Lower	Supply-Municipal	Active	334.27	330	18	196 - 320	10/9/2001	37.66468211	-121.8974628
3S1E19C004	19C4	Main-Bernal	Upper	Static-Monitor	Active	322.23	78	4	68 - 73	6/11/1979	37.66251859	-121.9057766
3S1E19K001	19K1	Main-Bernal	Upper	Static-Monitor	Active	321.54	57.6	2.5	47.6 - 52.6	12/8/1975	37.65595477	-121.9031374
3S1E20B002	20B2	Main-Bernal	Lower	Supply-Unspecified	Active	344.03	500	12	218 - 500	12/27/1961	37.6628195	-121.8832699
3S1E20C003	20C3	Main-Bernal	Lower	Supply-Unspecified	Active	338.6	110	14	74 - 107		37.66550942	-121.8899719
3S1E20C007	20C7	Main-Bernal	Upper	Static-Monitor	Active	338.66	153	2	65 - 145	6/15/2000	37.66558444	-121.8877176
3S1E20C008	20C8	Main-Bernal	Lower	Static-Nested	Active	338.67	315	2	295 - 315	10/20/2008	37.66566873	-121.8878765
3S1E20C009	20C9	Main-Bernal	Lower	Static-Nested	Active	338.78	515	2	495 - 515	10/20/2008	37.66566873	-121.8878765
3S1E20J004	20J4	Main-Bernal	Upper	Static-Monitor	Active	331.62	72	2.5	62 - 67	12/5/1975	37.65736986	-121.881537
3S1E20M011	20M11	Main-Bernal	Upper	Static-Monitor	Active	325.73	71	2.5	61 - 66	10/12/1977	37.65507486	-121.8915027
3S1E20Q002	20Q2	Main-Bernal	Upper	Static-Monitor	Active	325.82	65	10	45 - 53	2/17/1976	37.65138859	-121.8831251
3S1E22D002	22D2	Main-Amador	Upper	Static-Monitor	Active	368.05	72	2.5	62 - 67	10/28/1976	37.66498216	-121.8553477
3S1E23A006	23A006	Main-Amador		Static-Monitor	Active	380.8	325	2.5	240 - 260	12/1/2023	37.66289356	-121.8254005
3S1E23A007	23A007	Main-Amador		Static-Monitor	Active	380.83	326	2.5	285 - 315	12/1/2023	37.66289356	-121.8254005
3S1E23J001	23J1	Main-Amador	Lower	Supply-Domestic	Unknown	428.2	120	8	0 - 120	3/4/1958	37.65681551	-121.8278374
3S1E24Q001	24Q1	Main-Amador	Lower	Supply-Irrigation	Unknown	427.5	440	14	200 - 400	10/1/1993	37.65264977	-121.8146015
3S1E25C003	25C3	Main-Amador	Upper	Static-Monitor	Unknown	454.16	146	2	70 - 140	11/28/1990	37.65008048	-121.8190712
3S1E28M002	28M2	Upland	Upper	Supply-Unspecified	Active	390.01	141	5	80 - 141	2/8/1962	37.64232947	-121.8761919
3S1E29M004	29M4	Main-Castle	Upper	Static-Monitor	Active	310.94	57	2.5	47 - 52	12/4/1975	37.64237925	-121.8952193
3S1E29P002	29P2	Main-Bernal	Upper	Static-Monitor	Active	302.82	42	2.5	32 - 37	12/9/1975	37.63815806	-121.8880498
3S1E33G005	33G5	Upland	Upper	Static-Monitor	Unknown	408.53	35	2	11 - 35	7/21/2006	37.63164833	-121.8667756

TABLE B-1
WELL CONSTRUCTION DETAILS
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Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S1W01B009	1B9	Fringe-Dublin	Lower	Static-Nested	Unknown	333.56	162	2	122 - 152	2/15/1996	37.70624094	-121.9205208
3S1W01B010	1B10	Fringe-Dublin	Lower	Static-Nested	Unknown	333.57	414	2	274 - 404	2/15/1996	37.70624093	-121.9205217
3S1W01B011	1B11	Fringe-Dublin	Lower	Static-Nested	Unknown	333.74	560	2	480 - 550	2/15/1996	37.70624016	-121.9205217
3S1W01J001	1J1	Fringe-Dublin	Upper	Static-Monitor	Unknown	334.36	70		47 - 64	12/4/1984	37.70071528	-121.9158464
3S1W01J002	1J2	Fringe-Dublin	Upper	Static-Monitor	Unknown	334.58	37	4	15 - 37	12/4/1984	37.70045912	-121.9157701
3S1W02A002	2A2	Fringe-Dublin	Upper	Static-Monitor	Active	369.4	47	2.5	37 - 42	10/7/1976	37.70644336	-121.9371554
3S1W12A009	12A9	Fringe-Dublin	Upper	Static-Monitor	Unknown	332.14	74	2	49 - 69	11/7/2007	37.69595276	-121.9157792
3S1W12A010	12A10	Fringe-Dublin	Upper	Static-Monitor	Unknown	331.99	40	2	20 - 35	11/7/2007	37.69600852	-121.9157919
3S1W12B002	12B2	Fringe-Dublin	Upper	Static-Monitor	Active	342.89	39.5	4	20 - 50	6/21/1996	37.69237453	-121.9238722
3S1W12J001	12J1	Fringe-Dublin	Upper	Static-Monitor	Active	329.31	62	2.5	52 - 57	12/9/1975	37.68471212	-121.915041
3S1W13J001	13J1	Main-Castle	Upper	Static-Monitor	Active	343.94	48	2.5	39 - 44	10/7/1976	37.67017797	-121.9148308
3S2E01F002	1F2	Fringe-Spring	Upper	Static-Monitor	Active	572.99	68.6	2.5	59 - 64	12/22/1977	37.70343468	-121.7065899
3S2E02B002	2B2	Fringe-Spring	Upper	Static-Monitor	Active	539.45	46	2.5	36.9 - 41.9	6/7/1976	37.70645613	-121.7212722
3S2E03A001	3A1	Fringe-Spring	Upper	Static-Monitor	Active	517.63	54	2.5	44 - 49	12/21/1977	37.7077886	-121.7353671
3S2E03K003	3K3	Fringe-Mocho I	Upper	Static-Monitor	Active	522.83	60	2.5	50 - 55	12/12/1977	37.70028566	-121.7403175
3S2E05N001	5N1	Main-Mocho II	Mixed	Supply-Unspecified	Inactive	444	210	10	0 - 210	10/5/1977	37.69590721	-121.7862742
3S2E07C002	7C2	Main-Mocho II	Upper	Static-Monitor	Active	420.84	49	2.5	39 - 44	4/6/1978	37.69324854	-121.7973158
3S2E07H002	7H2	Main-Mocho II	Upper	Static-Monitor	Active	442.85	54	2	44 - 54	7/29/1989	37.68785333	-121.7876082
3S2E07N002	7N2	Main-Amador	Upper	Static-Monitor	Active	422	162	2	132 - 152	12/20/2012	37.68002957	-121.8058031
3S2E07P003	CWS24	Main-Amador	Lower	Supply-Municipal	Active	431.46	510	16	300 - 490	4/4/1972	37.68298787	-121.7998331
3S2E07R002	7R2	Main-Mocho II	Deep	Static-Monitor	Active	446	805	2	750 - 805	3/4/2002	37.68314714	-121.7897049
3S2E07R003	CWS31	Upland	Lower	Supply-Municipal	Active	446	583	16	410 - 528	9/20/2002	37.68309817	-121.7898265
3S2E08F001	CWS10	Main-Mocho II	Lower	Supply-Municipal	Active	456.24	470	16	143 - 433	5/15/1954	37.69017666	-121.781769
3S2E08H002	8H2	Main-Mocho II	Upper	Static-Monitor	Active	469.61	46	2.5	36 - 41	6/14/1976	37.69053956	-121.7741831
3S2E08H003	8H3	Main-Mocho II	Lower	Static-Nested	Active	477.4	195	2	170 - 190	7/10/2009	37.68914777	-121.7724119
3S2E08H004	8H4	Main-Mocho II	Lower	Static-Nested	Active	476.97	385	2	360 - 380	7/10/2009	37.68914777	-121.7724119
3S2E08K002	8K2	Main-Mocho II	Upper	Static-Monitor	Active	464.78	74	2.5	64 - 69	12/13/1977	37.68480411	-121.7787244
3S2E08N002	CWS14	Main-Mocho II	Lower	Supply-Municipal	Active	453.64	526	10	140 - 515	1/16/1958	37.6827654	-121.7857943
3S2E08P001	CWS8	Main-Mocho II	Lower	Supply-Municipal	Active	468.2	273	10	122 - 263	11/1/1948	37.68196051	-121.7790926
3S2E08Q009	8Q9	Main-Mocho II	Lower	Static-Monitor	Active	464.7	114	2	99 - 114	6/15/1999	37.68170246	-121.7772797
3S2E09Q004	9Q4	Main-Mocho II	Upper	Static-Monitor	Active	504.5	80	2.5	70 - 75	11/1/1977	37.6825049	-121.760615
3S2E10F003	10F3	Fringe-Mocho I	Upper	Static-Monitor	Active	534.84	45	2.5	35 - 40	12/12/1977	37.68966916	-121.7431999
3S2E10Q001	10Q1	Main-Mocho II	Upper	Static-Monitor	Active	555.36	43.5	2.5	33.5 - 39	11/1/1976	37.68003217	-121.7399477
3S2E10Q002	10Q2	Main-Mocho II	Lower	Static-Monitor	Unknown	549.33	325	4.5	298 - 325	12/3/1990	37.68196748	-121.7390438
3S2E11C001	11C1	Fringe-Mocho I	Upper	Static-Monitor	Active	556.49	66.2	2.5	56.2 - 61.2	11/1/1976	37.69062848	-121.7286922
3S2E12C004	12C4	Fringe-Spring	Upper	Static-Monitor	Unknown	591.46	108	4.5	100 - 108	3/11/1988	37.69242351	-121.7087088

TABLE B-1
WELL CONSTRUCTION DETAILS
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Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S2E12J003	12J3	Fringe-Spring	Lower	Static-Monitor	Unknown	628.84	160	5	127 - 157	5/20/1981	37.68555739	-121.6981982
3S2E14A003	14A3	Fringe-Mocho I	Upper	Static-Monitor	Active	601.87	110	2.5	100 - 105	12/13/1977	37.67941811	-121.7189172
3S2E14B001	14B1	Fringe-Mocho I	Lower	Supply-Domestic	Unknown	593.36	300	9	146 - 234	5/26/1983	37.67938333	-121.7221287
3S2E15E002	15E2	Main-Mocho II	Lower	Supply-Irrigation	Active	549.69	192	8	104 - 189	11/14/1983	37.67381754	-121.7493657
3S2E15L001	15L1	Main-Mocho II	Upper	Static-Monitor	Active	561.41	40.5	2	20 - 40.5	10/10/2013	37.67238623	-121.7450171
3S2E15L002	15L2	Main-Mocho II	Upper	Static-Monitor	Active	561.13	70.5	2	40 - 70	1/14/2015	37.67239349	-121.7453542
3S2E15M002	15M2	Main-Mocho II	Upper	Static-Monitor	Active	549.37	45	2	25 - 45	10/10/2013	37.67241403	-121.7499167
3S2E15M003	15M3	Main-Mocho II	Upper	Static-Monitor	Active	549.07	75.8	2	45.3 - 75.3	1/13/2015	37.67240411	-121.7503234
3S2E15Q006	15Q6	Main-Mocho II	Lower	Supply-Irrigation	Abandoned	577.56	301	12	220 - 301	3/28/1980	37.66870598	-121.7420745
3S2E15Q008	15Q 8	Main-Mocho II	Upper	Static-Monitor	Active	584.44	41	2	10.5 - 40.5	1/14/2015	37.66534563	-121.7408763
3S2E15R017	15R17	Main-Mocho II	Upper	Static-Nested	Active	592.41	63	2	38 - 58	12/14/2006	37.66759872	-121.7352763
3S2E15R018	15R18	Main-Mocho II	Lower	Static-Nested	Active	592.47	138	2	113 - 133	12/15/2007	37.66759872	-121.7352763
3S2E15R020	15R20	Main-Mocho II	Upper	Static-Monitor	Active	589.27	51	2	20.5 - 50.5	1/14/2015	37.6672257	-121.7374859
3S2E16A003	16A3	Main-Mocho II	Lower	Supply-Irrigation	Active	527.06	240	10	91 - 240	5/1/1972	37.6790358	-121.7535376
3S2E16C001	CWS15	Main-Mocho II	Lower	Supply-Municipal	Active	510.97	584	16	150 - 523	2/18/1958	37.67691023	-121.7639859
3S2E16E004	16E4	Main-Mocho II	Upper	Static-Monitor	Active	506.26	45	2.5	35 - 40	12/15/1977	37.67438231	-121.7675059
3S2E18B001	CWS20	Main-Amador	Lower	Supply-Municipal	Active	438.56	497	16	190 - 465	1/30/1961	37.67687486	-121.7954896
3S2E18E001	18E1	Main-Amador	Upper	Static-Monitor	Active	423.86	133.8	2.5	123.8 - 128.8	4/22/1977	37.67630643	-121.802347
3S2E19D007	19D7	Main-Amador	Upper	Static-Nested	Active	415.07	180	2	100 - 180	1/29/1999	37.66544422	-121.80467
3S2E19D008	19D8	Main-Amador	Lower	Static-Nested	Active	415.04	260	2	210 - 260	1/29/1999	37.66544422	-121.80467
3S2E19D009	19D9	Main-Amador	Lower	Static-Nested	Active	414.98	390	2	280 - 390	1/29/1999	37.66544422	-121.80467
3S2E19D010	19D10	Main-Amador	Lower	Static-Nested	Active	414.89	470	2	420 - 470	1/29/1999	37.66544422	-121.80467
3S2E19N003	19N3	Main-Amador	Upper	Static-Nested	Active	418.45	120	2	105 - 115	7/27/2018	37.65429516	-121.8048619
3S2E19N004	19N4	Main-Amador	Lower	Static-Nested	Active	417.96	203	2	188 - 198	7/27/2018	37.65429516	-121.8048619
3S2E20M001	20M1	Main-Amador	Lower	Supply-Unspecified	Active	478.79	184	12	0 - 184	9/15/1928	37.65523586	-121.7851549
3S2E20R002	20R2	Upland	Upper	Supply-Irrigation	Active	523.15	257	9	107 - 252	5/1/1985	37.65113348	-121.7702377
3S2E21K009	21K9	Upland	Upper	Supply-Domestic	Active	567.08		6	0 - 0		37.65700209	-121.7606041
3S2E21N001	21N1	Upland		Supply-Irrigation	Active	522	320	8	110 - 310	5/14/1987	37.65163278	-121.7702285
3S2E22B001	22B1	Main-Mocho II	Upper	Static-Monitor	Active	585.88	31.9	2.5	21.9 - 26.9	7/8/1976	37.66508152	-121.7406318
3S2E23E001	23E1	Main-Mocho II	Upper	Static-Nested	Active	613.36	40	2	20 - 35	9/2/2004	37.6604406	-121.7328709
3S2E23E002	23E2	Main-Mocho II	Lower	Static-Nested	Active	613.23	110	2	95 - 105	9/2/2004	37.6604406	-121.7328709
3S2E24A001	24A1	Fringe-Mocho I	Upper	Static-Monitor	Active	717.7	46.3	2.5	36.3 - 41.3	11/1/1976	37.66221891	-121.6967396
3S2E26J002	26J2	Main-Mocho II	Upper	Static-Monitor	Active	689.92	44	2.5	34 - 39	12/27/1977	37.64259738	-121.7169555
3S2E29F004	29F4	Main-Amador	Upper	Static-Monitor	Active	457.5	36	2.5	26 - 31	10/28/1976	37.64513824	-121.7827012
3S2E29L001	29L1 (P3)	Main-Amador	Upper	Static-Monitor	Active	463.64	23	2	8 - 23	11/29/2001	37.64304199	-121.7814775
3S2E30C001	30C1	Main-Amador	Lower	Supply-Unspecified	Active	439.41	150	6	125 - 145	3/16/1995	37.64876027	-121.7977565

TABLE B-1
WELL CONSTRUCTION DETAILS
2024 WATER YEAR

Well	Map	Basin	Aquifer	Type	Status	RP (ft MSL)	Well Depth (ft)	Well Diam (in)	Screened Interval (ft)	Completed Date	Latitude	Longitude
3S2E30D002	30D2	Main-Amador	Upper	Static-Monitor	Active	431.6	44	4	24 - 39	6/18/1979	37.65046551	-121.8013878
3S2E32E007	32E7	Upland	Upper	Static-Monitor	Active	610.94	37	6	19 - 34	7/16/1991	37.63113514	-121.786384
4S3E06E004	6E4	Main-Mocho II	Upper	Supply-Domestic	Active	807.68	220	10	184 - 212	5/28/1976	37.61720182	-121.6964167
TOTAL WELLS IN THE EITHER THE GROUNDWATER LEVELS & QUALITY PROGRAMS = 255												

RP = Reference Point Elevation (in feet above Mean Sea Level)

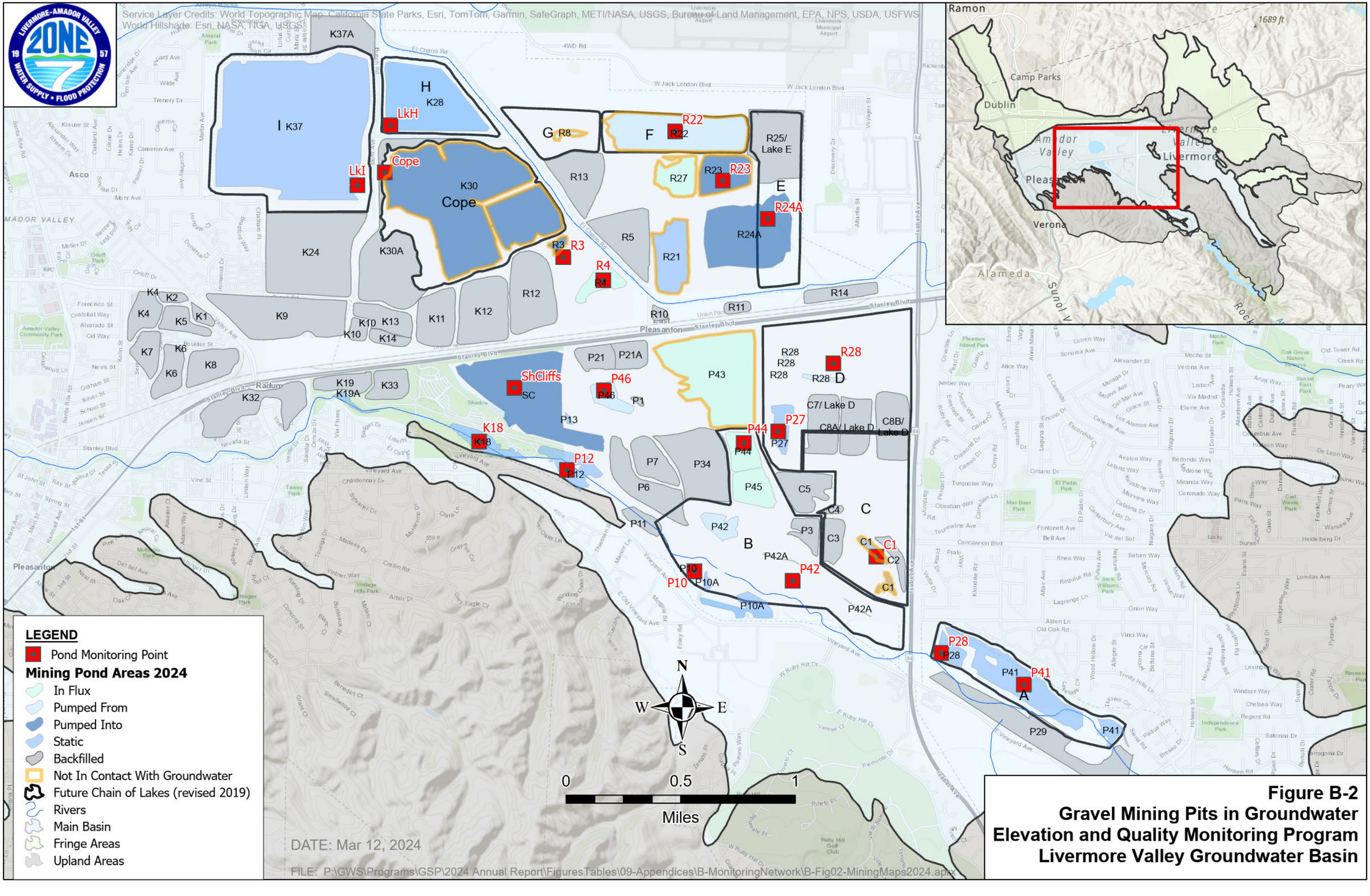


Figure B-2
Gravel Mining Pits in Groundwater Elevation and Quality Monitoring Program
Livermore Valley Groundwater Basin

TABLE B-2
MINING PIT MONITORING LOCATION DETAILS
2024 WATER YEAR

Pond Name	Description	Chain of Lake	Map Name	Contact with Aquifer	Pond Activity	Mining Use	Pond Area (acre)	Latitude	Longitude
MA-C001	Lake C - southeast	C	C1	No	Static	Unused	4.9	37.65991162	-121.8084152
MA-K015	Shadow Cliffs	Sh.Cliff	ShCliffs	Yes	Pumped Into	Unused	81.7	37.67026499	-121.8374045
MA-K018	Lake Boris		K18	Yes	Static	Unused	9.3	37.66683035	-121.8401557
MA-K028	Lake H	H	LkH	Yes	Static	Unused	62.1	37.68676284	-121.8475729
MA-K030	Cope Lake	Cope	Cope	No	Pumped Into	Unused	176	37.68377819	-121.8479704
MA-K037	Lake I	I	LkI	Yes	Static	Unused	234.4	37.68293935	-121.8501302
MA-P010	P10	B	P10	Yes	Static	Unused	1	37.65881982	-121.822876
MA-P012	Island Pond		P12	Yes	Static	Unused	12.7	37.66511679	-121.8331313
MA-P027	Lake D - southwest	D	P27	Yes	Static	Unused	9.2	37.66774193	-121.8163585
MA-P028	Lake A - west	A	P28	Yes	Static	Unused	7.1	37.65387786	-121.8031512
MA-P041	Lake A - east	A	P41	Yes	Static	Unused	46.4	37.65195178	-121.7965365
MA-P042	Lake B - west	B	P42	Yes	Pumped From	Active Mining	8.2	37.65830723	-121.81505
MA-P044	P44	B	P44	Yes	In Flux	Water Storage	13.1	37.66698046	-121.8190954
MA-P046	Lake J	J	P46	Yes	Pumped From	Active Mining	9.1	37.67018063	-121.8302795
MA-R003	R3		R3	No	Pumped Into	Settling Pond	2.2	37.67857733	-121.8336667
MA-R004	R4		R4	Yes	In Flux	Water Storage	10.9	37.67715277	-121.8304546
MA-R022	Lake F	F	R22	No	Pumped From	Settling Pond	60.3	37.68663632	-121.8249012
MA-R023	Vulcan Pond 5		R23	No	Pumped Into	Water Storage	21.9	37.68356493	-121.8210549
MA-R024A	Lake E - southeast	E	R24A	Yes	Pumped Into	Settling Pond	64.7	37.68118131	-121.8174422
MA-R028	Lake D - northwest	D	R28	Yes	Pumped From	Active Mining	2.6	37.67209793	-121.8120508

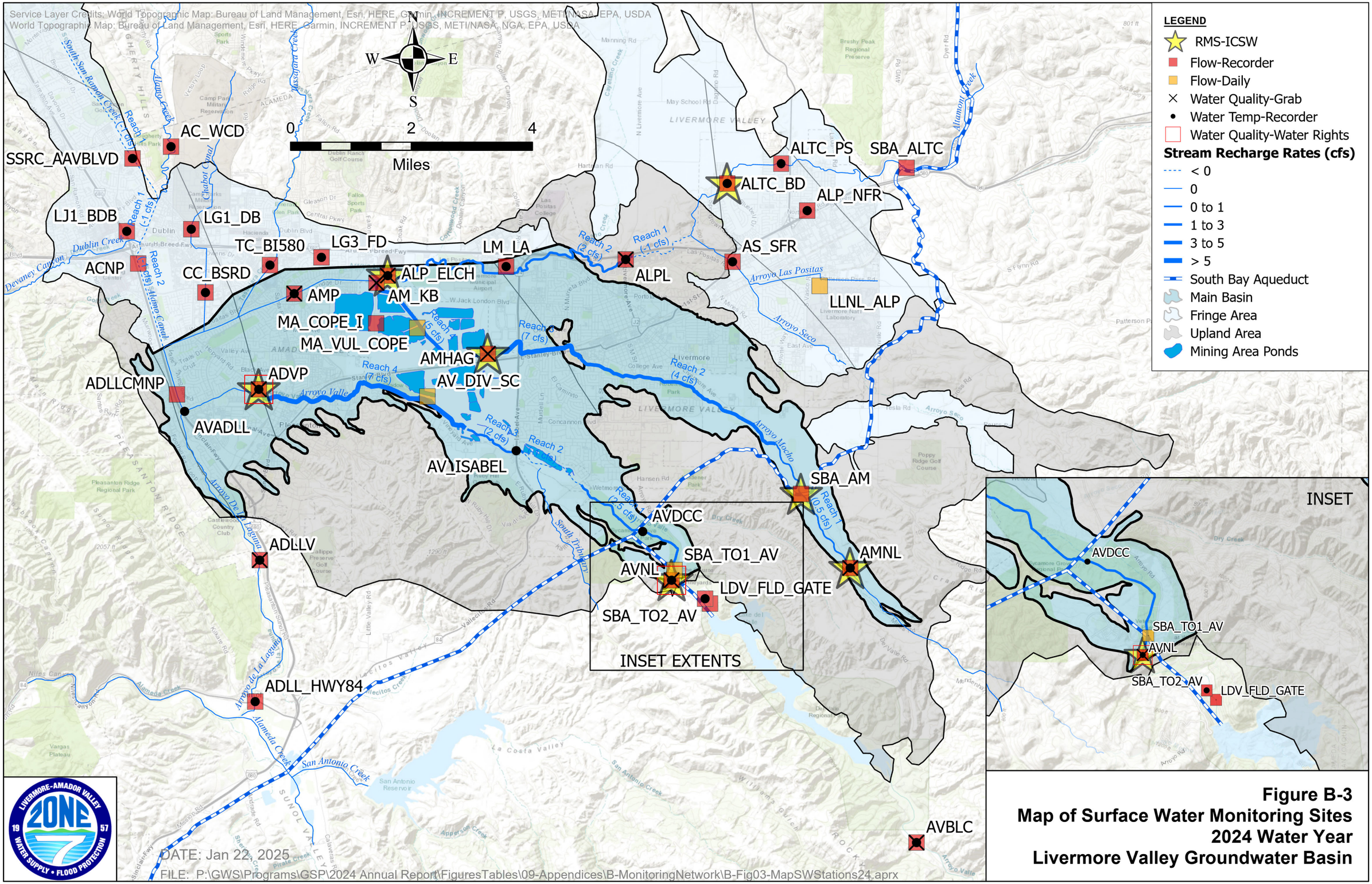


Figure B-3
Map of Surface Water Monitoring Sites
2024 Water Year
Livermore Valley Groundwater Basin

TABLE B-3
TABLE OF SURFACE WATER MONITORING STATIONS
AND MONITORING INFORMATION
2024 WATER YEAR

Station ID	Station Name	Stream	Station Type	SGMA-RMS	Flow Range	Flow Freq	Water Temp	SC	pH	WQ Freq	Flow By	Sample By
ARROYO VALLE - LINE E												
AVBLC	Arroyo Valle below Lang Canyon	Arroyo Valle	Gauge Height	-	Entire	15 Min	15 Min	-	-	Annual	USGS	Zone 7
LDV_FLD_GATE	Lake Del Valle Flood Gate	Lake Del Valle	Calculated	-	Entire	15 Min	-	-	-	-	DWR	
SBA_TO2_AV	SBA Turnout 2 to Arroyo Valle	SBA Turnout 2	Flow Meter	-	Entire	15 Min	15 Min	-	-	-	DWR	
SBA_TO1_AV	SBA Turnout 1 to Arroyo Valle	SBA Turnout 1	Estimated	RMS-ICSW	Entire	Daily	-	-	-	-	DWR	
AVNL	Arroyo Valle near Livermore	Arroyo Valle	Gauge Height	RMS-ICSW	Entire	15 Min	15 Min	-	-	Quarterly	USGS	Zone 7
AVDCC	Arroyo Valle at Dry Creek Confluence	Arroyo Valle	Water Temp Only	-		-	15 Min	-	-	-		
AV_ISABEL	Arroyo Valle at Isabel	Arroyo Valle	Water Temp Only	-		-	15 Min	-	-	-		
AV_DIV_SC	Arroyo Valle Diversion to Shadow Cliffs	Arroyo Valle	Flow Meter	RMS-ICSW	Entire	Daily	-	-	-	-	EBRPD	
ADVP	Arroyo Valle at Pleasanton	Arroyo Valle	Gauge Height	RMS-ICSW	Entire	15 Min	15 Min	-	-	Quarterly	Zone 7	Zone 7
AVADLL	Arroyo Valle above Arroyo De La Laguna	Arroyo Valle	Water Temp Only	-		-	15 Min	-	-	-		
ARROYO MOCHO - LINE G												
AMNL	Arroyo Mocho near Livermore	Arroyo Mocho	Gauge Height	RMS-ICSW	Entire	15 Min	15 Min	-	-	Annual	Zone 7	Zone 7
SBA_AM	SBA Turnout to Arroyo Mocho	SBA Turnout	Flow Meter	RMS-ICSW	Entire	15 Min	-	-	-	-	DWR	
AMHAG	Arroyo Mocho at Livermore	Arroyo Mocho	Gauge Height	RMS-ICSW	Entire	15 Min	-	-	-	Annual	Zone 7	Zone 7
MA_VUL_COPE	Vulcan Discharge to Cope Lake	Arroyo Mocho	Flow Meter	-	Entire	Daily	-	-	-	-	Vulcan	
MA_COPE_I	Cope Lake to Lake I	Arroyo Mocho	Gauge Height	-	Entire	Hourly	-	-	-	-	Zone 7	
AM_KB	Arroyo Mocho at Kaiser Bridge	Arroyo Valle	Gauge Height	-	Entire	15 Min	-	-	-	Annual	Zone 7	Zone 7
LG3_FD	Line G3 at Fairlands Drive	Line G3	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
AMP	Arroyo Mocho near Pleasanton	Arroyo Mocho	Gauge Height	-	Entire	15 Min	15 Min	-	-	Annual	Zone 7	Zone 7
ARROYO SECO - LINE P												
LLNL_ALP	LLNL Treated Groundwater Discharge to ALP	LLNL Treatment Effluent	Estimated	-	Entire	Daily	-	-	-	-	LLNL	
AS_SFR	Arroyo Seco at Southfront Rd	Arroyo Seco	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
ALTAMONT CREEK - LINE R												
SBA_ALTC	SBA Turnout to Altamont Creek	SBA Turnout	Flow Meter	-	Entire	15 Min	-	-	-	-	DWR	
ALTC_PS	Altamont Creek at Pasatiempo Street	Altamont Creek	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
ALTC_BD	Altamont Creek at Bluebell Drive	Altamont Creek	Gauge Height	RMS-ICSW	High	15 Min	15 Min	-	-	-	Zone 7	
ARROYO LAS POSITAS - LINE H												
ALP_NFR	Arroyo Las Positas at North Front Road	Arroyo Las Positas	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
ALPL	Arroyo Las Positas at Livermore	Arroyo Las Positas	Gauge Height	-	Entire	15 Min	15 Min	-	-	Annual	Zone 7	Zone 7
ALP_ELCH	Arroyo Las Positas above El Charro Road	Arroyo Las Positas	Gauge Height	RMS-ICSW	Entire	15 Min	15 Min	-	-	Annual	Zone 7	Zone 7
LINE M												
LM_LA	Line M at Lindbergh Ave	Collier Canyon Creek	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
CHABOT CANAL - LINE G-1												
LG1_DB	Line G1 at Dublin Blvd	Line G1	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
CC_BSRD	Chabot Canal below Stoneridge Drive nr Pleasanton	Chabot Canal	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
SOUTH SAN RAMON CREEK - LINE J												
SSRC_AAVBLVD	South San Ramon Creek above Amador Valley Blvd	SAN RAMON CREEK	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	Zone 7	
LJ1_BDB	Line J1 Below Dublin Blvd	Line J1	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
TASSAJARA CREEK - LINE K												
TC_BI580	Tassajara Creek below Interstate 580	Tassajara Creek	Gauge Height	-	High	15 Min	15 Min	-	-	-	BalanceHydro	
ALAMO CANAL - LINE F												
AC_WCD	Alamo Creek at Willow Creek Dr near Dublin	Alamo Creek	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	
ACNP	Alamo Canal near Pleasanton	Alamo Canal	Gauge Height	-	Entire	15 Min	-	-	-	-	USGS	
ARROYO DE LA LAGUNA - LINE B												
ADLLCMNP	Arroyo De La Laguna at Corte Madrid near Pleasanton	Arroyo De La Laguna	Gauge Height	-	Entire	15 Min	-	-	-	-	USGS	
ADLLV	Arroyo De La Laguna at Verona	Arroyo De La Laguna	Gauge Height	-	Entire	15 Min	15 Min	15 Min	15 Min	Annual	USGS	Zone 7
ADLL_HWY84	Arroyo De La Laguna at Highway 84 in Sunol	Arroyo De La Laguna	Gauge Height	-	Entire	15 Min	15 Min	-	-	-	BalanceHydro	

Freq = Frequency. Flow Range = range of accurate data for flow measurements. SC = Specific Conductance. WQ = Water Quality. Min = Minutes.
Quarterly Water Quality Samples are required for water rights requirements.
Stations are ordered from upstream to downstream on each stream line.

Appendix C

Groundwater Elevation
Supporting Data & Hydrographs

TABLE C-1
SEMIANNUAL GROUNDWATER LEVELS
(Feet above Mean Sea Level, NAVD88)
FALL 2023 TO FALL 2024

Well Number	Display Name	Well Depth	Aquifer	Subarea	Fall 2023		Spring 2024		Fall 2024		Change in Elevation (ft)		
											Seasonal		Annual
					Depth to Water	GW Elev	Depth to Water (ft)	GW Elev	Depth to Water (ft)	GW Elev	Fall 23 to Spring 24	Spring 24 to Fall 24	Fall 23 to Fall 24
2S1E32E001	32E1	70	Upper	None	38.0	354.6	34.6	358.0	36.0	356.6	3.4	-1.3	2.0
2S1E32N001	32N1	44	Upper	Fringe-Camp	18.8	342.0	15.9	344.9	17.9	342.9	2.9	-2.0	1.0
2S1E32Q001	32Q1	45	Upper	Fringe-Camp	27.9	339.7	26.1	341.5	27.1	340.4	1.8	-1.0	0.8
2S1E33L001	33L1	80	Upper	None	53.4	336.1	52.0	337.5	51.1	338.4	1.4	0.9	2.4
2S1E33P002	33P2	55	Upper	Fringe-Camp	34.1	336.0	32.7	337.4	32.2	337.9	1.4	0.5	1.9
2S1E33R001	33R1	60	Upper	None	20.7	337.8	18.8	339.7	19.1	339.4	1.9	-0.3	1.6
2S1W15F001	15F1	60	Upper	Fringe-Bishop	10.1	429.3	8.6	430.9	10.6	428.8	1.6	-2.0	-0.5
2S1W26C002	26C2	50	Upper	Fringe-Dublin	22.8	383.8	19.9	386.6	23.8	382.8	2.9	-3.9	-1.0
2S1W36E003	36E3	60	Upper	Fringe-Dublin	4.3	342.2	2.7	343.8	4.2	342.3	1.6	-1.5	0.1
2S1W36F001	36F1	190	Lower	Fringe-Dublin	13.5	329.2	10.4	332.4	9.9	332.9	3.2	0.5	3.7
2S1W36F002	36F2	320	Lower	Fringe-Dublin	10.4	332.4	8.0	334.7	6.9	335.9	2.3	1.2	3.5
2S1W36F003	36F3	520	Lower	Fringe-Dublin	25.6	317.1	20.2	322.5	17.6	325.1	5.3	2.6	8.0
2S2E21L001	21L1	168	Upper	Fringe-May	35.5	527.6	34.3	528.7	34.8	528.3	1.1	-0.4	0.7
2S2E27C002	27C2	108	Upper	Fringe-Spring	12.3	529.8	11.5	530.7	12.5	529.7	0.8	-1.0	-0.2
2S2E27K001	27K1	96	Upper	Fringe-Spring	8.7	515.8	6.9	517.6	7.5	516.9	1.8	-0.6	1.1
2S2E27M002	27M2	112	Upper	Fringe-May	13.9	510.6	NA	NA	8.1	516.4	-	-	5.8
2S2E27P002	27P2	68	Upper	Fringe-Spring	2.8	502.6	0.7	504.7	2.5	502.9	2.1	-1.8	0.3
2S2E28D002	28D2	55	Upper	Fringe-May	29.3	525.9	28.6	526.6	28.3	526.9	0.7	0.3	1.0
2S2E28J002	28J2	230	Lower	Fringe-May	6.7	515.6	4.9	517.4	5.5	516.8	1.8	-0.6	1.2
2S2E28Q001	28Q1	28	Upper	Fringe-May	8.0	505.0	3.5	509.5	4.7	508.4	4.5	-1.2	3.3
2S2E32K002	32K2	43	Upper	Fringe-Cayetano	9.0	498.5	6.8	500.6	8.0	499.5	2.2	-1.2	1.0
2S2E34E001	34E1	49	Upper	Fringe-May	5.7	494.0	2.9	496.8	5.1	494.7	2.8	-2.2	0.7
2S2E34Q002	34Q2	50	Upper	Fringe-Spring	3.7	503.6	2.0	505.2	3.7	503.5	1.7	-1.7	0.0
3S1E01F002	1F2	40	Upper	Fringe-Camp	19.5	409.0	18.6	409.8	20.5	408.0	0.8	-1.9	-1.0
3S1E01H003	1H3	80	Upper	Fringe-Camp	26.0	396.8	23.0	399.8	26.0	396.8	3.0	-3.0	0.0
3S1E01J004	1J04	300	Lower	Fringe-Camp	NA	NA	NA	NA	NA	NA	-	-	-
3S1E01L001	1L1	70	Upper	Fringe-Camp	52.0	351.1	45.8	357.2	44.9	358.2	6.2	0.9	7.1
3S1E01P002	1P2	50	Upper	Main-Amador	15.0	374.6	14.0	375.6	15.0	374.6	1.0	-1.0	0.0
3S1E01P003	1P3	480	Lower	Main-Amador	98.7	295.8	84.9	309.6	89.2	305.2	13.8	-4.3	9.5
3S1E02J002	2J2	41	Upper	Fringe-Camp	12.4	368.5	8.6	372.3	12.2	368.7	3.7	-3.6	0.2
3S1E02J003	2J3	65	Upper	Fringe-Camp	25.9	380.5	25.6	380.8	25.6	380.8	0.3	0.0	0.3
3S1E02K002	2K2	46	Upper	Fringe-Camp	25.1	371.9	23.5	373.6	24.7	372.4	1.7	-1.2	0.4
3S1E02M003	2M3	50	Upper	Fringe-Camp	12.6	352.5	12.1	353.0	13.2	351.8	0.5	-1.1	-0.6
3S1E02N006	2N6	55	Upper	Main-Amador	27.7	338.5	24.6	341.6	26.9	339.2	3.1	-2.3	0.8
3S1E02P003	2P3	380	Lower	Fringe-Camp	79.6	292.2	66.1	305.6	68.9	302.9	13.5	-2.8	10.7
3S1E02Q001	2Q1	45	Upper	Main-Amador	18.3	351.7	15.2	354.8	17.9	352.1	3.1	-2.7	0.4
3S1E02R001	2R1	33	Upper	Main-Amador	14.0	362.3	11.0	365.3	15.5	360.8	3.0	-4.5	-1.5
3S1E03G002	3G2	50	Upper	Fringe-Camp	12.2	342.1	9.1	345.1	12.2	342.1	3.1	-3.1	0.0
3S1E04A001	4A1	50	Upper	Fringe-Camp	17.9	332.8	16.1	334.6	16.4	334.3	1.8	-0.3	1.6
3S1E04J005	4J5	47	Upper	Fringe-Camp	16.7	328.6	13.0	332.2	14.4	330.8	3.6	-1.4	2.2
3S1E04J006	4J6	110	Upper	Fringe-Camp	20.1	325.4	16.7	328.9	16.2	329.3	3.4	0.5	3.9
3S1E04Q002	4Q2	90	Upper	Main-Amador	56.0	289.4	45.7	299.7	38.4	307.0	10.3	7.3	17.6
3S1E05K006	5K6	75	Upper	Fringe-Camp	14.7	331.3	11.9	334.2	13.5	332.6	2.8	-1.6	1.2
3S1E05K007	5K7	150	Lower	Fringe-Camp	20.9	325.3	17.4	328.8	16.9	329.3	3.4	0.5	4.0
3S1E05L003	5L3	40	Upper	Fringe-Camp	13.1	326.3	11.9	327.5	12.8	326.6	1.2	-0.9	0.3
3S1E05P006	5P6	35	Upper	Fringe-Camp	12.4	324.3	10.6	326.1	11.4	325.3	1.8	-0.8	1.0
3S1E06F003	6F3	36	Upper	Fringe-Dublin	5.6	324.2	3.8	326.0	5.4	324.4	1.8	-1.6	0.2
3S1E06G005	6G5	200	Lower	Fringe-Dublin	10.2	322.0	7.8	324.4	8.0	324.3	2.4	-0.2	2.2
3S1E06M002	6M2	26	Upper	Fringe-Dublin	12.1	322.6	11.4	323.3	NA	NA	0.8	-	-
3S1E06N002	6N2	67	Upper	Fringe-Dublin	14.2	321.0	11.6	323.6	13.3	322.0	2.6	-1.7	0.9
3S1E06N003	6N3	72	Upper	Fringe-Dublin	19.7	321.1	17.5	323.3	NA	NA	2.2	-	-
3S1E06N004	6N4	26	Upper	Fringe-Dublin	15.6	325.4	14.6	326.5	NA	NA	1.0	-	-
3S1E06N005	6N5	35	Upper	Fringe-Dublin	15.0	318.5	12.6	320.8	NA	NA	2.4	-	-
3S1E06N006	6N6	75	Upper	Fringe-Dublin	11.7	321.9	12.6	321.0	NA	NA	-1.0	-	-
3S1E07B002	7B2	152	Lower	Fringe-Dublin	11.2	316.6	8.3	319.5	8.4	319.4	2.9	-0.1	2.8
3S1E07B012	7B12	70	Upper	Fringe-Dublin	13.9	313.9	10.2	317.6	10.6	317.2	3.7	-0.4	3.3
3S1E07D001	7D1	75	Upper	Fringe-Dublin	17.4	312.7	13.0	317.1	NA	NA	4.4	-	-
3S1E07D003	7D3	70	Upper	Fringe-Dublin	19.8	312.4	15.6	316.7	NA	NA	4.3	-	-
3S1E07D004	7D4	35	Upper	Fringe-Dublin	10.7	321.9	12.1	320.5	NA	NA	-1.4	-	-
3S1E07G007	7G7	55	Upper	Fringe-Dublin	16.1	311.3	11.6	315.7	11.8	315.6	4.5	-0.2	4.3
3S1E07J005	7J5	50	Upper	Fringe-Dublin	29.4	297.4	13.8	313.0	13.9	312.9	15.6	-0.1	15.6
3S1E08B001	8B1	148	Upper	Main-Amador	52.2	286.1	39.6	298.7	34.1	304.2	12.6	5.4	18.0
3S1E08G004	8G4	85	Upper	Main-Amador	55.3	286.2	43.3	298.2	37.0	304.5	12.0	6.3	18.3
3S1E08H009	8H9	240	Lower	Main-Amador	51.0	287.5	38.4	300.1	35.7	302.9	12.6	2.7	15.3
3S1E08H010	8H10	440	Lower	Main-Amador	52.3	286.9	39.1	300.2	37.8	301.5	13.2	1.3	14.6
3S1E08H011	8H11	720	Deep	Main-Amador	84.5	254.8	39.9	299.3	68.2	271.1	44.5	-28.3	16.3
3S1E08H013	8H13	800	Deep	Main-Amador	77.0	262.0	39.9	299.0	59.0	279.9	37.1	-19.1	18.0
3S1E08H018	M4	745	Lower	Main-Amador	57.4	284.5	NA	NA	52.9	289.1	-	-	4.5
3S1E08K001	8K1	99	Upper	Main-Amador	50.4	281.9	35.8	296.6	30.2	302.2	14.7	5.6	20.3
3S1E08N001	8N1	72	Upper	Main-Bernal	NA	NA	NA	NA	NA	NA	-	-	-
3S1E09B001	St1	810	Lower	Main-Amador	56.7	292.6	46.3	302.9	41.3	307.9	10.4	5.0	15.4
3S1E09H010	9H10	145	Upper	Main-Amador	66.0	286.9	54.0	298.9	46.8	306.1	12.1	7.1	19.2

U = Upper; L = Lower; NM = Not Measured; NA = Not Available; OBS = Obstructed; - = Not Applicable

Highlighted = Representative Monitoring Site

TABLE C-1
SEMIANNUAL GROUNDWATER LEVELS
(Feet above Mean Sea Level, NAVD88)
FALL 2023 TO FALL 2024

Well Number	Display Name	Well Depth	Aquifer	Subarea	Fall 2023		Spring 2024		Fall 2024		Change in Elevation (ft)		
											Seasonal		Annual
					Depth to Water	GW Elev	Depth to Water (ft)	GW Elev	Depth to Water (ft)	GW Elev	Fall 23 to Spring 24	Spring 24 to Fall 24	Fall 23 to Fall 24
2S1E32E001	32E1	70	Upper	None	38.0	354.6	34.6	358.0	36.0	356.6	3.4	-1.3	2.0
2S1E32N001	32N1	44	Upper	Fringe-Camp	18.8	342.0	15.9	344.9	17.9	342.9	2.9	-2.0	1.0
2S1E32Q001	32Q1	45	Upper	Fringe-Camp	27.9	339.7	26.1	341.5	27.1	340.4	1.8	-1.0	0.8
2S1E33L001	33L1	80	Upper	None	53.4	336.1	52.0	337.5	51.1	338.4	1.4	0.9	2.4
2S1E33P002	33P2	55	Upper	Fringe-Camp	34.1	336.0	32.7	337.4	32.2	337.9	1.4	0.5	1.9
2S1E33R001	33R1	60	Upper	None	20.7	337.8	18.8	339.7	19.1	339.4	1.9	-0.3	1.6
3S1E09H011	9H11	190	Lower	Main-Amador	63.7	289.4	51.5	301.5	47.2	305.8	12.1	4.3	16.5
3S1E09H013	9H13	145	Upper	Main-Amador	68.3	285.7	NA	NA	50.1	304.0	-	-	18.2
3S1E09J007	9J7	145	Upper	Main-Amador	70.5	286.9	58.7	298.7	51.7	305.7	11.8	7.0	18.8
3S1E09J008	9J8	305	Lower	Main-Amador	68.4	289.2	56.1	301.4	53.2	304.4	12.3	2.9	15.2
3S1E09J009	9J9	505	Lower	Main-Amador	69.2	288.5	56.8	300.9	56.2	301.5	12.4	0.6	13.0
3S1E09M002	M1	530	Lower	Main-Amador	NA	NA	NA	NA	NA	NA	-	-	-
3S1E09M003	M2	575	Lower	Main-Amador	59.7	287.8	47.5	300.0	45.5	302.0	12.2	2.0	14.1
3S1E09M004	M3	498	Lower	Main-Amador	38.1	304.8	36.0	306.9	43.5	299.4	2.1	-7.5	-5.4
3S1E09P005	9P5	105	Upper	Main-Amador	62.5	286.9	51.1	298.3	44.8	304.7	11.4	6.4	17.7
3S1E09P009	9P9	210	Lower	Main-Amador	61.7	287.9	50.1	299.3	45.6	303.8	11.4	4.5	15.9
3S1E09P010	9P10	310	Lower	Main-Amador	61.2	288.3	49.1	300.5	45.0	304.7	12.2	4.2	16.4
3S1E09P011	9P11	425	Lower	Main-Amador	61.0	288.4	48.7	300.8	47.1	302.3	12.3	1.6	13.9
3S1E10A002	10A2	88	Upper	Main-Amador	62.9	304.5	54.7	312.7	52.8	314.6	8.2	1.9	10.1
3S1E10B008	10B8	200	Lower	Main-Amador	62.6	291.0	50.7	302.9	46.5	307.1	11.9	4.2	16.1
3S1E10B009	10B9	294	Lower	Main-Amador	62.8	290.7	49.9	303.6	48.5	305.0	13.0	1.3	14.3
3S1E10B010	10B10	600	Lower	Main-Amador	65.8	287.8	51.3	302.3	53.9	299.7	14.5	-2.6	11.9
3S1E10B011	10B11	810	Deep	Main-Amador	71.6	281.9	52.9	300.7	62.4	291.1	18.8	-9.6	9.2
3S1E10B014	COL5 Mon	690	Lower	Main-Amador	69.4	286.2	57.0	298.6	59.6	296.0	12.4	-2.6	9.8
3S1E10B016	COL5	690	Lower	Main-Amador	72.0	285.6	NA	NA	64.0	293.6	-	-	8.0
3S1E10D002	10D2	212	Lower	Main-Amador	58.5	290.8	46.6	302.7	43.1	306.2	11.9	3.5	15.4
3S1E10D003	10D3	322	Lower	Main-Amador	59.2	290.1	46.9	302.4	45.1	304.2	12.3	1.8	14.1
3S1E10D004	10D4	616	Lower	Main-Amador	59.8	289.5	47.6	301.8	48.4	300.9	12.3	-0.9	11.4
3S1E10D005	10D5	790	Deep	Main-Amador	60.4	288.9	49.1	300.3	58.2	291.1	11.3	-9.1	2.2
3S1E10D007	10D7	145	Upper	Main-Amador	73.8	287.3	61.5	299.6	54.5	306.6	12.3	7.1	19.4
3S1E10D008	10D8	215	Lower	Main-Amador	69.8	291.2	57.8	303.2	54.4	306.7	12.0	3.4	15.5
3S1E10K002	COL1 Mon	591	Lower	Main-Amador	68.8	289.9	55.6	303.1	54.3	304.4	13.2	1.3	14.4
3S1E10K003	COL1	530	Lower	Main-Amador	74.0	289.8	NA	NA	62.5	301.3	-	-	11.5
3S1E10N002	10N2	195	Upper	Main-Amador	70.9	287.0	58.8	299.1	51.9	306.0	12.1	6.9	19.0
3S1E10N003	10N3	195	Lower	Main-Amador	68.8	289.2	56.7	301.3	52.3	305.7	12.2	4.4	16.5
3S1E11B001	11B1	43	Upper	Main-Amador	29.0	340.4	NA	NA	NA	NA	-	-	-
3S1E11C003	11C3	55	Upper	Main-Amador	30.3	334.5	28.7	336.2	29.3	335.5	1.6	-0.6	1.0
3S1E11G001	11G1	120	Upper	Main-Amador	54.3	317.3	44.2	327.4	44.4	327.2	10.1	-0.2	9.9
3S1E11G002	11G2	350	Lower	Main-Amador	76.9	294.7	62.4	309.2	65.9	305.7	14.6	-3.5	11.1
3S1E11G003	11G3	590	Lower	Main-Amador	80.9	290.8	68.6	303.0	71.5	300.2	12.2	-2.9	9.4
3S1E11G004	11G4	790	Deep	Main-Amador	84.3	287.4	73.5	298.2	77.5	294.2	10.8	-3.9	6.9
3S1E11M002	COL2 Mon	700	Lower	Main-Amador	75.0	291.0	61.5	304.5	62.7	303.3	13.5	-1.2	12.3
3S1E11M003	COL2	684	Lower	Main-Amador	79.7	289.5	NA	NA	NA	NA	-	-	-
3S1E11P006	11P6	400	Lower	Main-Amador	87.1	289.6	73.1	303.6	75.2	301.5	14.0	-2.1	11.9
3S1E12A002	12A2	69	Upper	Main-Amador	30.0	371.4	26.0	375.4	27.0	374.4	4.0	-1.0	3.0
3S1E12D002	12D2	45	Upper	Main-Amador	29.0	355.5	27.0	357.5	27.0	357.5	2.0	0.0	2.0
3S1E12G001	12G1	73	Upper	Main-Amador	53.0	351.5	49.0	355.5	49.0	355.5	4.0	0.0	4.0
3S1E12H004	12H4	270	Lower	Main-Amador	106.8	300.9	91.9	315.9	98.4	309.4	15.0	-6.5	8.5
3S1E12H005	12H5	400	Lower	Main-Amador	115.6	292.2	105.7	302.1	110.5	297.3	9.8	-4.8	5.1
3S1E12H006	12H6	480	Lower	Main-Amador	117.0	290.8	107.2	300.6	111.1	296.7	9.8	-3.9	5.9
3S1E12H007	12H7	684	Deep	Main-Amador	184.7	223.0	161.4	246.3	168.4	239.3	23.3	-7.0	16.3
3S1E12K002	12K2	300	Lower	Main-Amador	106.0	300.3	88.7	317.6	97.1	309.2	17.4	-8.5	8.9
3S1E12K003	12K3	475	Lower	Main-Amador	112.0	294.9	102.4	304.4	107.3	299.5	9.5	-4.9	4.6
3S1E12K004	12K4	575	Deep	Main-Amador	136.8	270.0	121.1	285.6	123.0	283.7	15.7	-1.9	13.7
3S1E13P005	13P5	135	Upper	Main-Amador	101.4	292.3	99.0	294.8	100.0	293.8	2.4	-1.0	1.4
3S1E13P006	13P6	255	Lower	Main-Amador	109.2	284.5	98.1	295.6	99.3	294.4	11.1	-1.2	9.9
3S1E13P007	13P7	375	Lower	Main-Amador	101.0	292.5	93.5	300.0	95.7	297.8	7.5	-2.2	5.3
3S1E13P008	13P8	605	Lower	Main-Amador	146.1	247.5	127.5	266.1	132.8	260.8	18.6	-5.3	13.3
3S1E14B001	14B1	435	Lower	Main-Amador	98.4	285.8	84.8	299.4	86.5	297.7	13.6	-1.7	11.9
3S1E14D002	14D2	740	Lower	Main-Amador	81.8	290.1	66.8	305.0	66.9	304.9	14.9	-0.1	14.8
3S1E15F003	15F3	625	Lower	Main-Amador	78.9	290.1	66.6	302.4	99.2	269.8	12.3	-32.6	-20.2
3S1E15J003	15J3	196	Lower	Main-Amador	49.6	295.0	39.3	305.3	40.9	303.7	10.3	-1.7	8.6
3S1E15M003	15M3	600	Lower	Main-Amador	85.3	277.6	70.9	291.2	71.3	290.8	13.7	-0.4	13.3
3S1E16A002	P8	500	Lower	Main-Amador	72.8	283.4	59.7	296.4	54.3	301.9	13.1	5.4	18.5
3S1E16A004	16A4	603	Lower	Main-Amador	70.3	289.1	58.8	300.5	58.4	301.0	11.5	0.5	12.0
3S1E16B001	16B1	805	Deep	Main-Amador	67.7	288.1	56.5	299.3	59.4	296.4	11.2	-2.8	8.3
3S1E16C002	16C2	190	Lower	Main-Amador	56.1	288.3	44.5	299.9	41.1	303.3	11.6	3.4	15.0
3S1E16C003	16C3	305	Lower	Main-Amador	55.7	288.6	44.2	300.1	42.8	301.5	11.5	1.4	13.0
3S1E16C004	16C4	375	Lower	Main-Amador	55.7	288.5	44.4	299.8	45.0	299.2	11.3	-0.6	10.7
3S1E16E004	16E4	105	Upper	Main-Amador	57.4	294.3	44.9	306.8	39.6	312.1	12.5	5.3	17.8
3S1E16L002	P4	151	Lower	Main-Amador	59.6	286.7	48.8	297.6	43.3	303.0	10.8	5.4	16.3
3S1E16L005	P5	685	Lower	Main-Amador	61.2	285.1	46.2	300.1	45.1	301.2	15.0	1.1	16.1

U = Upper; L = Lower; NM = Not Measured; NA = Not Available; OBS = Obstructed; - = Not Applicable

Highlighted = Representative Monitoring Site

TABLE C-1
SEMIANNUAL GROUNDWATER LEVELS
(Feet above Mean Sea Level, NAVD88)
FALL 2023 TO FALL 2024

Well Number	Display Name	Well Depth	Aquifer	Subarea	Fall 2023		Spring 2024		Fall 2024		Change in Elevation (ft)		
											Seasonal		Annual
					Depth to Water	GW Elev	Depth to Water (ft)	GW Elev	Depth to Water (ft)	GW Elev	Fall 23 to Spring 24	Spring 24 to Fall 24	Fall 23 to Fall 24
2S1E32E001	32E1	70	Upper	None	38.0	354.6	34.6	358.0	36.0	356.6	3.4	-1.3	2.0
2S1E32N001	32N1	44	Upper	Fringe-Camp	18.8	342.0	15.9	344.9	17.9	342.9	2.9	-2.0	1.0
2S1E32Q001	32Q1	45	Upper	Fringe-Camp	27.9	339.7	26.1	341.5	27.1	340.4	1.8	-1.0	0.8
2S1E33L001	33L1	80	Upper	None	53.4	336.1	52.0	337.5	51.1	338.4	1.4	0.9	2.4
2S1E33P002	33P2	55	Upper	Fringe-Camp	34.1	336.0	32.7	337.4	32.2	337.9	1.4	0.5	1.9
2S1E33R001	33R1	60	Upper	None	20.7	337.8	18.8	339.7	19.1	339.4	1.9	-0.3	1.6
3S1E16L007	P6	647	Lower	Main-Amador	59.4	284.1	46.6	296.9	44.5	299.0	12.8	2.1	14.9
3S1E16R001	16R1	239	Lower	Main-Amador	63.3	299.2	53.7	308.8	52.1	310.5	9.6	1.7	11.2
3S1E17B004	17B4	248	Lower	Main-Amador	58.6	279.1	40.0	297.7	35.6	302.1	18.5	4.4	23.0
3S1E17D003	17D3	108	Lower	Main-Bernal	47.9	277.2	29.0	296.2	25.2	299.9	18.9	3.8	22.7
3S1E17D004	17D4	236	Lower	Main-Bernal	47.8	277.3	29.1	296.0	25.9	299.2	18.7	3.2	21.9
3S1E17D005	17D5	308	Lower	Main-Bernal	47.7	277.4	29.3	295.9	25.8	299.3	18.5	3.4	21.9
3S1E17D006	17D6	408	Lower	Main-Bernal	47.2	277.9	31.1	294.0	26.6	298.6	16.1	4.5	20.7
3S1E17D007	17D7	684	Deep	Main-Bernal	18.2	307.0	16.5	308.6	16.8	308.4	1.6	-0.2	1.4
3S1E17D010	H7	425	Lower	Main-Bernal	50.1	278.0	32.2	296.0	28.7	299.5	18.0	3.5	21.5
3S1E17D011	17D11	603	Lower	Main-Bernal	47.3	277.6	30.8	294.1	26.2	298.6	16.5	4.5	21.0
3S1E17D012	H9	315	Lower	Main-Bernal	NA	NA	NA	NA	NA	NA	-	-	-
3S1E18A005	P7	454	Lower	Main-Bernal	51.9	275.4	34.3	293.0	30.0	297.3	17.6	4.3	21.9
3S1E18A006	H6	500	Lower	Main-Bernal	50.9	275.9	NA	NA	NA	NA	-	-	-
3S1E18E004	18E4	83	Upper	Main-Bernal	43.0	277.3	24.5	295.7	20.0	300.2	18.5	4.5	23.0
3S1E18J002	18J2	71	Upper	Main-Bernal	45.7	277.4	26.5	296.5	21.4	301.6	19.2	5.1	24.3
3S1E18N001	18N1	708	Lower	Main-Bernal	30.9	288.5	16.5	303.0	19.5	299.9	14.5	-3.1	11.4
3S1E19A010	SF-B	331	Lower	Main-Bernal	63.5	273.6	41.7	295.3	37.9	299.1	21.8	3.8	25.5
3S1E19A011	SF-A	330	Lower	Main-Bernal	NA	NA	36.1	298.2	32.5	301.8	-	3.7	-
3S1E19C004	19C4	78	Upper	Main-Bernal	43.7	278.6	24.5	297.7	19.9	302.4	19.2	4.6	23.8
3S1E19K001	19K1	58	Upper	Main-Bernal	44.8	276.8	25.7	295.8	21.8	299.7	19.1	3.9	22.9
3S1E20C003	20C3	110	Lower	Main-Bernal	61.1	277.6	42.5	296.1	37.9	300.7	18.6	4.6	23.2
3S1E20C007	20C7	153	Upper	Main-Bernal	60.4	278.3	42.1	296.6	36.9	301.7	18.3	5.1	23.5
3S1E20C008	20C8	315	Lower	Main-Bernal	61.4	277.3	42.5	296.2	38.5	300.1	18.9	3.9	22.8
3S1E20C009	20C9	515	Lower	Main-Bernal	62.9	275.9	42.5	296.3	39.1	299.7	20.3	3.4	23.7
3S1E20J004	20J4	72	Upper	Main-Bernal	46.7	284.9	32.7	298.9	28.6	303.0	14.0	4.1	18.1
3S1E20M011	20M11	71	Upper	Main-Bernal	44.8	281.0	25.5	300.3	21.3	304.5	19.3	4.2	23.5
3S1E20Q002	20Q2	65	Upper	Main-Bernal	22.8	303.0	16.4	309.4	17.3	308.6	6.4	-0.8	5.6
3S1E22D002	22D2	72	Upper	Main-Amador	47.4	320.7	40.1	328.0	39.0	329.1	7.3	1.2	8.4
3S1E23J001	23J1	120	Lower	Main-Amador	85.7	342.5	NA	NA	83.7	344.5	-	-	2.0
3S1E24Q001	24Q1	440	Lower	Main-Amador	105.2	322.3	92.0	335.5	96.3	331.2	13.2	-4.3	8.9
3S1E25C003	25C3	146	Upper	Main-Amador	81.5	372.7	84.2	369.9	85.9	368.3	-2.7	-1.6	-4.3
3S1E28M002	28M2	141	Upper	Upland	21.1	368.9	NA	NA	23.0	367.0	-	-	-1.9
3S1E29M004	29M4	57	Upper	Main-Castle	37.4	273.6	16.9	294.0	16.0	294.9	20.5	0.9	21.4
3S1E29P002	29P2	42	Upper	Main-Bernal	29.1	273.8	25.2	277.6	26.4	276.4	3.9	-1.3	2.6
3S1E33G005	33G5	35	Upper	Upland	15.7	392.9	10.2	398.4	15.7	392.8	5.5	-5.6	0.0
3S1W01B009	1B9	162	Lower	Fringe-Dublin	10.3	323.2	7.5	326.0	8.7	324.9	2.8	-1.2	1.7
3S1W01B010	1B10	414	Lower	Fringe-Dublin	20.7	312.8	14.6	319.0	10.2	323.3	6.1	4.4	10.5
3S1W01B011	1B11	560	Lower	Fringe-Dublin	9.2	324.5	6.1	327.7	4.2	329.6	3.2	1.9	5.1
3S1W01J001	1J1	70	Upper	Fringe-Dublin	11.8	322.5	9.0	325.3	NA	NA	2.8	-	-
3S1W01J002	1J2	37	Upper	Fringe-Dublin	11.9	322.7	8.7	325.9	NA	NA	3.2	-	-
3S1W02A002	2A2	47	Upper	Fringe-Dublin	24.4	345.1	20.3	349.1	25.0	344.4	4.1	-4.7	-0.7
3S1W12A009	12A9	74	Upper	Fringe-Dublin	13.5	318.7	11.2	320.9	NA	NA	2.3	-	-
3S1W12A010	12A10	40	Upper	Fringe-Dublin	13.0	319.0	10.8	321.2	NA	NA	2.1	-	-
3S1W12B002	12B2	40	Upper	Fringe-Dublin	20.3	322.6	17.7	325.2	20.4	322.5	2.6	-2.7	-0.1
3S1W12J001	12J1	62	Upper	Fringe-Dublin	22.6	306.8	15.5	313.8	15.9	313.4	7.1	-0.4	6.6
3S1W13J001	13J1	48	Upper	Main-Castle	30.1	313.8	17.8	326.1	29.9	314.0	12.3	-12.1	0.2
3S2E01F002	1F2	69	Upper	Fringe-Spring	23.2	549.8	21.9	551.1	22.5	550.5	1.3	-0.6	0.7
3S2E02B002	2B2	46	Upper	Fringe-Spring	8.8	530.7	8.0	531.5	9.1	530.4	0.8	-1.1	-0.3
3S2E03A001	3A1	54	Upper	Fringe-Spring	5.7	512.0	3.7	513.9	5.6	512.1	1.9	-1.8	0.1
3S2E03K003	3K3	60	Upper	Fringe-Mocho I	13.0	509.9	12.7	510.2	13.3	509.6	0.3	-0.6	-0.3
3S2E05N001	5N1	210	Mixed	Main-Mocho II	31.0	413.0	23.9	420.1	33.6	410.4	7.1	-9.7	-2.6
3S2E07C002	7C2	49	Upper	Main-Mocho II	23.0	397.8	22.0	398.8	24.0	396.8	1.0	-2.0	-1.0
3S2E07H002	7H2	54	Upper	Main-Mocho II	25.4	417.5	21.6	421.2	27.9	415.0	3.8	-6.3	-2.5
3S2E07N002	7N2	162	Upper	Main-Amador	94.7	327.4	78.9	343.1	94.5	327.5	15.7	-15.6	0.1
3S2E07P003	CWS24	510	Lower	Main-Amador	NA	NA	245.0	186.5	NA	NA	-	-	-
3S2E07R002	7R2	805	Deep	Main-Mocho II	3.6	442.4	2.7	443.3	2.5	443.5	0.8	0.2	1.1
3S2E07R003	CWS31	583	Lower	Upland	NA	NA	76.2	369.8	NA	NA	-	-	-
3S2E08H002	8H2	46	Upper	Main-Mocho II	35.4	434.2	21.3	448.3	37.7	431.9	14.2	-16.5	-2.3
3S2E08H003	8H3	195	Lower	Main-Mocho II	51.1	426.1	41.4	436.0	56.9	420.5	9.9	-15.5	-5.6
3S2E08H004	8H4	385	Lower	Main-Mocho II	128.5	348.5	95.2	381.7	139.3	337.7	33.2	-44.1	-10.8
3S2E08K002	8K2	74	Upper	Main-Mocho II	30.1	434.7	24.5	440.3	33.5	431.3	5.7	-9.1	-3.4
3S2E08N002	CWS14	526	Lower	Main-Mocho II	48.7	405.0	35.4	418.3	62.6	391.0	13.3	-27.3	-14.0
3S2E08P001	CWS8	273	Lower	Main-Mocho II	37.4	430.8	31.5	436.7	NA	NA	5.9	-	-
3S2E08Q009	8Q9	114	Lower	Main-Mocho II	23.7	441.0	18.0	446.7	28.1	436.7	5.6	-10.0	-4.4
3S2E09Q004	9Q4	80	Upper	Main-Mocho II	20.7	483.8	14.9	489.6	23.2	481.3	5.8	-8.4	-2.5
3S2E10F003	10F3	45	Upper	Fringe-Mocho I	12.2	522.6	11.0	523.9	13.0	521.8	1.3	-2.0	-0.8

U = Upper; L = Lower; NM = Not Measured; NA = Not Available; OBS = Obstructed; - = Not Applicable

Highlighted = Representative Monitoring Site

TABLE C-1
SEMIANNUAL GROUNDWATER LEVELS
(Feet above Mean Sea Level, NAVD88)
FALL 2023 TO FALL 2024

Well Number	Display Name	Well Depth	Aquifer	Subarea	Fall 2023		Spring 2024		Fall 2024		Change in Elevation (ft)		
											Seasonal		Annual
					Depth to Water	GW Elev	Depth to Water (ft)	GW Elev	Depth to Water (ft)	GW Elev	Fall 23 to Spring 24	Spring 24 to Fall 24	Fall 23 to Fall 24
2S1E32E001	32E1	70	Upper	None	38.0	354.6	34.6	358.0	36.0	356.6	3.4	-1.3	2.0
2S1E32N001	32N1	44	Upper	Fringe-Camp	18.8	342.0	15.9	344.9	17.9	342.9	2.9	-2.0	1.0
2S1E32Q001	32Q1	45	Upper	Fringe-Camp	27.9	339.7	26.1	341.5	27.1	340.4	1.8	-1.0	0.8
2S1E33L001	33L1	80	Upper	None	53.4	336.1	52.0	337.5	51.1	338.4	1.4	0.9	2.4
2S1E33P002	33P2	55	Upper	Fringe-Camp	34.1	336.0	32.7	337.4	32.2	337.9	1.4	0.5	1.9
2S1E33R001	33R1	60	Upper	None	20.7	337.8	18.8	339.7	19.1	339.4	1.9	-0.3	1.6
3S2E10Q001	10Q1	44	Upper	Main-Mocho II	21.5	533.9	17.6	537.8	23.6	531.8	3.9	-6.0	-2.1
3S2E10Q002	10Q2	325	Lower	Main-Mocho II	NA	NA	NA	NA	29.8	519.7	-	-	-
3S2E11C001	11C1	66	Upper	Fringe-Mocho I	25.8	531.4	25.4	531.1	26.8	529.7	-0.3	-1.4	-1.7
3S2E12C004	12C4	108	Upper	Fringe-Spring	NA	NA	52.2	539.3	52.7	538.7	-	-0.5	-
3S2E12J003	12J3	160	Lower	Fringe-Spring	NA	NA	NA	NA	83.4	547.6	-	-	-
3S2E14A003	14A3	110	Upper	Fringe-Mocho I	NA	NA	NA	NA	68.4	533.8	-	-	-
3S2E14B001	14B1	300	Lower	Fringe-Mocho I	60.9	532.5	61.7	531.7	63.0	530.3	-0.8	-1.4	-2.1
3S2E15E002	15E2	192	Lower	Main-Mocho II	33.0	516.7	25.8	523.9	35.2	514.5	7.3	-9.5	-2.2
3S2E15L001	15L1	41	Upper	Main-Mocho II	24.9	536.5	14.8	546.8	21.8	539.7	10.2	-7.1	3.1
3S2E15L002	15L2	71	Upper	Main-Mocho II	24.8	536.3	10.5	550.7	21.8	539.3	14.4	-11.3	3.0
3S2E15M002	15M2	45	Upper	Main-Mocho II	27.3	522.1	20.0	529.4	29.3	520.1	7.3	-9.3	-2.0
3S2E15M003	15M3	76	Upper	Main-Mocho II	27.4	521.7	20.3	528.7	29.6	519.5	7.1	-9.2	-2.2
3S2E15Q006	15Q6	301	Lower	Main-Mocho II	51.8	525.7	25.8	551.8	52.9	524.7	26.1	-27.1	-1.0
3S2E15Q008	15Q 8	41	Upper	Main-Mocho II	15.3	569.1	10.5	574.0	15.7	568.8	4.8	-5.2	-0.4
3S2E15R017	15R17	63	Upper	Main-Mocho II	11.8	580.6	8.2	584.2	11.8	580.6	3.6	-3.7	-0.1
3S2E15R018	15R18	138	Lower	Main-Mocho II	20.6	571.9	11.6	580.9	20.1	572.4	9.0	-8.5	0.5
3S2E15R020	15R20	51	Upper	Main-Mocho II	14.6	574.7	8.6	580.7	14.6	574.7	6.0	-6.0	0.0
3S2E16A003	16A3	240	Lower	Main-Mocho II	33.7	493.3	23.4	503.7	33.9	493.2	10.3	-10.5	-0.2
3S2E16C001	CWS15	584	Lower	Main-Mocho II	86.4	424.6	68.4	442.6	NA	NA	18.0	-	-
3S2E16E004	16E4	45	Upper	Main-Mocho II	16.0	490.3	14.8	491.5	18.9	487.4	1.2	-4.1	-2.9
3S2E18B001	CWS20	497	Lower	Main-Amador	67.4	371.2	61.1	377.5	65.5	373.1	6.3	-4.4	1.9
3S2E18E001	18E1	134	Upper	Main-Amador	62.3	361.6	42.2	381.7	72.4	351.5	20.1	-30.2	-10.1
3S2E19D007	19D7	180	Upper	Main-Amador	81.5	333.6	80.4	334.7	82.3	332.8	1.0	-1.9	-0.9
3S2E19D008	19D8	260	Lower	Main-Amador	81.9	333.2	80.6	334.4	82.6	332.4	1.2	-2.0	-0.8
3S2E19D009	19D9	390	Lower	Main-Amador	143.2	271.8	127.4	287.6	130.5	284.5	15.8	-3.1	12.7
3S2E19D010	19D10	470	Lower	Main-Amador	156.2	258.7	131.5	283.4	141.3	273.6	24.8	-9.8	14.9
3S2E19N003	19N3	120	Upper	Main-Amador	38.0	380.5	37.5	381.0	39.3	379.2	0.5	-1.8	-1.3
3S2E19N004	19N4	203	Lower	Main-Amador	15.7	402.3	14.4	403.6	11.6	406.4	1.3	2.8	4.1
3S2E20M001	20M1	184	Lower	Main-Amador	55.7	423.1	51.5	427.3	59.6	419.2	4.2	-8.1	-3.9
3S2E20R002	20R2	257	Upper	Upland	74.5	448.6	70.8	452.3	75.8	447.4	3.7	-4.9	-1.2
3S2E21K009	21K9	0	Upper	Upland	90.7	476.4	NA	NA	88.6	478.5	-	-	2.1
3S2E21N001	21N1	320	0	Upland	NA	NA	NA	NA	NA	NA	-	-	-
3S2E22B001	22B1	32	Upper	Main-Mocho II	15.8	570.1	12.8	573.1	20.9	565.0	3.0	-8.1	-5.1
3S2E23E001	23E1	40	Upper	Main-Mocho II	16.1	597.3	15.2	598.2	16.5	596.9	0.9	-1.3	-0.4
3S2E23E002	23E2	110	Lower	Main-Mocho II	14.0	599.3	12.9	600.3	14.5	598.8	1.0	-1.6	-0.5
3S2E24A001	24A1	46	Upper	Fringe-Mocho I	18.4	699.3	18.3	699.4	19.0	698.7	0.1	-0.7	-0.6
3S2E26J002	26J2	44	Upper	Main-Mocho II	8.4	681.5	6.3	683.6	10.5	679.4	2.1	-4.3	-2.1
3S2E29F004	29F4	36	Upper	Main-Amador	8.8	448.8	8.5	449.0	9.0	448.6	0.3	-0.4	-0.2
3S2E29L001	29L1 (P3)	23	Upper	Main-Amador	9.3	454.3	9.8	453.8	10.2	453.4	-0.5	-0.4	-0.9
3S2E30C001	30C1	150	Lower	Main-Amador	20.9	418.5	17.7	421.7	22.2	417.2	3.2	-4.5	-1.3
3S2E30D002	30D2	44	Upper	Main-Amador	22.9	408.7	21.9	409.7	22.5	409.1	1.0	-0.6	0.4
3S2E32E007	32E7	37	Upper	Upland	18.0	593.0	7.4	603.5	8.3	602.6	10.5	-0.9	9.6
3S2E33C001	33C1	20	Upper	Main-Amador	8.4	489.2	8.2	489.4	8.9	488.8	0.2	-0.6	-0.5
3S2E33G001	33G1	17	Upper	Main-Amador	8.8	502.7	8.8	502.7	9.4	502.2	0.0	-0.6	-0.6
3S2E33K001	33K1	15	Upper	Main-Amador	6.3	540.6	NA	NA	NA	NA	-	-	-
4S3E06E004	6E4	220	Upper	Main-Mocho II	0.7	807.0	NA	NA	3.9	803.8	-	-	-3.3

U = Upper; L = Lower; NM = Not Measured; NA = Not Available; OBS = Obstructed; - = Not Applicable
Highlighted = Representative Monitoring Site

TABLE C-2
SEMIANNUAL WATER LEVELS IN MINING AREA PONDS
2024 WATER YEAR

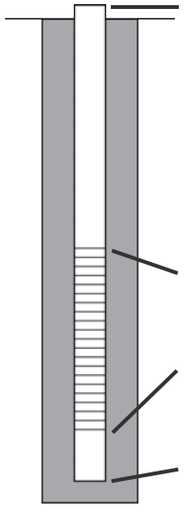
POND DESCRIPTION					CURRENT POND STATUS				POND ELEVATION (ft)			
Pond Name	Description	Chain of Lake	Map Name	Pond Status	Pond Area (acre)	Contact with Aquifer	Pond Activity	Mining Use	Fall 23	Spring 24	Fall 24	WY Diff
MA-C001	Lake C - southeast	C	C1	Existing	4.9	No	Static	Unused	354.02	354.93	351.75	-2.27
MA-R003	R3		R3	Existing	2.2	No	Pumped Into	Settling Pond	344.14	345.02	NM	-
MA-R004	R4		R4	Existing	10.9	Yes	In Flux	Water Storage	313.59	317.35	316.31	2.72
MA-R022	Lake F	F	R22	Existing	60.3	No	Pumped From	Settling Pond	363.23	363.76	363.96	0.73
MA-R023	Vulcan Pond 5		R23	Existing	21.9	No	Pumped Into	Water Storage	362.62	361.3	362.49	-0.13
MA-R024A	Lake E - southeast	E	R24A	Existing	64.7	Yes	Pumped Into	Settling Pond	283.68	303.31	297.19	13.51
MA-R028	Lake D - northwest	D	R28	Existing	2.6	Yes	Pumped From	Active Mining	173.5	179.55	183.01	9.51
MA-K015	Shadow Cliffs	Sh.Cliff	ShCliffs	Existing	81.7	Yes	Pumped Into	Unused	330.84	332.26	330.79	-0.05
MA-K018	Lake Boris		K18	Existing	9.3	Yes	Static	Unused	350.71	350.75	350.26	-0.45
MA-K028	Lake H	H	LkH	Existing	62.1	Yes	Static	Unused	290.61	300.86	305.74	15.13
MA-K030	Cope Lake	Cope	Cope	Existing	176	No	Pumped Into	Unused	331.43	333.39	332.31	0.88
MA-K037	Lake I	I	LkI	Existing	234.4	Yes	Static	Unused	286.85	299.26	306.61	19.76
MA-P012	Island Pond		P12	Existing	12.7	Yes	Static	Unused	351.49	351.56	350.92	-0.57
MA-P028	Lake A - west	A	P28	Existing	7.1	Yes	Static	Unused	403.34	403.39	403.08	-0.26
MA-P041	Lake A - east	A	P41	Existing	46.4		Static	Unused	403.86	403.8	403.27	-0.59
MA-P042	Lake B - west	B	P42	Existing	8.2	Yes	Pumped From	Active Mining	NM	259.85	250.28	-
MA-P044	P44	B	P44	Existing	13.1	Yes	In Flux	Water Storage	347.36	347.88	347.64	0.28
MA-P046	Lake J	J	P46	Existing	9.1	Yes	Pumped From	Active Mining	274.02	310.29	299.6	25.58

NM = Not Measured
WY Diff = Water Year Difference (Fall to Fall)

Hydrograph of Measured Groundwater Elevation for Well 2S2E27P002

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
2S2E27P002			X

Basin Type - Subbasin: Fringe-Spring
Aquifer Designation: Upper



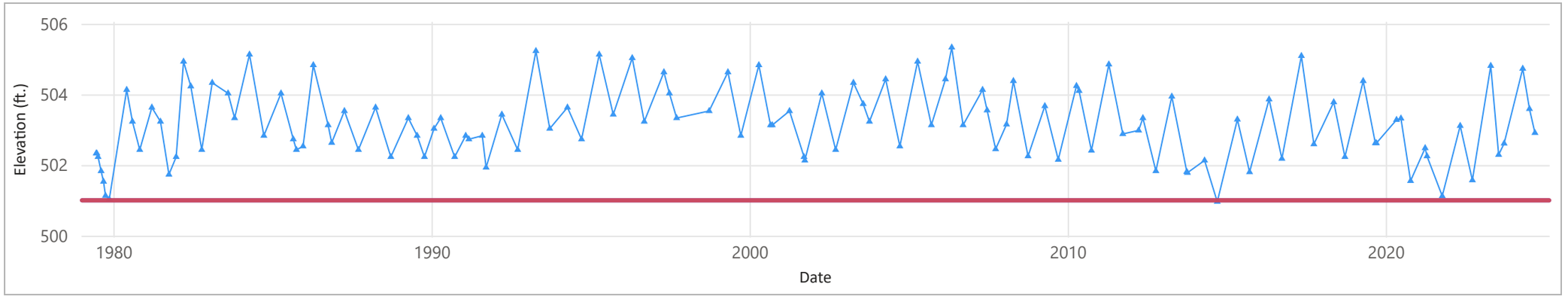
Reference Point Elevation (ft.):
505.43

Depth to Top of Screen (ft. bgs):
35.00

Depth to Bottom of Screen (ft. bgs):
63.00

Total Well Depth (ft.):
68.00

Latitude: 37.723454 Longitude: -121.742496

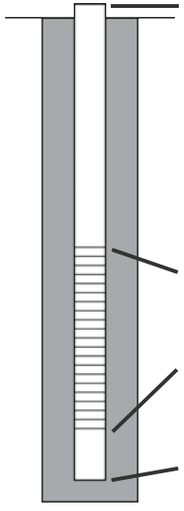


Minimum Objective: 501.00 (ft.) Minimum Threshold: 501.00 (ft.) Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 2S2E34E001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
2S2E34E001	X	X	X

Basin Type - Subbasin: Fringe-May
Aquifer Designation: Upper

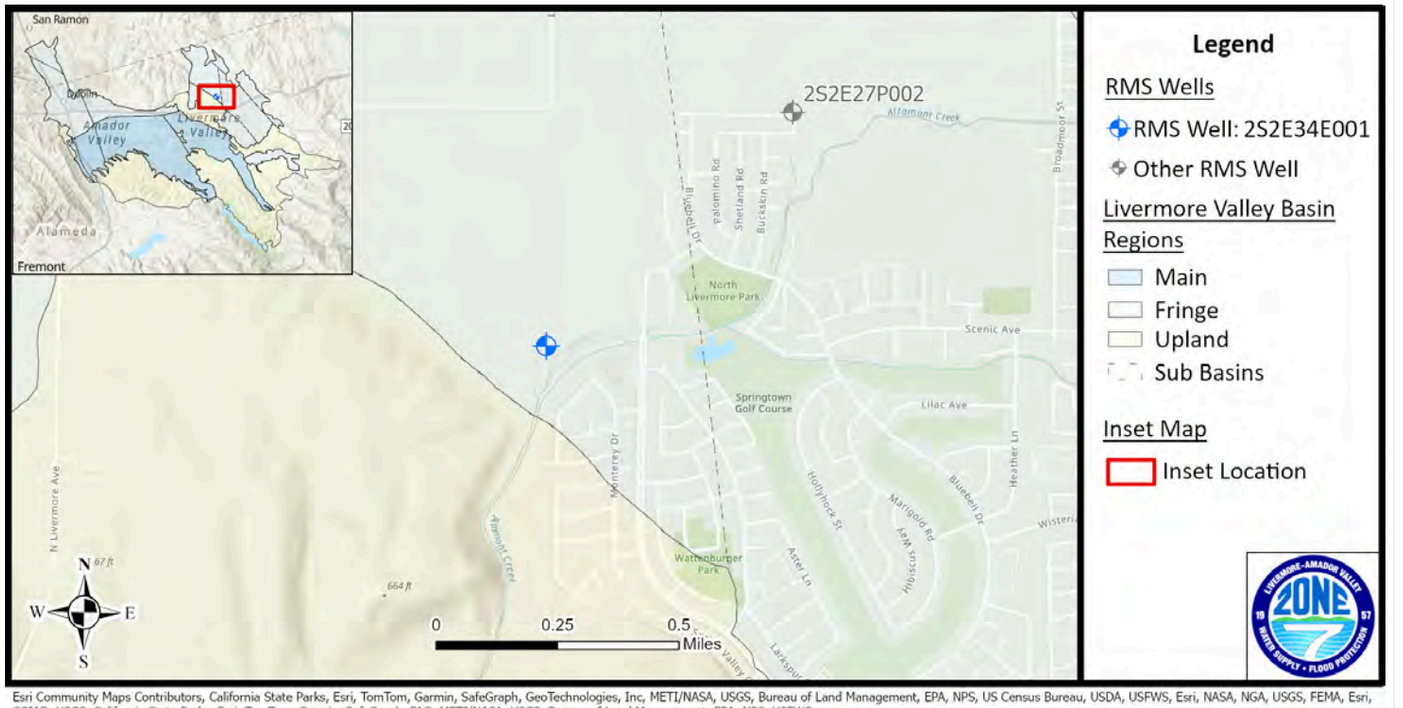


Reference Point Elevation (ft.):
499.73

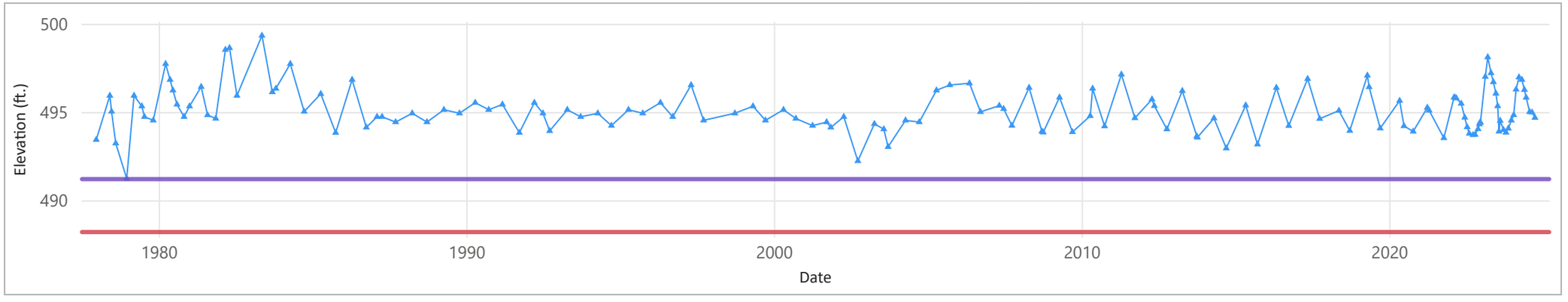
Depth to Top of Screen (ft. bgs):
40.00

Depth to Bottom of Screen (ft. bgs):
45.00

Total Well Depth (ft.):
49.00



Latitude: 37.716377 Longitude: -121.751637

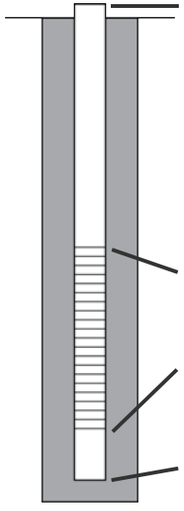


Minimum Objective: 491.20 (ft.)
Minimum Threshold: 488.20 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E02N006

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E02N006			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper



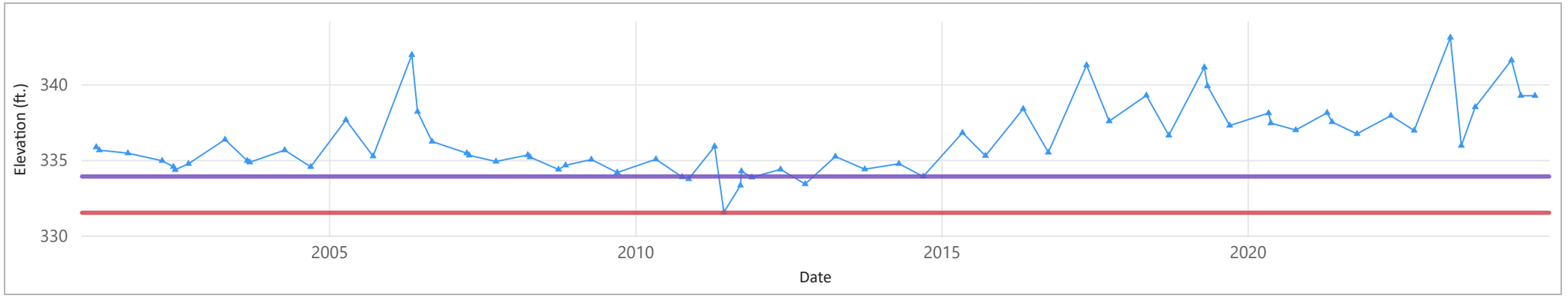
Reference Point Elevation (ft.):
366.14

Depth to Top of Screen (ft. bgs):
40.00

Depth to Bottom of Screen (ft. bgs):
55.00

Total Well Depth (ft.):
55.00

Latitude: 37.695266 Longitude: -121.839172

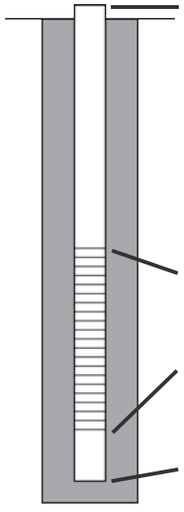


Minimum Objective: 333.90 (ft.)
Minimum Threshold: 331.50 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E02R001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E02R001			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper

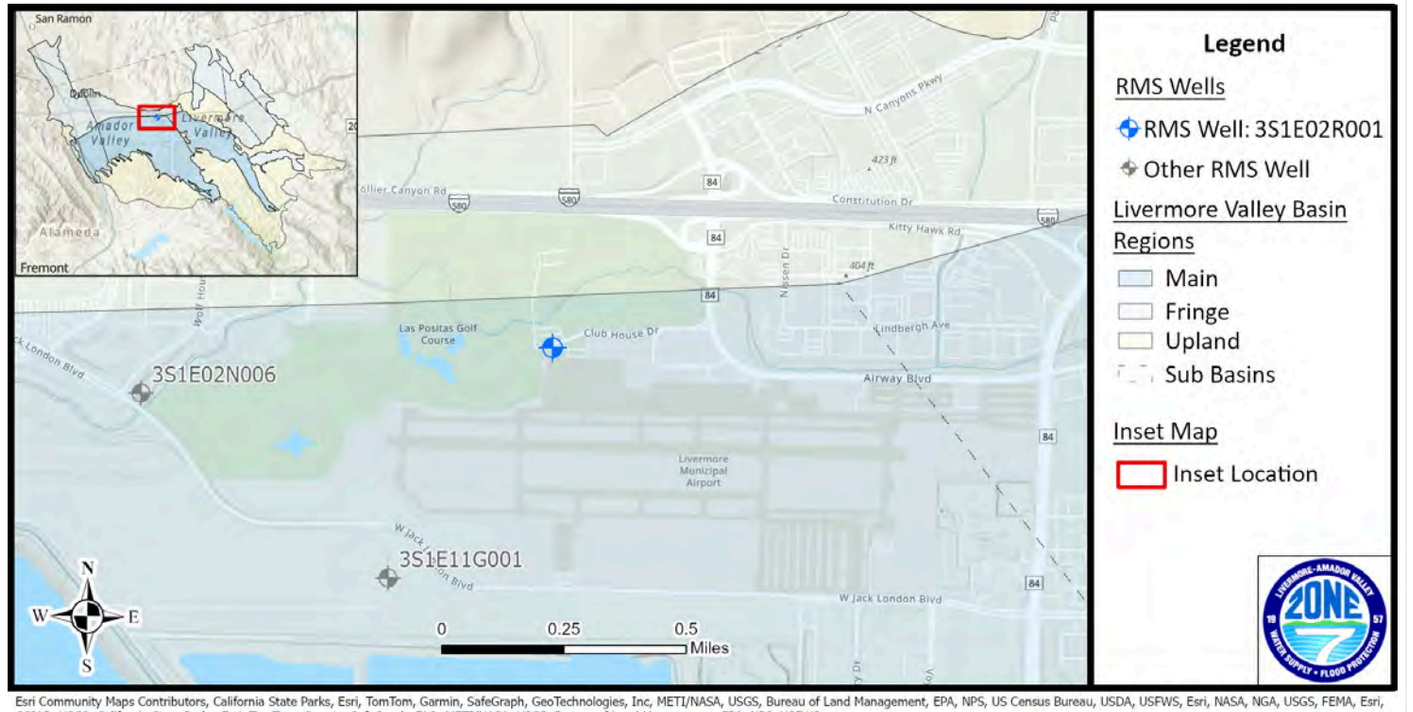


Reference Point Elevation (ft.):
376.29

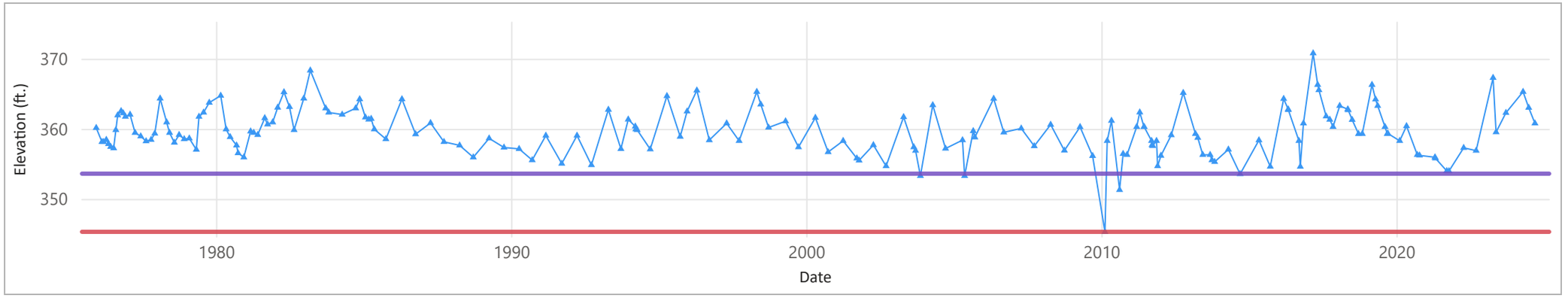
Depth to Top of Screen (ft. bgs):
21.00

Depth to Bottom of Screen (ft. bgs):
26.00

Total Well Depth (ft.):
33.00



Latitude: 37.696788 Longitude: -121.823840

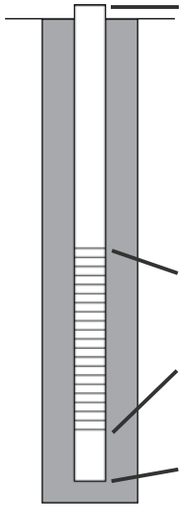


Minimum Objective: 353.60 (ft.)
Minimum Threshold: 345.30 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E05K006

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E05K006			X

Basin Type - Subbasin: Fringe-Camp
Aquifer Designation: Upper

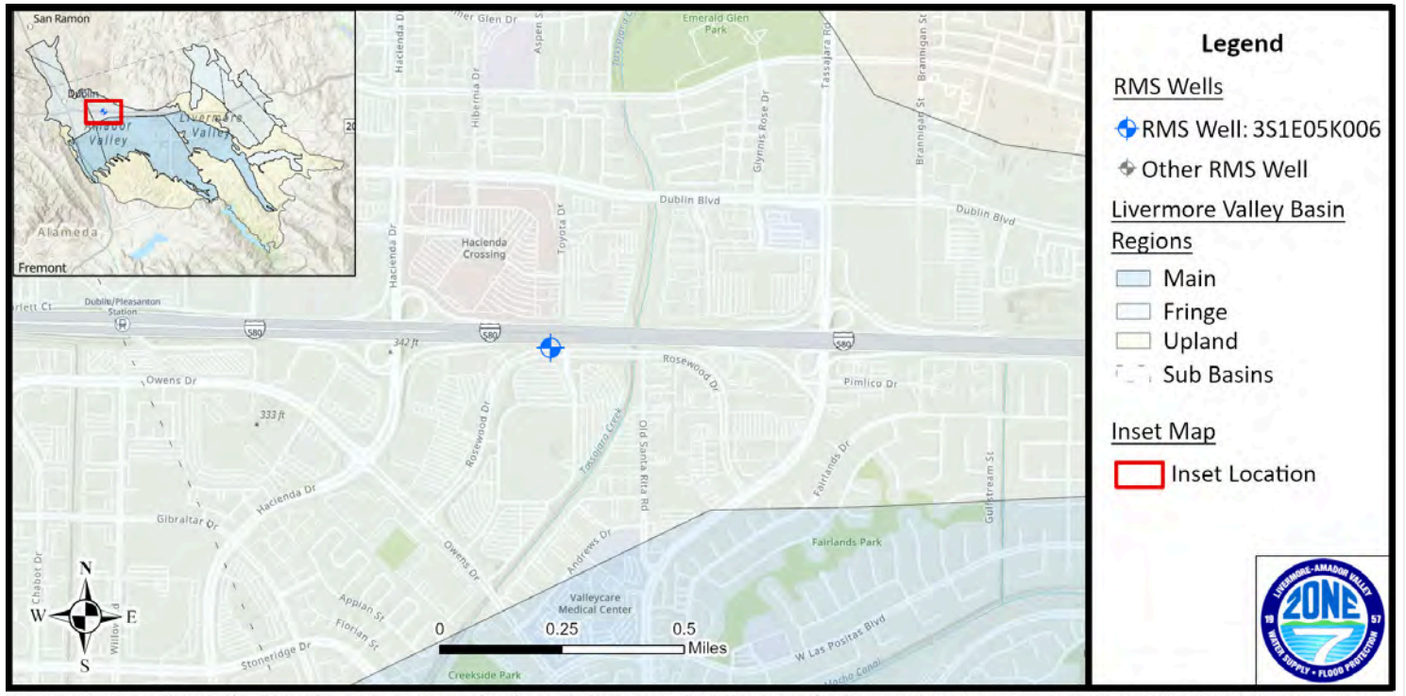


Reference Point Elevation (ft.):
346.05

Depth to Top of Screen (ft. bgs):
40.00

Depth to Bottom of Screen (ft. bgs):
70.00

Total Well Depth (ft.):
75.00



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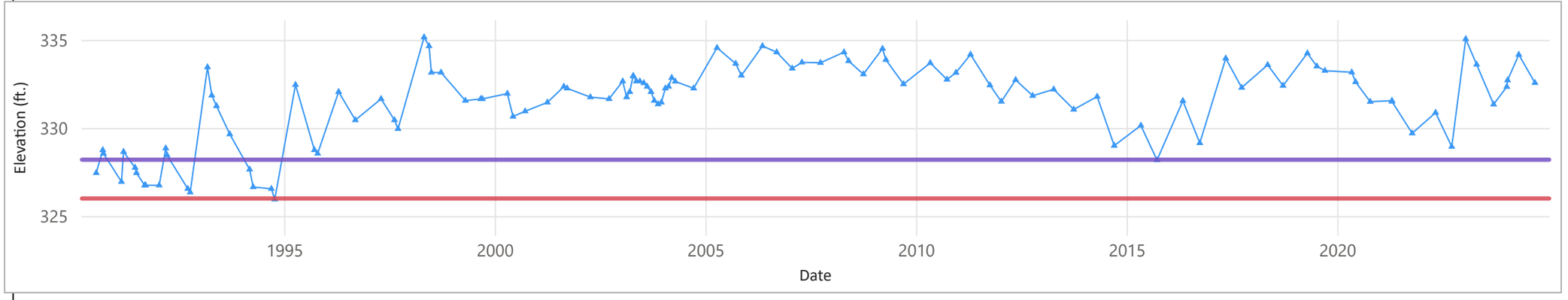
Latitude: 37.701128 Longitude: -121.882274

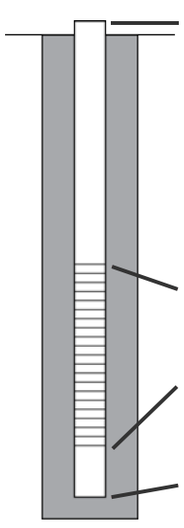


Minimum Objective: 328.20 (ft.)
Minimum Threshold: 326.00 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E06F003

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E06F003	X	X	

Basin Type - Subbasin: Fringe-Dublin
Aquifer Designation: Upper



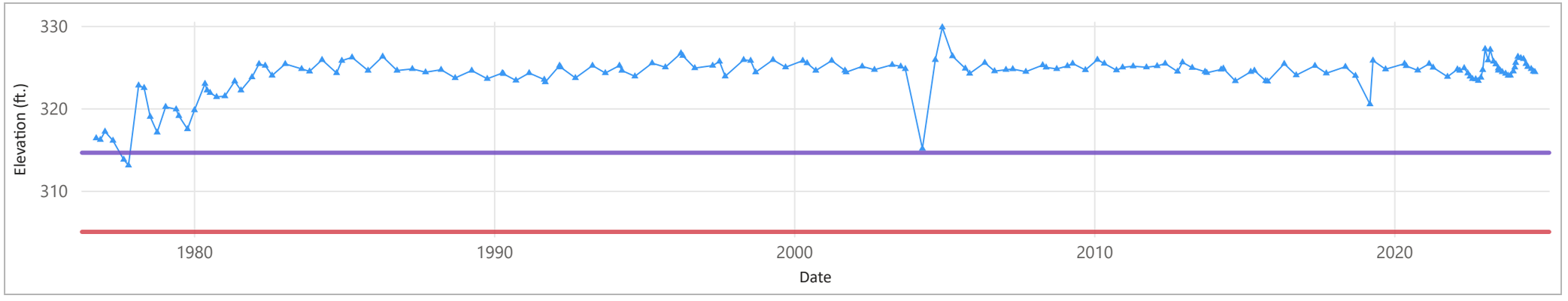
Reference Point Elevation (ft.):
329.82

Depth to Top of Screen (ft. bgs):
27.00

Depth to Bottom of Screen (ft. bgs):
32.00

Total Well Depth (ft.):
36.00

Latitude: 37.702954 Longitude: -121.908554

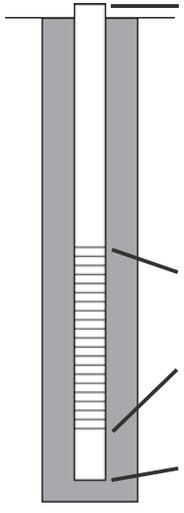


Minimum Objective: 314.60 (ft.)
Minimum Threshold: 305.00 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E09P005

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E09P005	X	X	

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper



Reference Point Elevation (ft.):
349.40

Depth to Top of Screen (ft. bgs):
95.00

Depth to Bottom of Screen (ft. bgs):
100.00

Total Well Depth (ft.):
105.00

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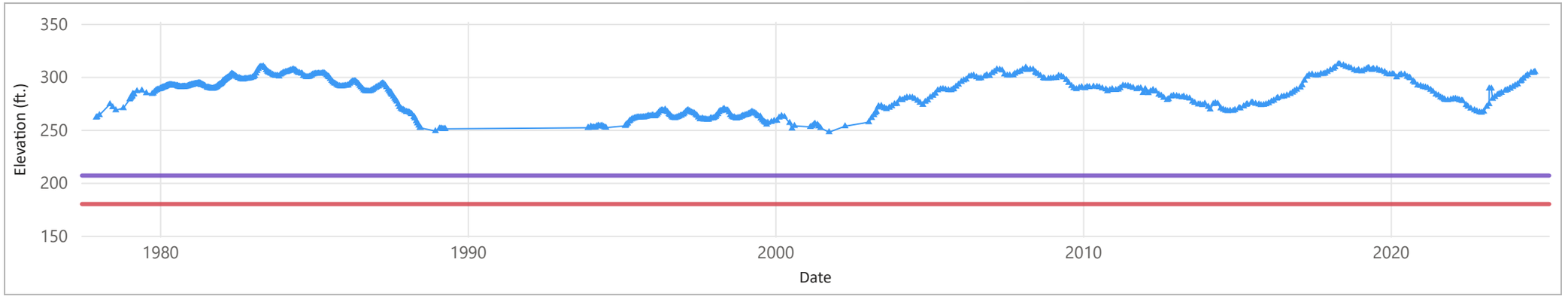
Latitude: 37.681969 Longitude: -121.870072

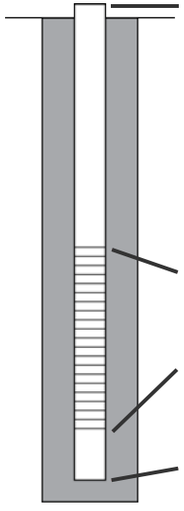


Minimum Objective: 206.70 (ft.)
Minimum Threshold: 179.80 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E09P010

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E09P010	X	X	

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Lower

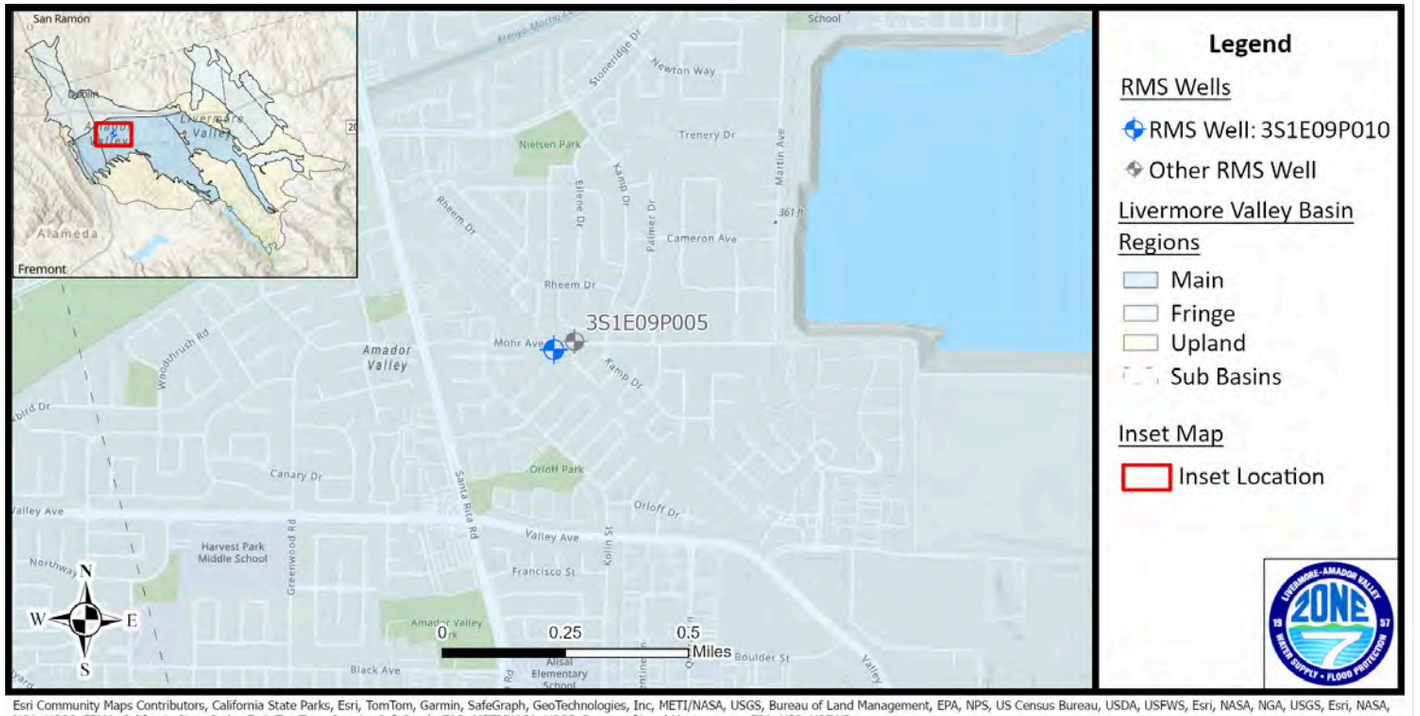


Reference Point Elevation (ft.):
349.66

Depth to Top of Screen (ft. bgs):
285.00

Depth to Bottom of Screen (ft. bgs):
305.00

Total Well Depth (ft.):
310.00



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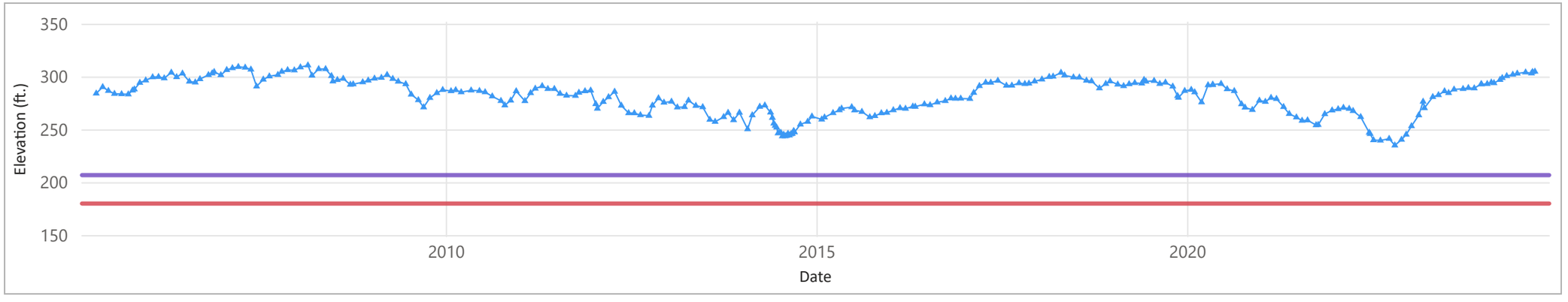
Latitude: 37.681722 Longitude: -121.870839

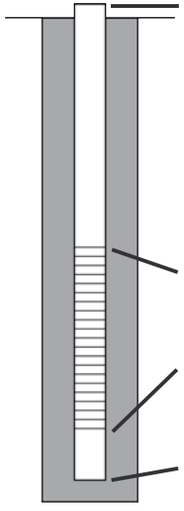


Minimum Objective: 206.70 (ft.)
Minimum Threshold: 179.80 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E11G001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E11G001	X	X	

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper



Reference Point Elevation (ft.):
371.62

Depth to Top of Screen (ft. bgs):
100.00

Depth to Bottom of Screen (ft. bgs):
110.00

Total Well Depth (ft.):
120.00

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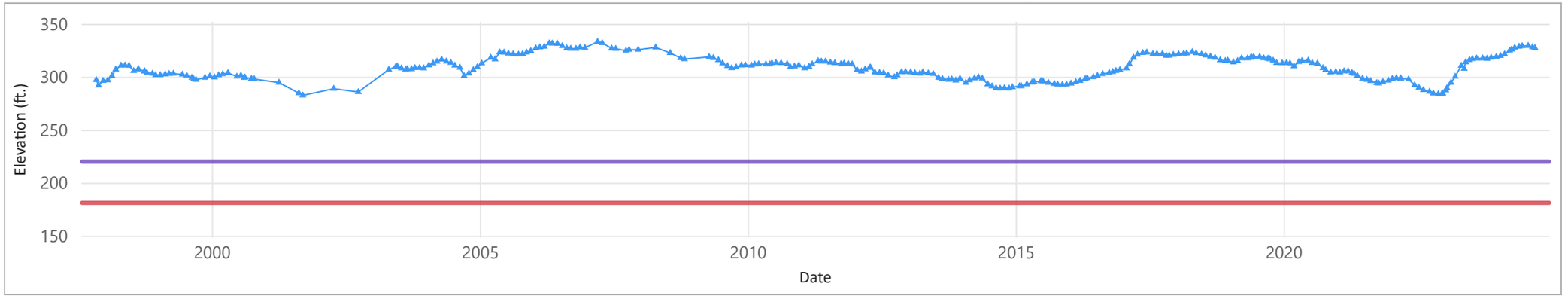
Latitude: 37.689890 Longitude: -121.829854

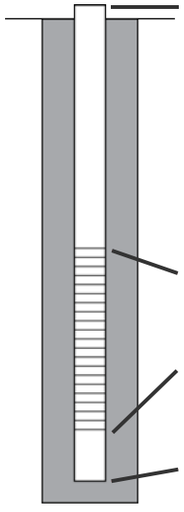


Minimum Objective: 219.90 (ft.)
Minimum Threshold: 181.00 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E12K003

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E12K003	X	X	

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Lower

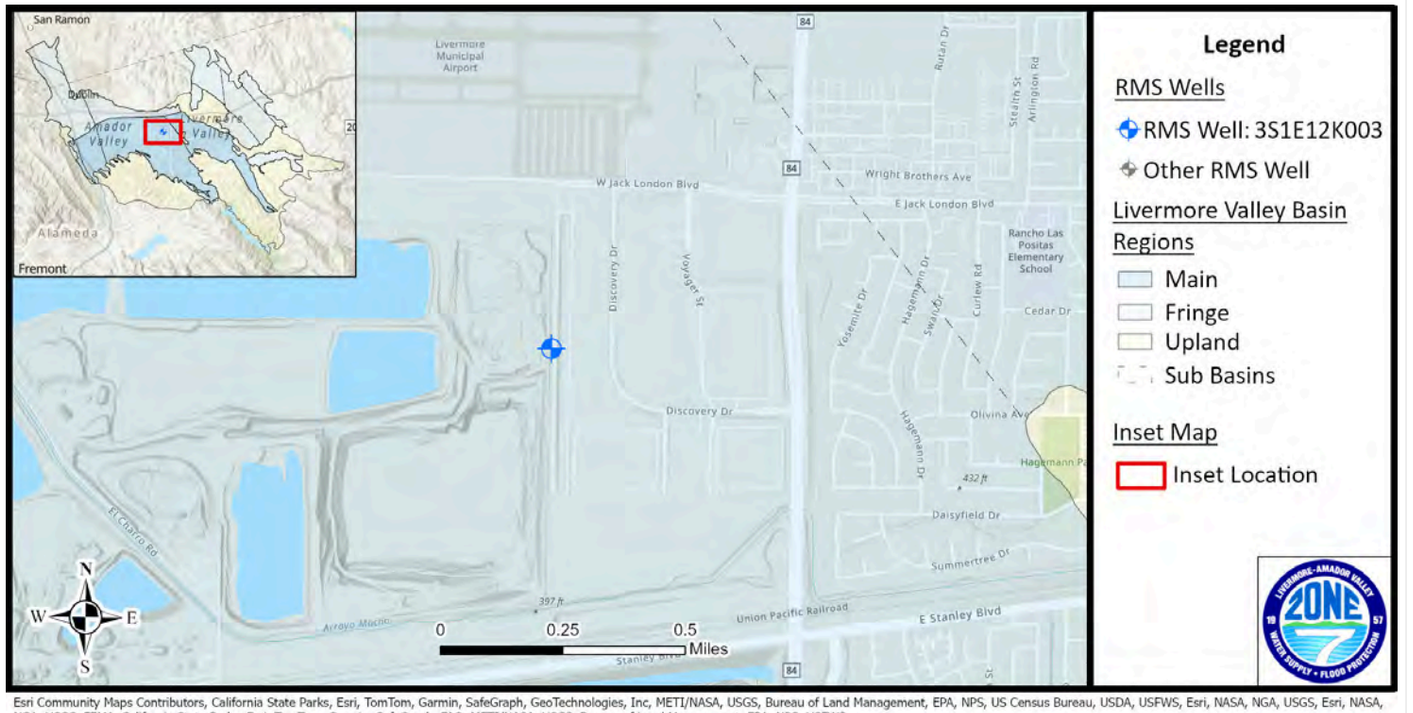


Reference Point Elevation (ft.):
406.83

Depth to Top of Screen (ft. bgs):
355.00

Depth to Bottom of Screen (ft. bgs):
470.00

Total Well Depth (ft.):
475.00



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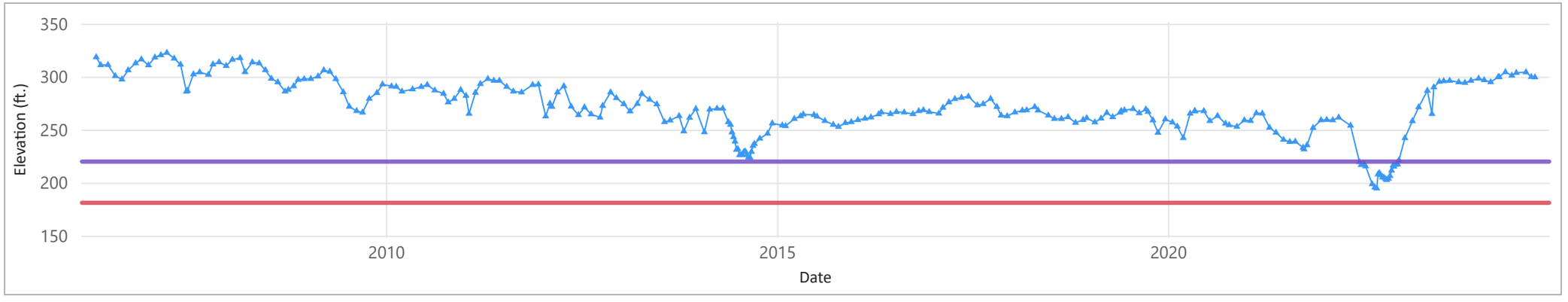
Latitude: 37.684560 Longitude: -121.814595

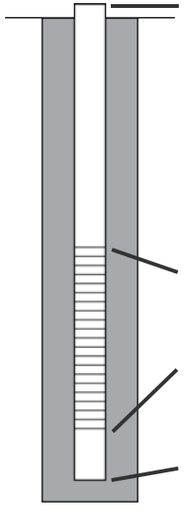


Minimum Objective: 219.90 (ft.)
Minimum Threshold: 181.00 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E16P005

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E16P005			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper

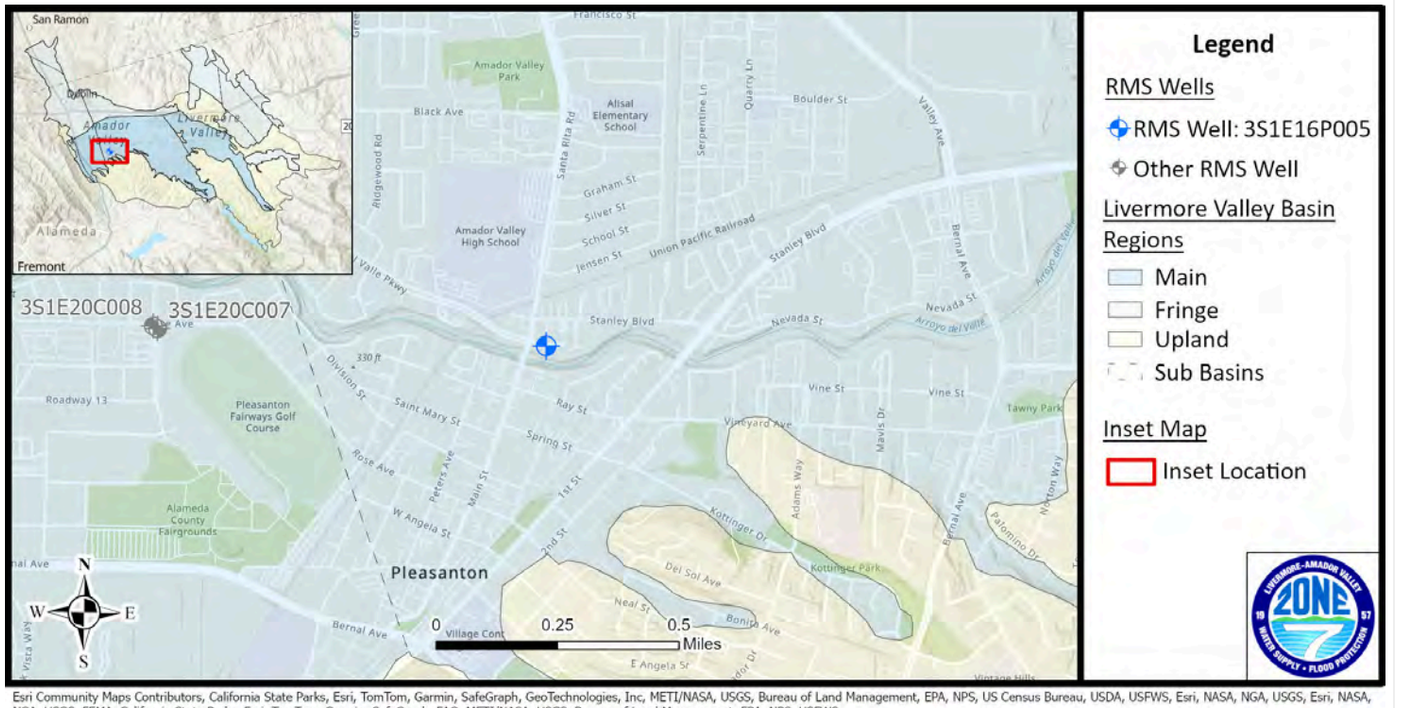


Reference Point Elevation (ft.):
354.51

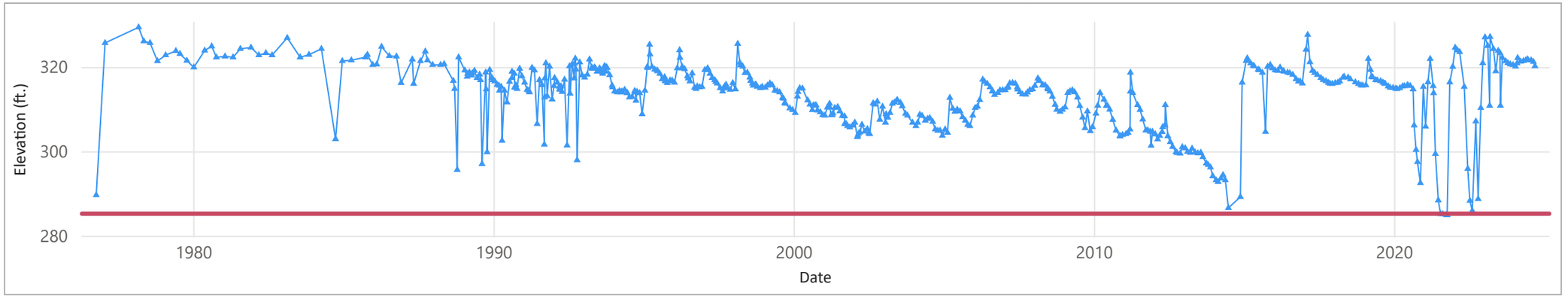
Depth to Top of Screen (ft. bgs):
64.00

Depth to Bottom of Screen (ft. bgs):
69.00

Total Well Depth (ft.):
75.00



Latitude: 37.665246 Longitude: -121.873111

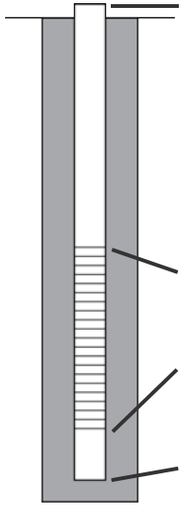


Minimum Objective: 285.20 (ft.)
Minimum Threshold: 285.20 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E20C007

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E20C007	X	X	

Basin Type - Subbasin: Main-Bernal
Aquifer Designation: Upper

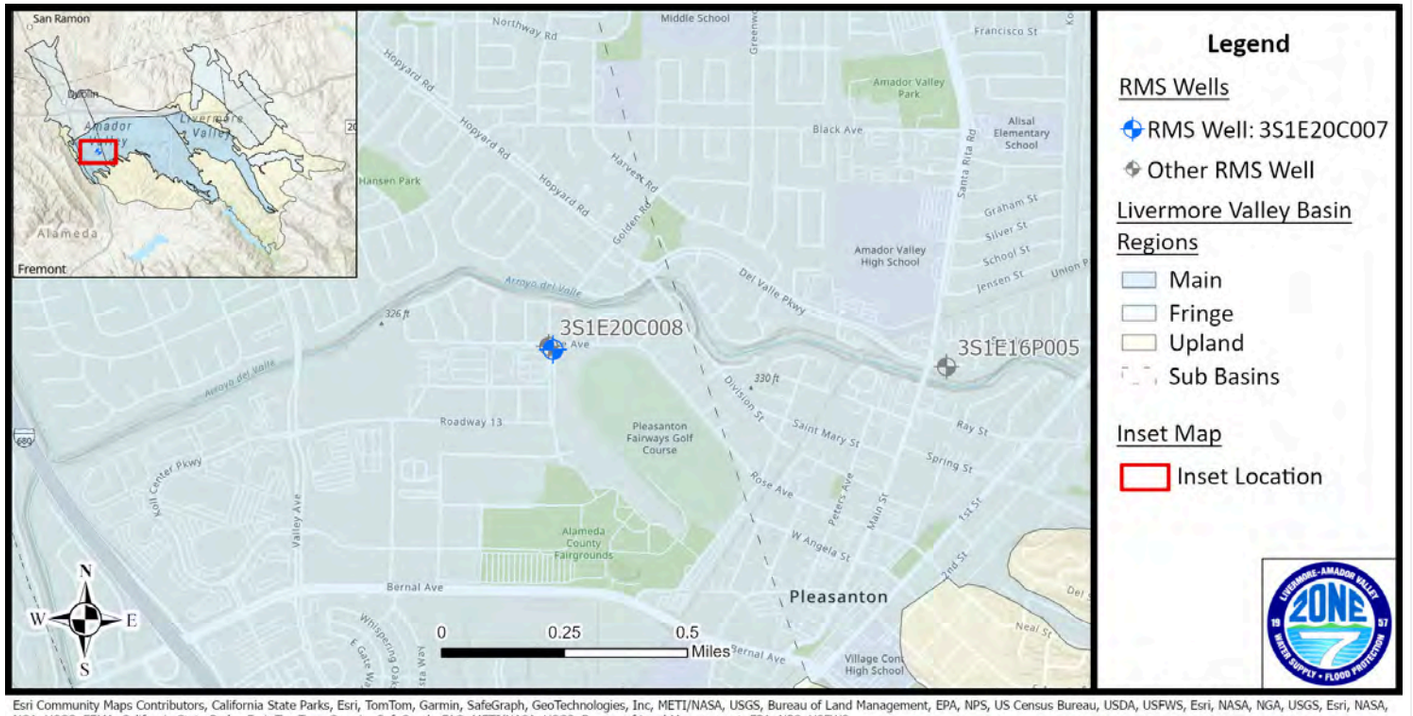


Reference Point Elevation (ft.):
338.66

Depth to Top of Screen (ft. bgs):
65.00

Depth to Bottom of Screen (ft. bgs):
145.00

Total Well Depth (ft.):
153.00



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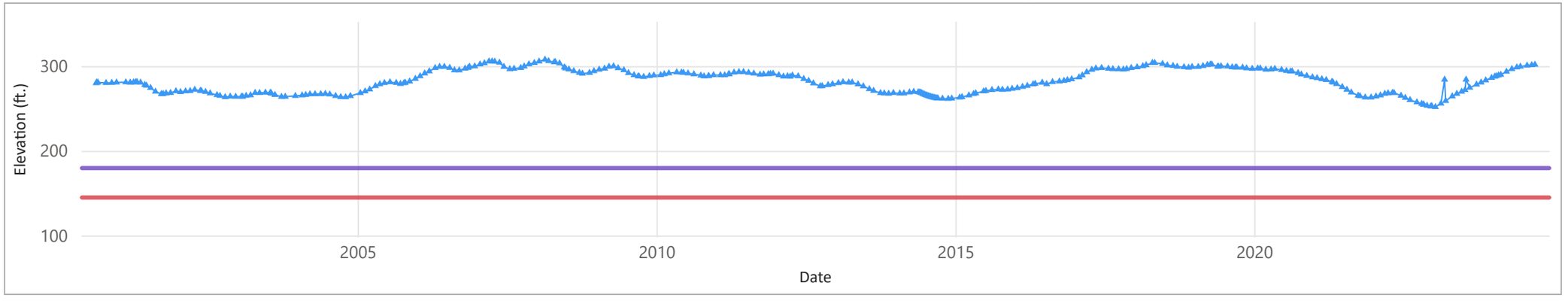
Latitude: 37.665584 Longitude: -121.887718

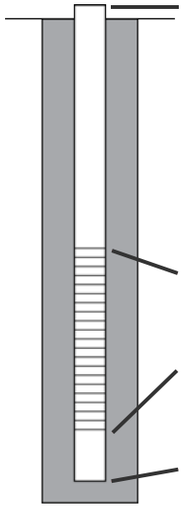


Minimum Objective: 179.50 (ft.)
Minimum Threshold: 144.80 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S1E20C008

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S1E20C008	X	X	

Basin Type - Subbasin: Main-Bernal
Aquifer Designation: Lower

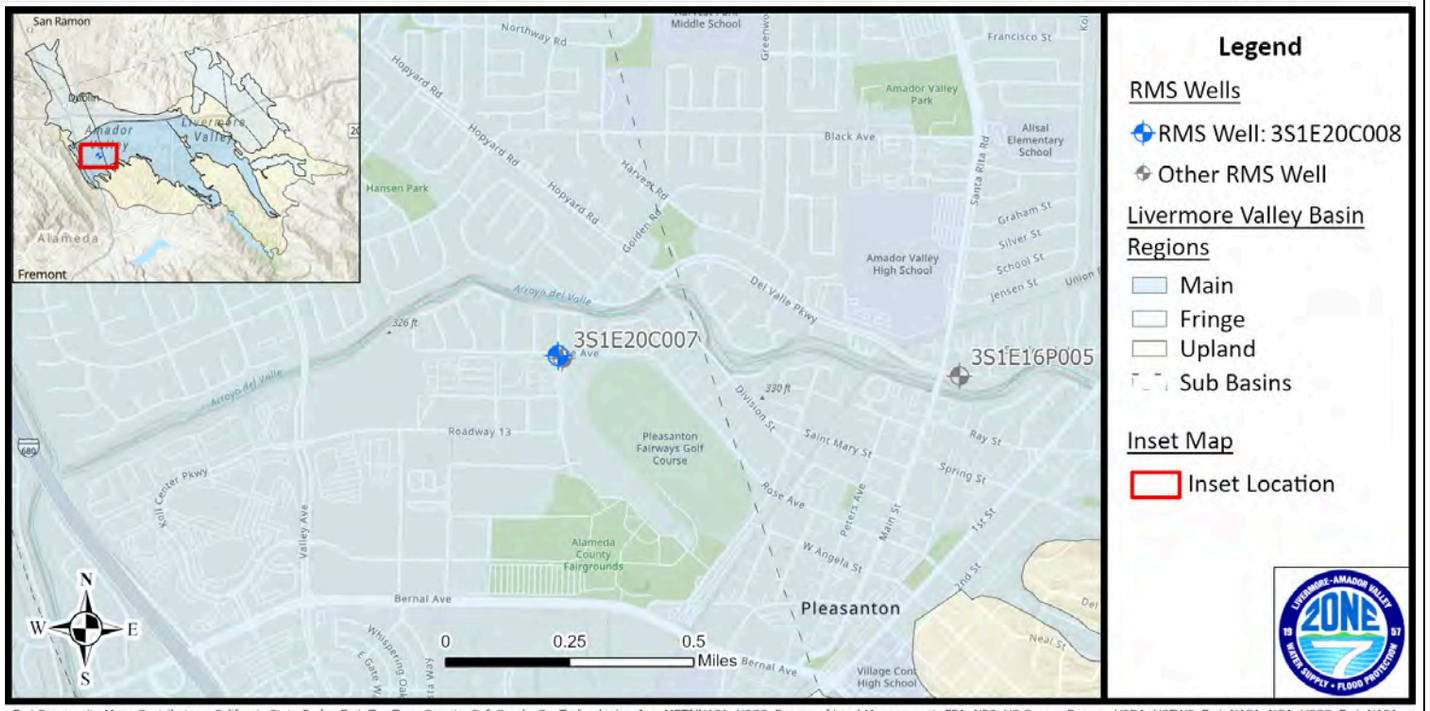


Reference Point Elevation (ft.):
338.67

Depth to Top of Screen (ft. bgs):
295.00

Depth to Bottom of Screen (ft. bgs):
315.00

Total Well Depth (ft.):
315.00



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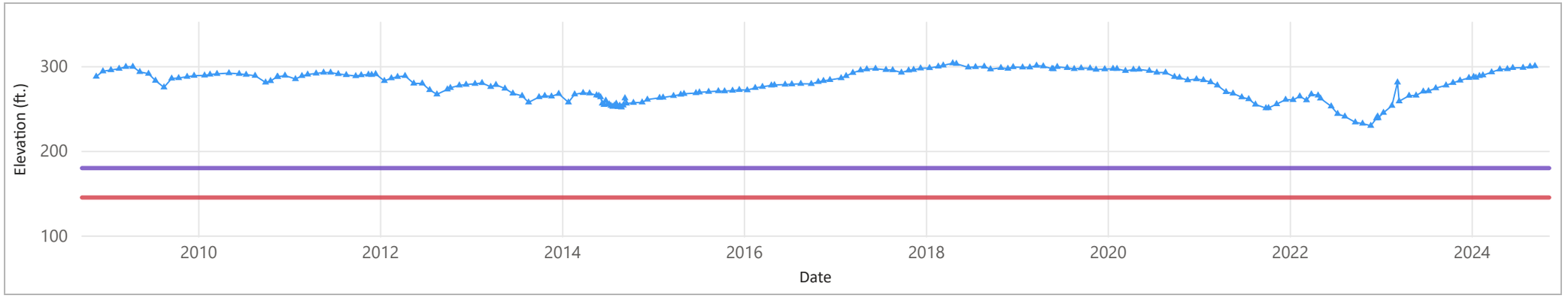
Latitude: 37.665669 Longitude: -121.887876

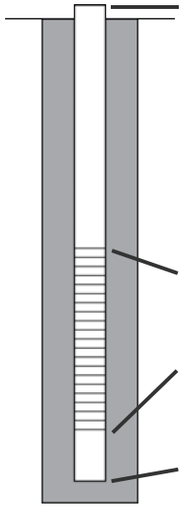


Minimum Objective: 179.50 (ft.)
Minimum Threshold: 144.80 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E08H003

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E08H003	X	X	

Basin Type - Subbasin: Main-Mocho II
Aquifer Designation: Lower

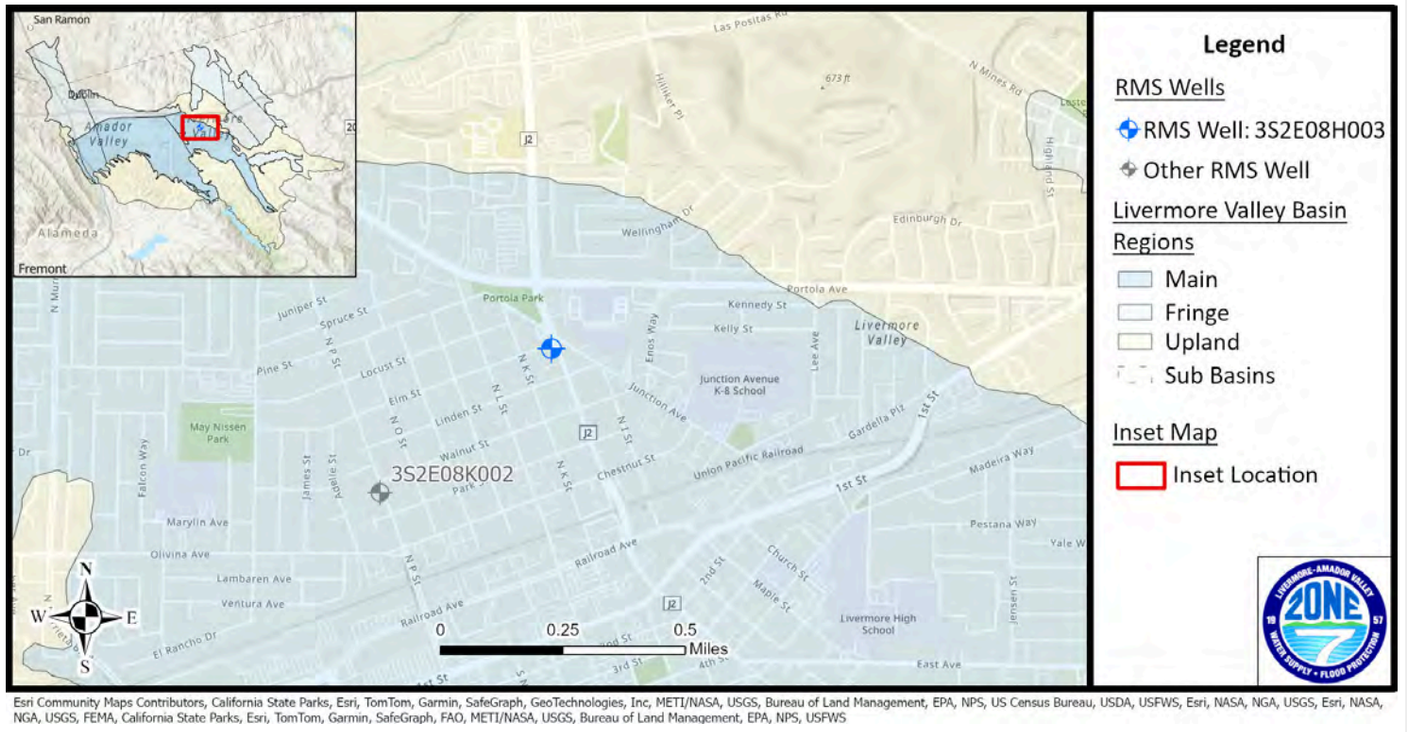


Reference Point Elevation (ft.):
477.40

Depth to Top of Screen (ft. bgs):
170.00

Depth to Bottom of Screen (ft. bgs):
190.00

Total Well Depth (ft.):
195.00



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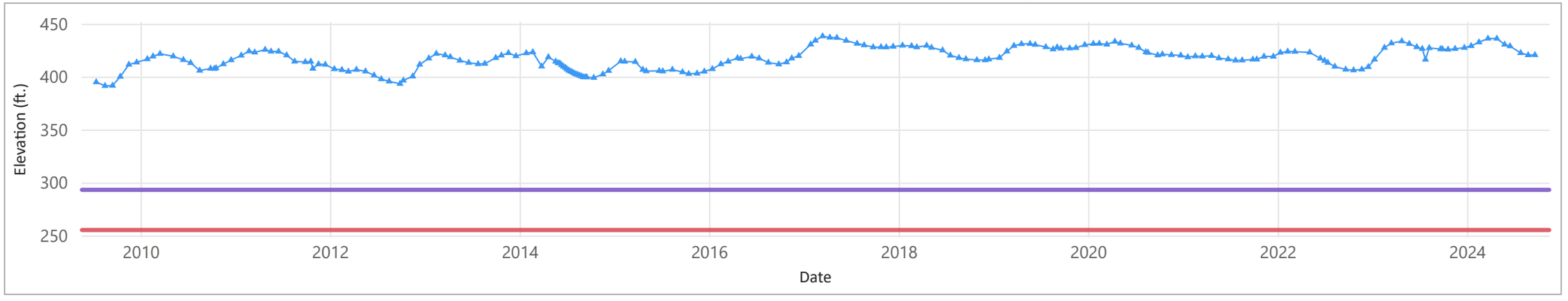
Latitude: 37.689148 Longitude: -121.772412

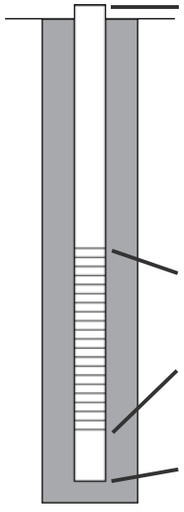


Minimum Objective: 293.10 (ft.)
Minimum Threshold: 255.10 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E08K002

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E08K002	X	X	

Basin Type - Subbasin: Main-Mocho II
Aquifer Designation: Upper

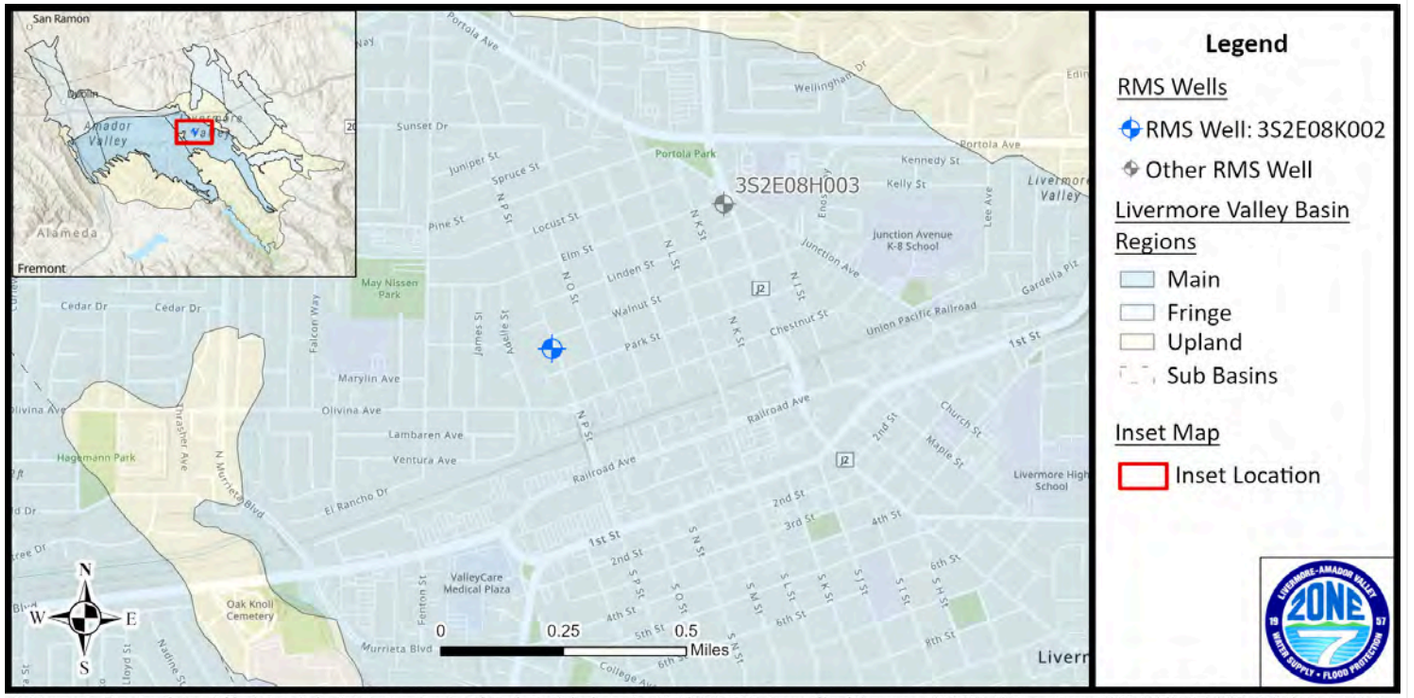


Reference Point Elevation (ft.):
464.78

Depth to Top of Screen (ft. bgs):
64.00

Depth to Bottom of Screen (ft. bgs):
69.00

Total Well Depth (ft.):
74.00



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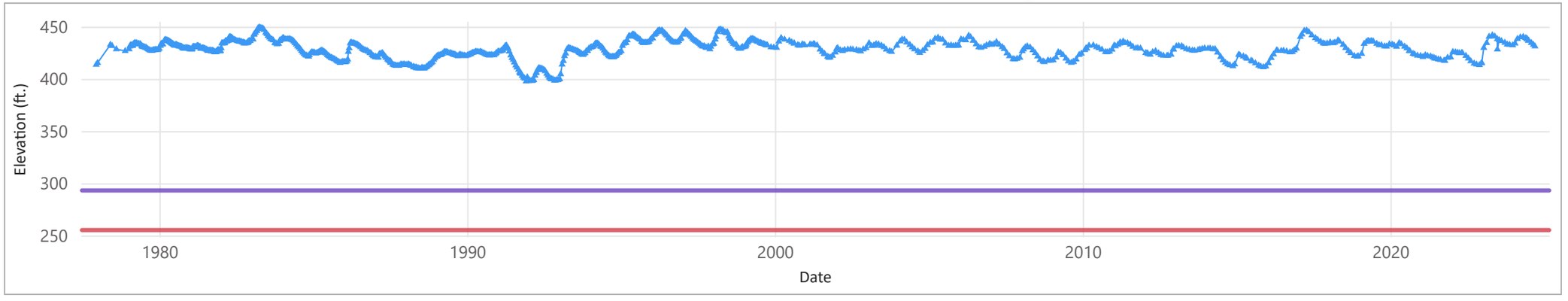
Latitude: 37.684804 Longitude: -121.778724



Minimum Objective: 293.10 (ft.)

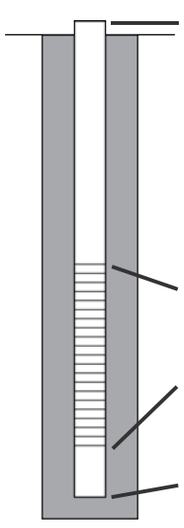
Minimum Threshold: 255.10 (ft.)

Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E16E004

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E16E004			X

Basin Type - Subbasin: Main-Mocho II
Aquifer Designation: Upper



Reference Point Elevation (ft.):
506.26

Depth to Top of Screen (ft. bgs):
35.00

Depth to Bottom of Screen (ft. bgs):
40.00

Total Well Depth (ft.):
45.00

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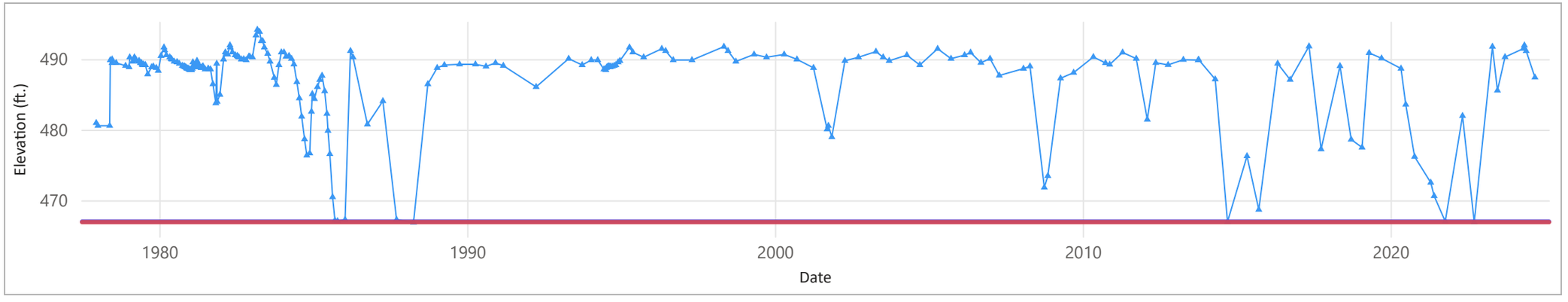
Latitude: 37.674382 Longitude: -121.767506

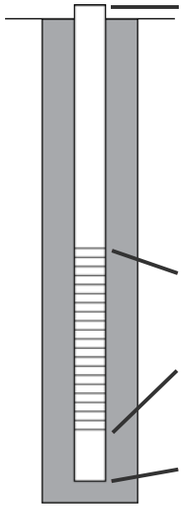


Minimum Objective: 467.00 (ft.)
Minimum Threshold: 466.90 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E21K009

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E21K009	X	X	

Basin Type - Subbasin: Upland
Aquifer Designation: Upper



Reference Point Elevation (ft.):
567.08

Depth to Top of Screen (ft. bgs):
0.00

Depth to Bottom of Screen (ft. bgs):
0.00

Total Well Depth (ft.):
0.00

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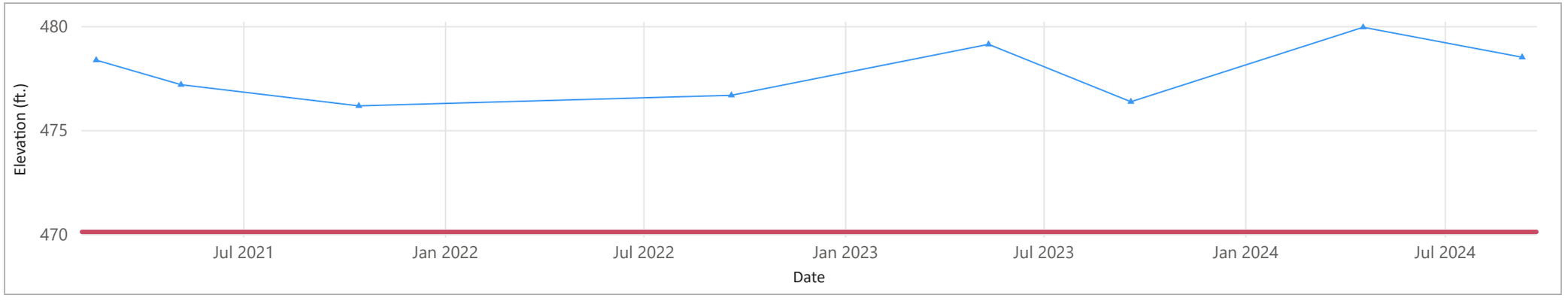
Latitude: 37.657002 Longitude: -121.760604

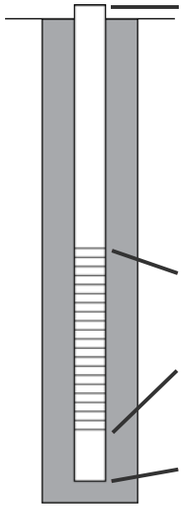


Minimum Objective: 470.10 (ft.) Minimum Threshold: 470.10 (ft.) Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E23E001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E23E001			X

Basin Type - Subbasin: Main-Mocho II
Aquifer Designation: Upper

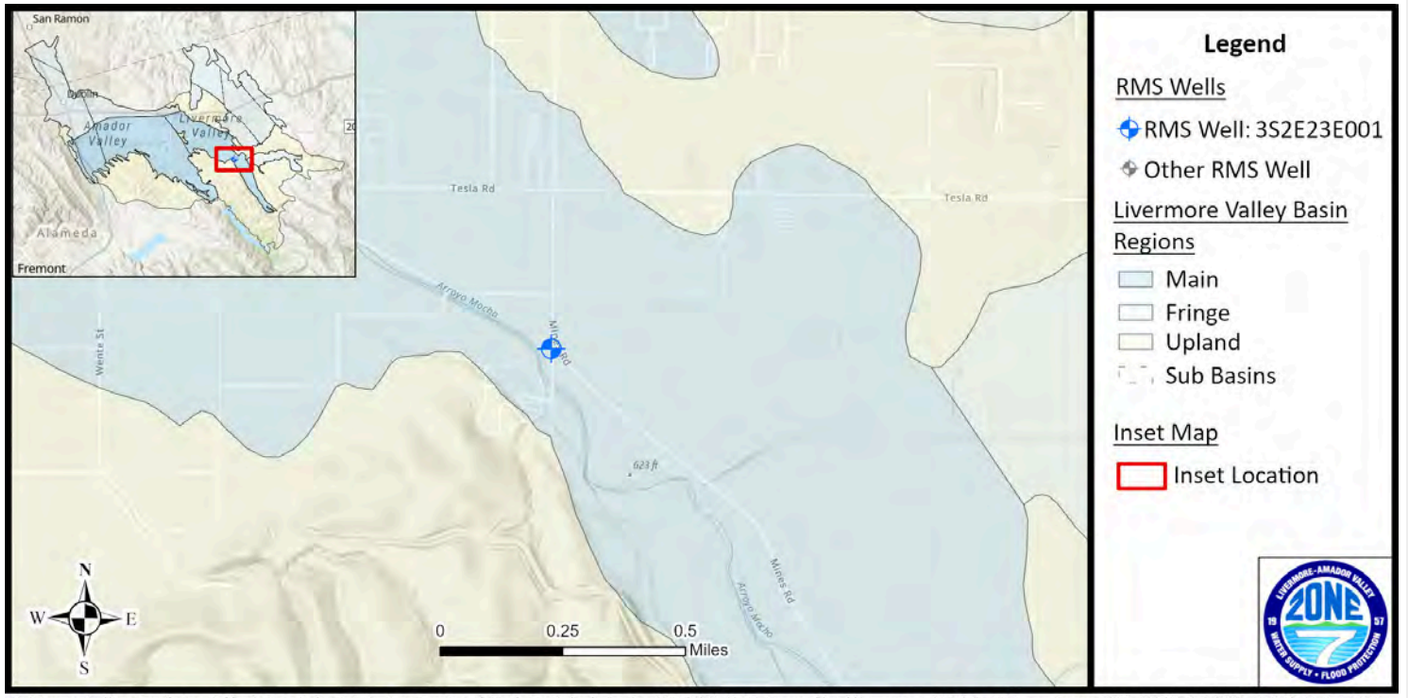


Reference Point Elevation (ft.):
613.36

Depth to Top of Screen (ft. bgs):
20.00

Depth to Bottom of Screen (ft. bgs):
35.00

Total Well Depth (ft.):
40.00



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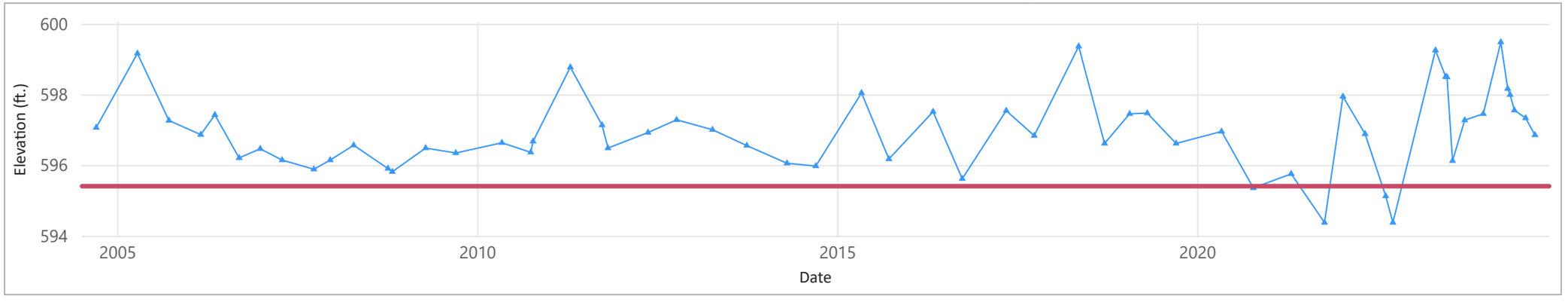
Latitude: 37.660441 Longitude: -121.732871

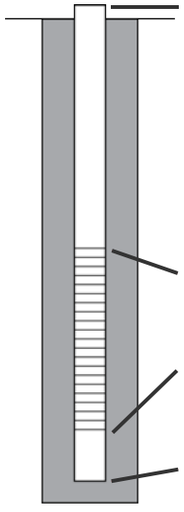


Minimum Objective: 595.40 (ft.)
Minimum Threshold: 595.40 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E24A001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E24A001	X	X	

Basin Type - Subbasin: Fringe-Mocho I
Aquifer Designation: Upper

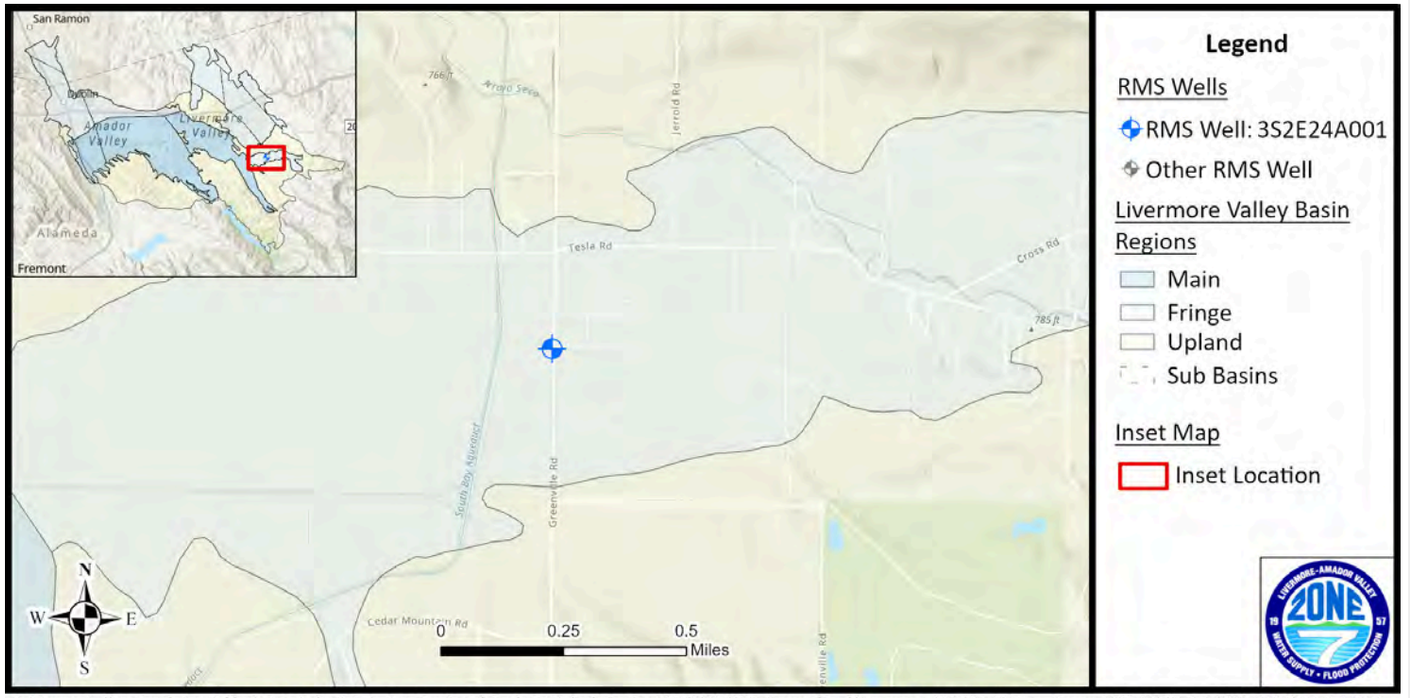


Reference Point Elevation (ft.):
717.70

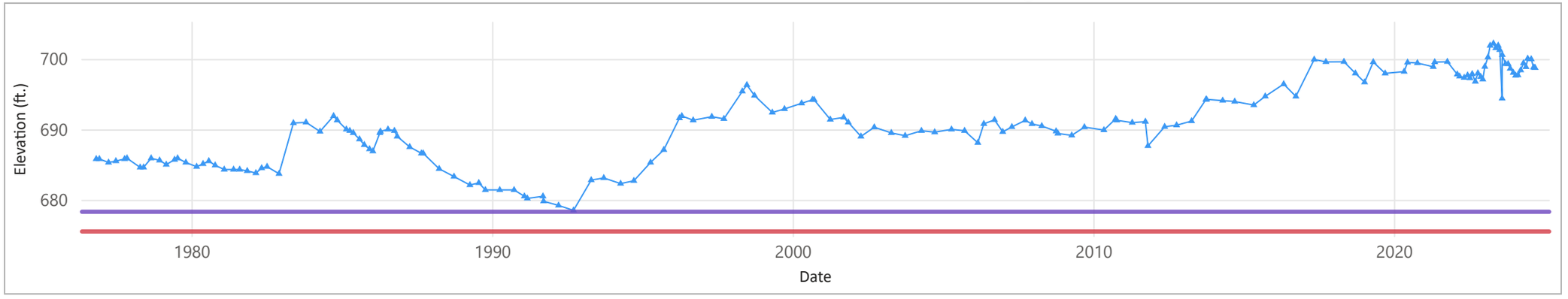
Depth to Top of Screen (ft. bgs):
36.30

Depth to Bottom of Screen (ft. bgs):
41.30

Total Well Depth (ft.):
46.30



Latitude: 37.662219 Longitude: -121.696740

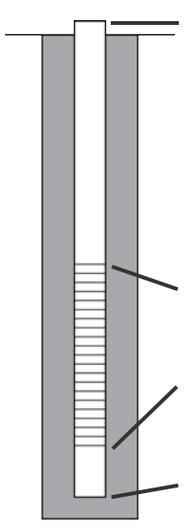


Minimum Objective: 678.30 (ft.)
Minimum Threshold: 675.50 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E29F004

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E29F004			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper



Reference Point Elevation (ft.):
457.50

Depth to Top of Screen (ft. bgs):
26.00

Depth to Bottom of Screen (ft. bgs):
31.00

Total Well Depth (ft.):
36.00

Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, NASA, NGA, USGS, Esri, NASA, NGA, USGS, FEMA, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

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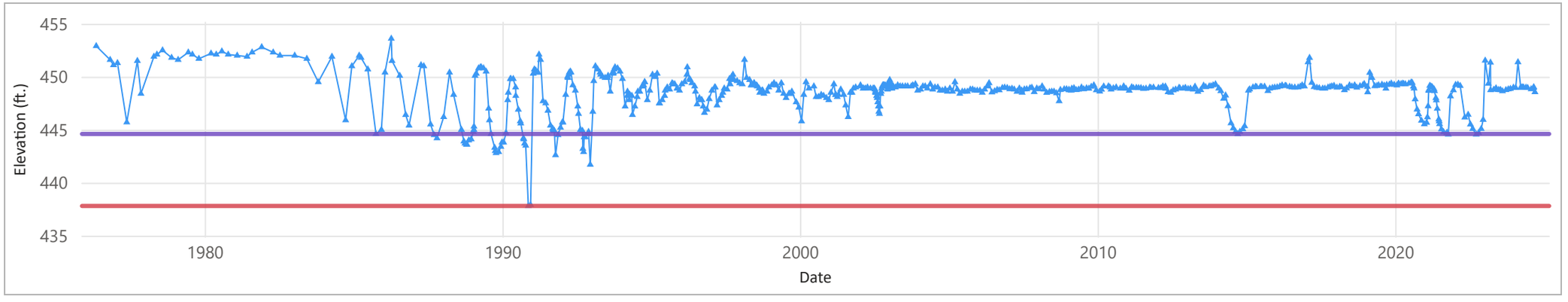
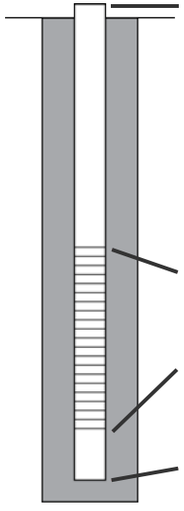


Minimum Objective: 444.60 (ft.)
Minimum Threshold: 437.80 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E30D002

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E30D002			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper



Reference Point Elevation (ft.):
431.60

Depth to Top of Screen (ft. bgs):
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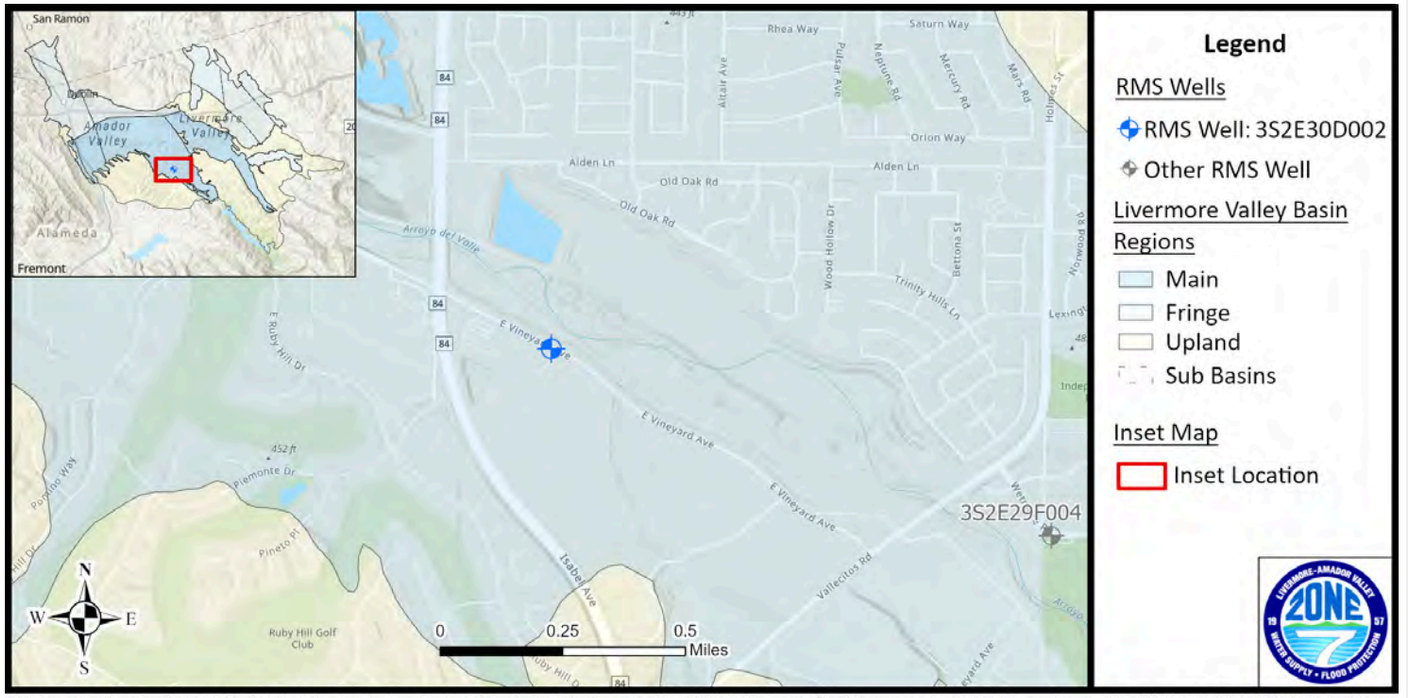
Depth to Bottom of Screen (ft. bgs):
39.00

Total Well Depth (ft.):
44.00



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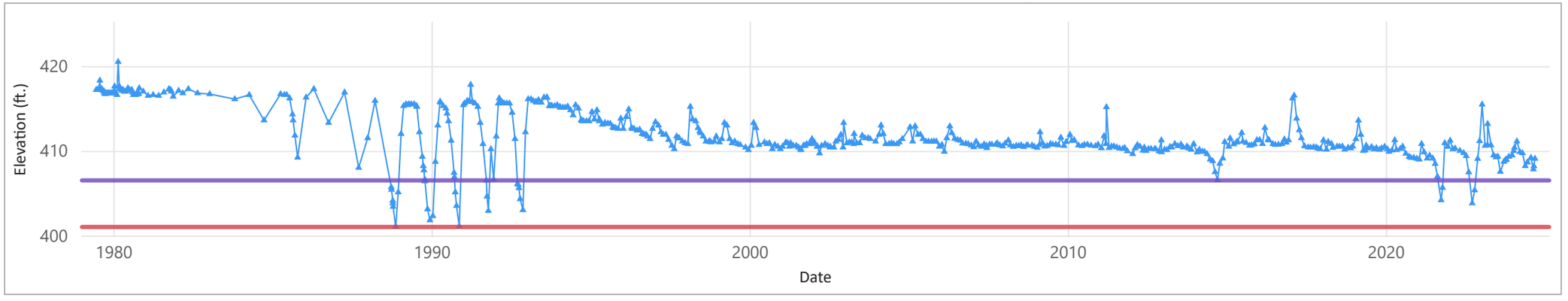
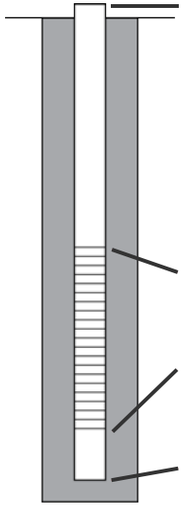


Minimum Objective: 406.50 (ft.) Minimum Threshold: 401.00 (ft.) Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E32E007

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E32E007			X

Basin Type - Subbasin: Upland
Aquifer Designation: Upper

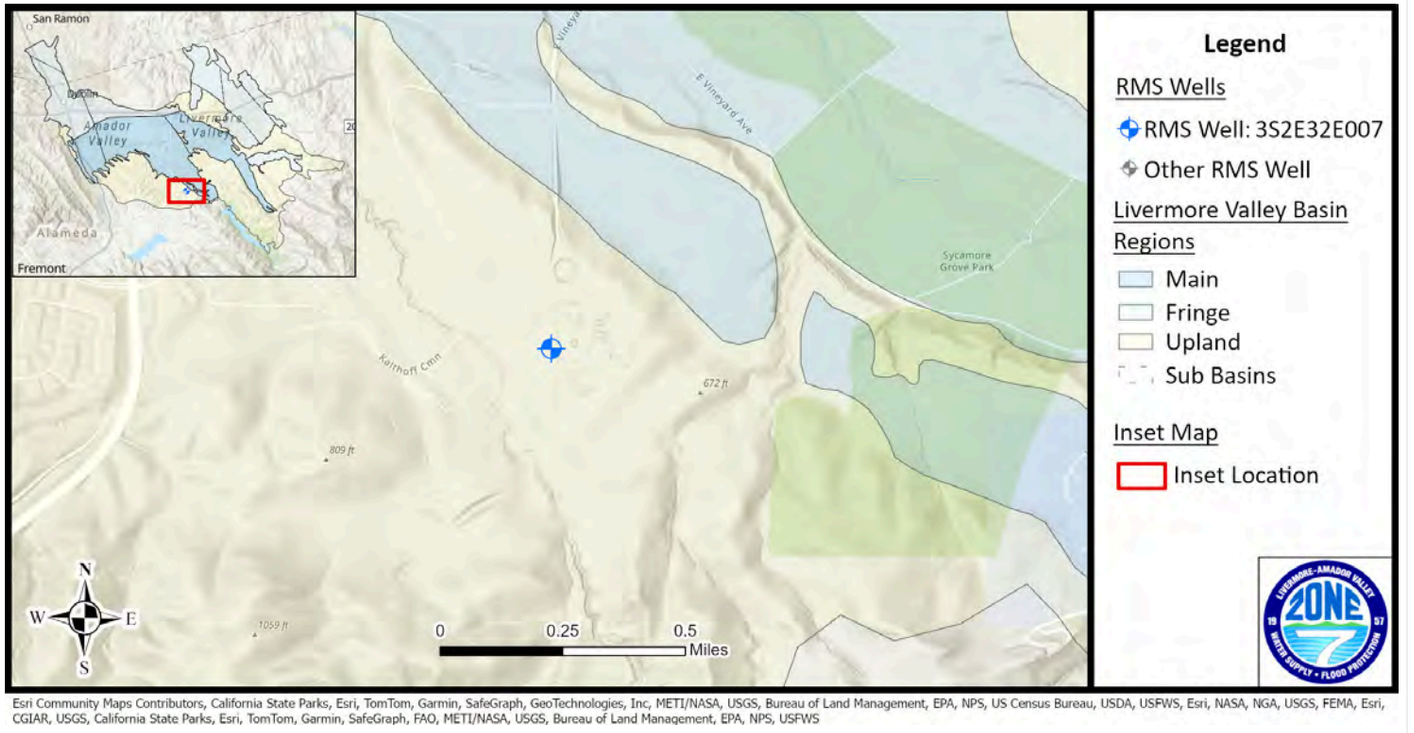


Reference Point Elevation (ft.):
610.94

Depth to Top of Screen (ft. bgs):
19.00

Depth to Bottom of Screen (ft. bgs):
34.00

Total Well Depth (ft.):
37.00



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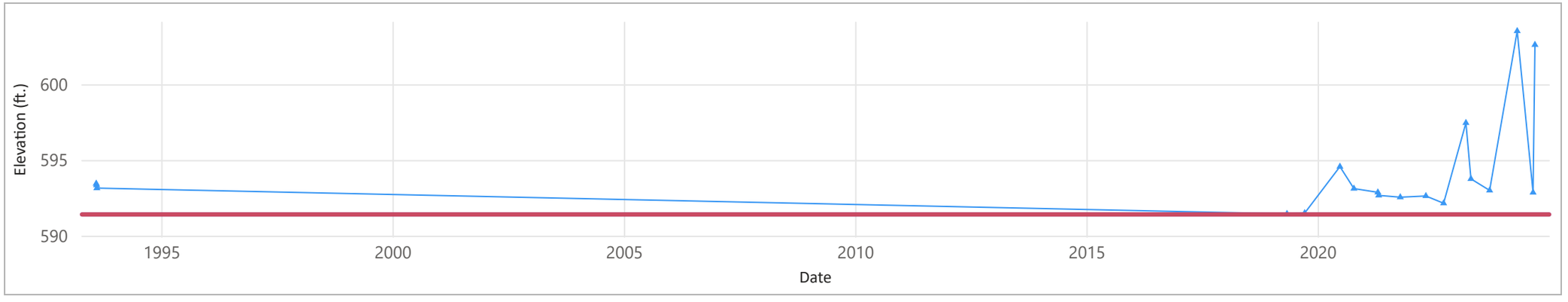
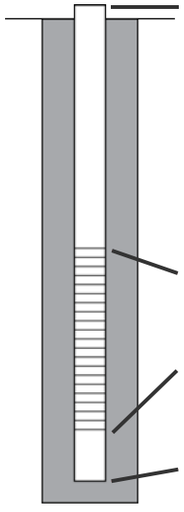


Minimum Objective: 591.40 (ft.) Minimum Threshold: 591.40 (ft.) Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E33C001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E33C001			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper

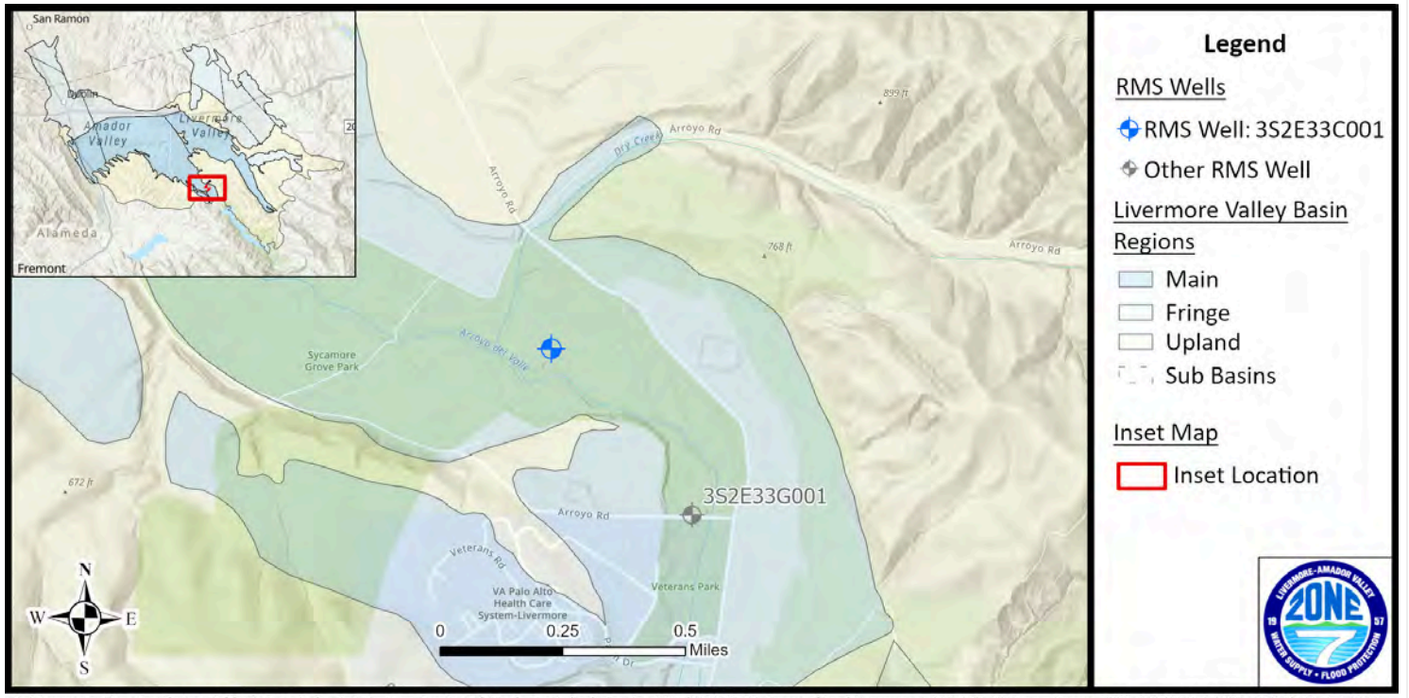


Reference Point Elevation (ft.):
497.63

Depth to Top of Screen (ft. bgs):
5.00

Depth to Bottom of Screen (ft. bgs):
20.00

Total Well Depth (ft.):
20.00



Esri Community Maps Contributors, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, NASA, NGA, USGS, Esri, NASA, NGA, USGS, FEMA, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

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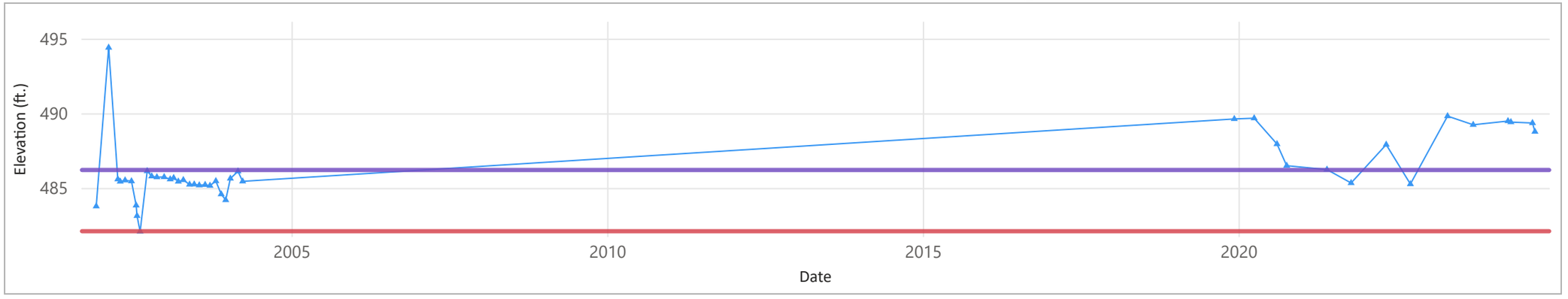
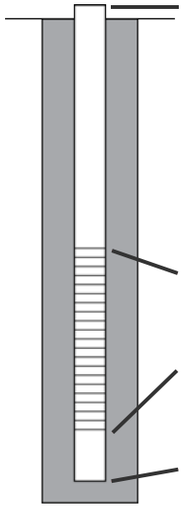


Minimum Objective: 486.20 (ft.)
Minimum Threshold: 482.10 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 3S2E33G001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
3S2E33G001			X

Basin Type - Subbasin: Main-Amador
Aquifer Designation: Upper

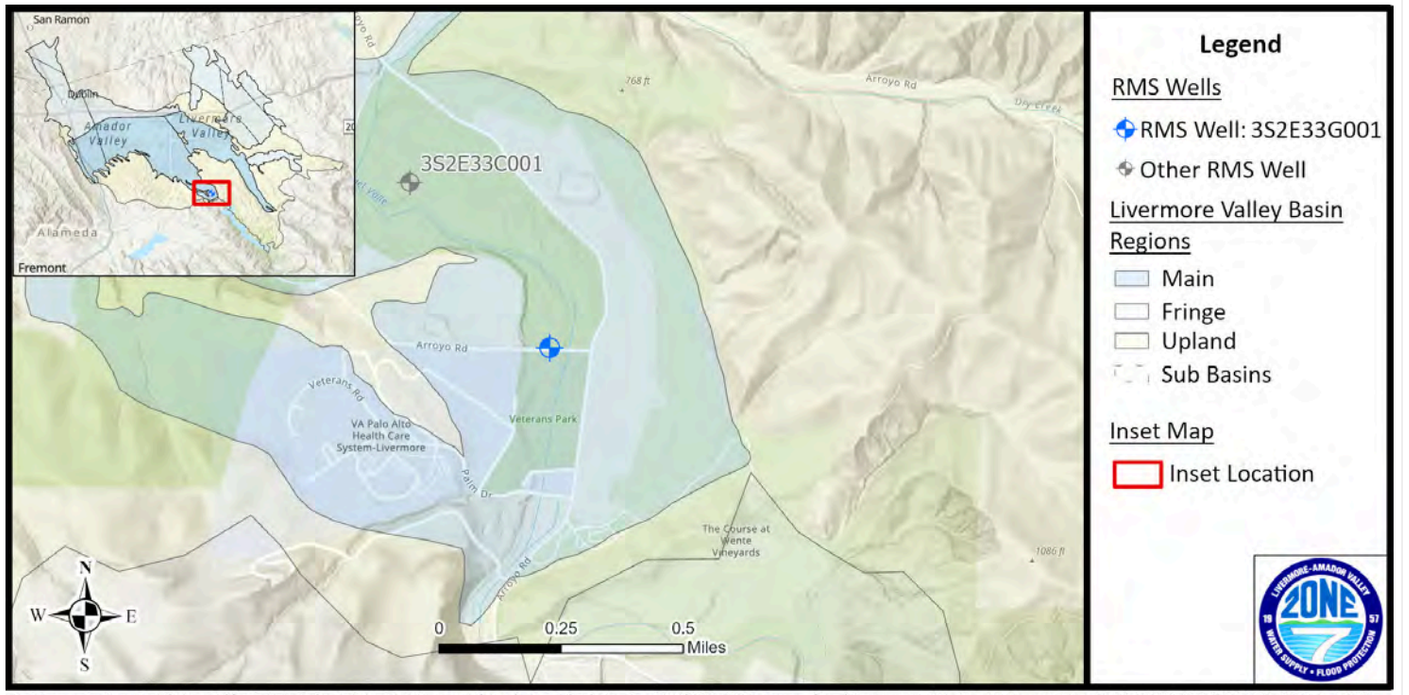


Reference Point Elevation (ft.):
511.52

Depth to Top of Screen (ft. bgs):
9.00

Depth to Bottom of Screen (ft. bgs):
14.00

Total Well Depth (ft.):
17.00



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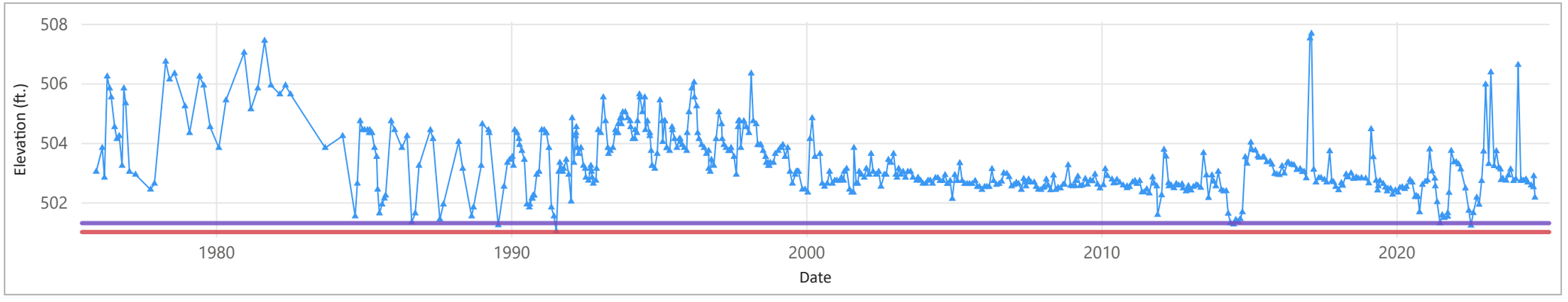
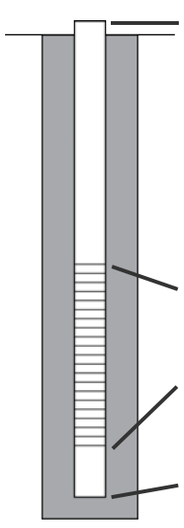


Minimum Objective: 501.30 (ft.)
Minimum Threshold: 501.00 (ft.)
Groundwater Elevation Measurement

Hydrograph of Measured Groundwater Elevation for Well 4S2E01A001

Well ID	RMS-WL	RMS-WQ	RMS-ICSW
4S2E01A001			X

Basin Type - Subbasin: Main-Mocho II
Aquifer Designation: Upper

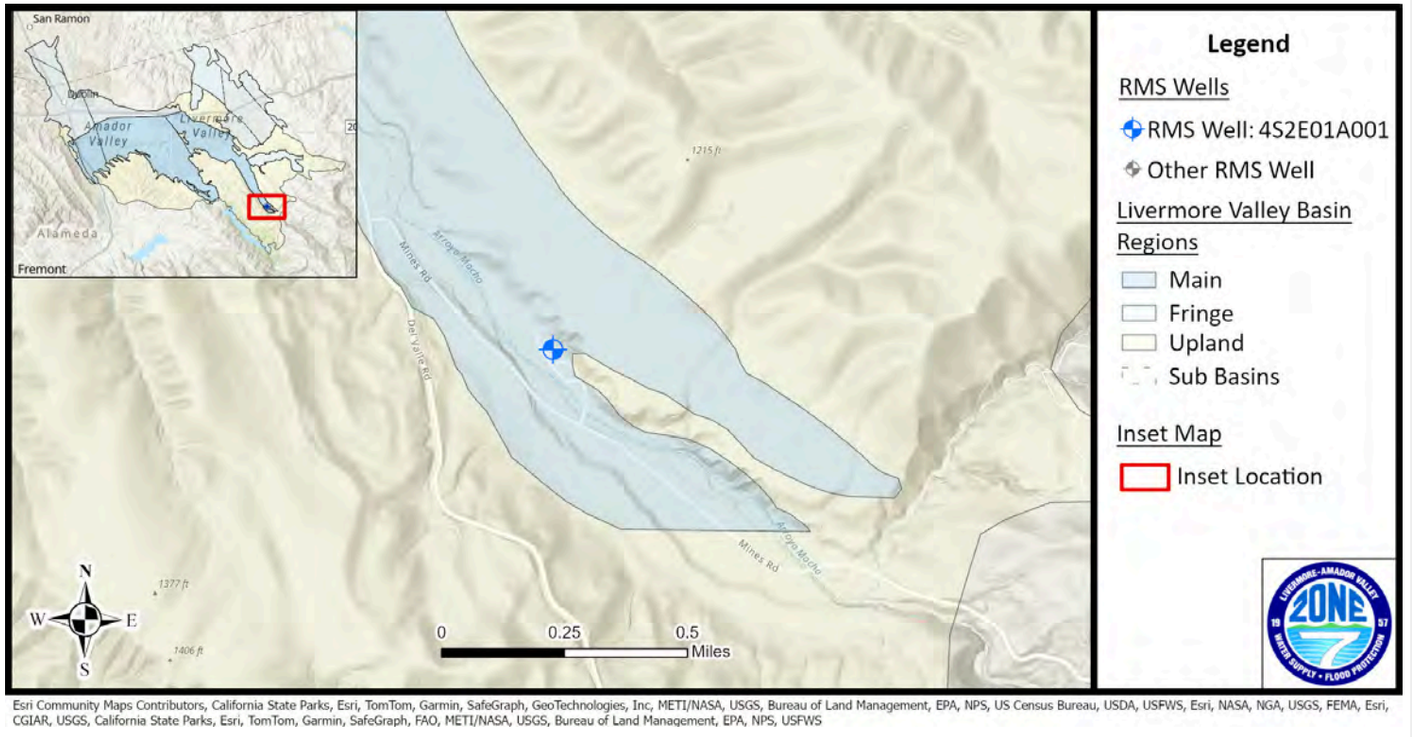


Reference Point Elevation (ft.):
819.76

Depth to Top of Screen (ft. bgs):
45.00

Depth to Bottom of Screen (ft. bgs):
130.00

Total Well Depth (ft.):
130.00



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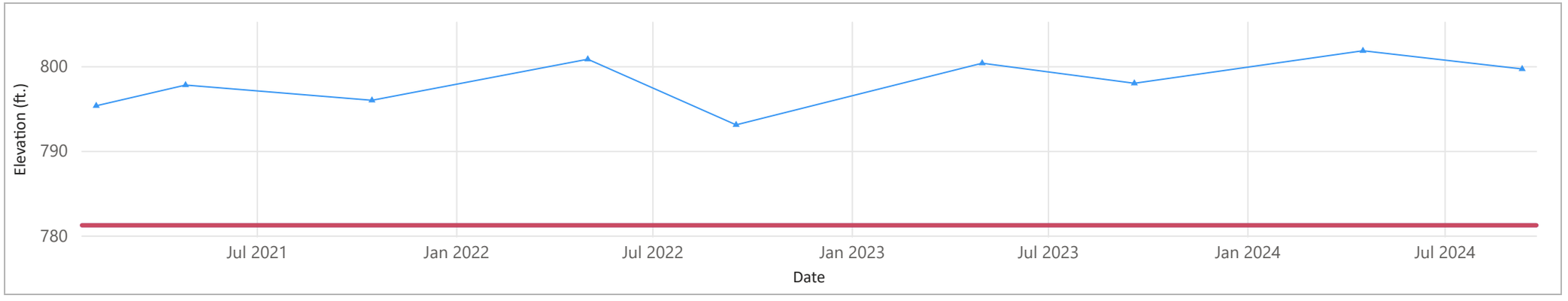
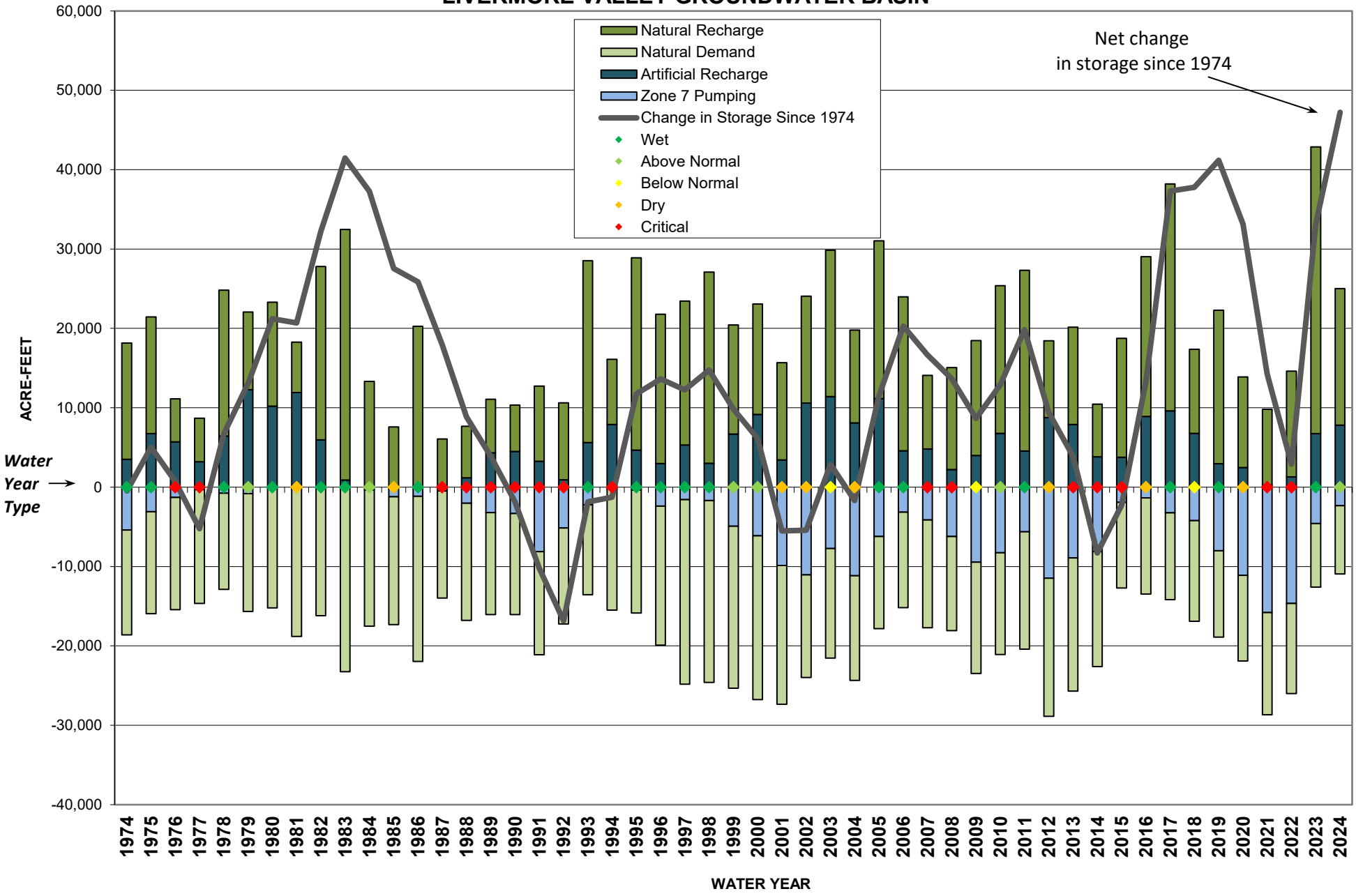


Minimum Objective: 781.20 (ft.) Minimum Threshold: 781.20 (ft.) Groundwater Elevation Measurement

Appendix D

Groundwater Storage
Supplemental Data

FIGURE D-1
CUMULATIVE CHANGE IN STORAGE WITH NATURAL AND ARTIFICIAL RECHARGE AND DEMAND
1974 - 2024 WATER YEARS
LIVERMORE VALLEY GROUNDWATER BASIN



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3/3/2025

TABLE D-1
DESCRIPTION OF HYDROLOGIC INVENTORY COMPONENTS
LIVERMORE VALLEY GROUNDWATER BASIN

COMPONENTS	*DESCRIPTION/REMARK*	*Direct/ Indirect*	*HOW CALCULATED/MEASURED*	*ESTIMATED ACCURACY*
SUPPLY INDICES				
Rainfall	Pleasanton rainfall (Parkside Office)	Direct	Measured by Zone 7	0.5 in
Evaporation	Evaporation at Lake Del Valle Station	Direct	Collected by DWR	0.5 in
Streamflow	Arroyo Valle Streamflow if Lake Del Valle Dam did not exist	Direct	USGS Stream Gage Station AV_BLC	10 AF
Water Year Type	Indicator of Water Year in Sacramento Valley	Direct	DWR California Data Exchange Center	-
SUPPLY COMPONENTS				
NATURAL STREAM RECHARGE				
ARROYO VALLE	AV natural recharge.	Indirect	Stream Inflows - Stream Outflows	100 AF
ARROYO MOCHO	AM natural recharge.	Indirect	Stream Inflows - Stream Outflows	100 AF
ARROYO LAS POSITAS	ALP natural recharge.	Indirect	Stream Inflows - Stream Outflows	100 AF
ARTIFICIAL RECHARGE				
ARROYO VALLE	Total artificial recharge on Arroyo Valle minus Prior Rights	Indirect	Stream Inflows - Stream Outflows	100 AF
ARROYO VALLE PRIOR RIGHTS	AVBLC flow that would have recharged if no dam.	Indirect	Formula based on AVBLC flow.	100 AF
ARROYO MOCHO	Total artificial recharge on Arroyo Mocho	Indirect	Stream Inflows - Stream Outflows	100 AF
ARROYO LAS POSITAS	Total artificial recharge on Arroyo Las Positas	Indirect	Stream Inflows - Stream Outflows	100 AF
INJECTION WELL RECHARGE	Injection at Hop 6 from 1998 to 2000	Direct	Metered by Zone 7	10 AF
RAINFALL RECHARGE	Recharge from rainfall	Indirect	Calculated by Areal Recharge Model	1000 AF
PIPE LEAKAGE	Pipe leakage that recharges the GW basin	Indirect	Estimated using length and age of pipes	500 AF
APPLIED WATER RECHARGE				
URBAN MUNICIPAL (GW & SBA)	Applied recharge in urban area - delivered water (GW & SBA)	Indirect	Calculated by Areal Recharge Model	100 AF
URBAN RECYCLED WATER	Applied water recharge from urban area - recycled water	Indirect	Calculated using Wastewater Plant deliveries	10 AF
AGRICULTURAL (SBA)	Total applied recharge from 'untreated' ag sources (untreated SBA)	Indirect	Calculated by Areal Recharge Model	100 AF
AGRICULTURAL (GW)	Total applied water recharge from groundwater ag sources	Indirect	Calculated by Areal Recharge Model	100 AF
GOLF COURSES (GW)	Applied water from golf courses on groundwater	Indirect	Calculated by Areal Recharge Model	100 AF
GOLF COURSES (RW)	Applied water from golf courses from recycled water	Indirect	Calculated using Wastewater Plant deliveries	10 AF
SUBSURFACE BASIN INFLOW	Subsurface Inflow from Northern Fringe Basin	Indirect	Estimated historically groundwater contours	500 AF
DEMAND COMPONENTS				
MUNICIPAL PUMPING				
ZONE 7	Total pumping by Zone 7, including pumping to waste	Direct	Metered by Zone 7	10 AF
DSRSD	*Pumping by Zone 7 for DSRSD.*	*Direct*	*DSRSD Groundwater Pumping Quota*	*10 AF*
PLEASANTON	Pumping by Pleasanton.	Direct	Metered by Pleasatnon	10 AF
CALIFORNIA WATER SERVICE	Pumping by CWS.	Direct	Metered by CWS	10 AF
SFPUC	Pumping by SF Public Utilities Commission	Direct	Metered by SFPUC	10 AF
FAIRGROUNDS	Pumping by Alameda County Fairgrounds	Indirect	Metered by Fairgrounds	10 AF
DOMESTIC	Pumping from active domestic, supply, and potable wells	Indirect	Estimated: Number of Wells x 0.5 AF/yr	50 AF
GOLF COURSES				
CASTLEWOOD GOLF COURSE	*Pumping for Castlewood Golf Course*	*Indirect*	*Estimated using historical meter data*	*50 AF*
TRI VALLEY GOLF CENTER	*Pumping for TriValley Golf Driving Range*	*Indirect*	*Calculated by Areal Recharge Model*	*50 AF*
AGRICULTURAL PUMPING	Unmetered pumping for agriculture	Indirect	Calculated by Areal Recharge Model	100 AF
MINING				
EXPORT	Total mining area releases that leave the basin	Indirect	Calculated from metered data and stream recharge rate	50 AF
EVAPORATION	Pond evaporation & rainfall.	Indirect	Calculated using lake area, evaporation, and rainfall	100 AF
PROCESSING	Mining Area processing losses	Indirect	Estimated at 700 AF/Yr	100 AF
SUBSURFACE BASIN OUTFLOW	Basin overflow leaving basin	Indirect	Formula based on GW elevation and synoptic data	100 AF

GW = Groundwater
SBA = South Bay Aqueduct
RW = Recycled Water
AF = Acre-feet

WRP:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\D-GWStorage\D-TblD1-DescHIComponents24.xlsx
2/20/2025

TABLE D-2
GROUNDWATER STORAGE
HYDROLOGIC INVENTORY (HI) METHOD
2024 WATER YEAR (in Acre-Feet, except where indicated)

	Total for Water Year	Sustainable Average	Percent of Sust Avg
INDICES			
Rainfall at Livermore (inches)	14.66	14.46	101%
8 Station Rainfall Index (Northern CA)(inches)	48.22	50.16	96%
Evaporation at Lake Del Valle (inches)	67.78	67.14	101%
Arroyo Valle Stream flow (AF)	28,182	21,392	132%
SUPPLY TOTAL (AF)	**25,012**	**19,800**	**126%**
Stream Recharge	**13,899**	**11,900**	**117%**
[1] Natural Stream Recharge	5,244	5,700	92%
[1] Arroyo Valle Prior Rights	843	900	94%
[3] Artificial Stream Recharge	7,812	5,300	147%
Injection Well Recharge	**0**	**0**	**0%**
[1] **Rainfall Recharge**	**5,998**	**4,300**	**139%**
Lake Recharge	5,401	NA	NA
Pipe Leakage	**1,365**	**1,000**	**NA**
[1] **Applied Water Recharge**	**2,750**	**1,600**	**172%**
Urban - Municipal	1,662	1,280	130%
Urban - Groundwater	214	26	823%
Urban - Recycled Water	120	0	0%
Agriculture - Municipal (SBA)	616	92	670%
Agriculture/Golf - Groundwater	86	158	54%
Agriculture/Golf - Recycled	52	44	118%
[1] **Subsurface Inflow**	**1,000**	**1,000**	**100%**
DEMAND TOTAL (AF)	**10,953**	**18,800**	**58%**
Municipal Pumping	**7,103**	**13,700**	**52%**
[4] Zone 7	2,992	5,950	50%
[2] *Zone 7 pumping for DSRSD*	*645*	*645*	*100%*
GW through Demin Membranes	*828*	-	-
Demin Permeate to Z7 Distribution System	*664*	-	-
[2] City of Pleasanton	0	3,500	0%
[2] California Water Service	2,574	3,070	84%
[2] SFPUC	136	450	30%
[2] Fairgrounds	288	310	93%
[2] Domestic	59	200	30%
Agricultural and Golf Pumping	**1,054**	**850**	**124%**
[2] Agriculture	836	400	0%
[2] Golf Courses	218	225	97%
[2] **Mining Use**	**3,837**	**4,600**	**83%**
Mining Discharges (Export) to Stream	0	700	0%
Mining Discharges to Cope Lake	*6,112*	*NA*	*NA*
Evaporation	3,137	3,200	98%
Processing	700	700	100%
GDE Uptake	*1,775*	*1,500*	*118%*
[1] **Subsurface Overflow**	**13**	**100**	**13%**
SUBTOTALS (AF)			
Sustainable Yield - Natural Recharge [sum of [1]]	15,822	13,400	118%
Sustainable Yield - Demand Components [sum of [2]]	8,811	13,400	66%
Net Natural	7,011		
Zone 7 - Artificial Recharge (Stream) [sum of [3]]	7,812	5,300	147%
Zone 7 - Municipal Pumping [sum of [4]]	2,347	5,300	44%
Net Artificial	5,465		
NET RECHARGE (Supply - Demand)	**14,059**	**1,000**	**1406%**
TOTAL STORAGE (AF)	**2024 WY**	**2023 WY**	**Δ Storage**
Hydrologic Inventory (HI)	259,223	245,164	14,059
Nodal GW Elevations (NGE)	249,529	232,498	17,031
Average Storage: (HI + NGE)/2	254,376	238,831	15,545
Available Storage: Avg Storage - Reserve (128K AF)	126,376	110,831	15,545

Sustainable average includes original estimates for Sustainable Yield components (shown with *)

Natural Component

Artificial Component

TABLE D-3
HISTORICAL GROUNDWATER STORAGE
HYDROLOGIC INVENTORY (HI) METHOD
1974-2024 WATER YEARS (in Acre-Feet, except where indicated)

	WATER YEAR (Oct - Sep)																
COMPONENTS	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
INDICES																	
Rainfall at Livermore (in)	16.1	14.8	6.2	6.0	18.5	13.6	17.6	10.3	24.4	32.0	13.0	12.6	19.8	8.9	8.7	11.2	9.4
8 Station Rain Index (N. CA)(in)	78.6	48.8	28.3	19.0	71.6	39.1	59.6	37.6	84.8	88.5	58.1	37.8	72.1	28.6	34.9	50.1	36.0
Evap at Lake Del Valle (in)	60.9	62.7	63.5	66.0	64.2	67.7	59.7	72.1	60.5	59.7	70.2	64.9	61.1	64.0	66.9	63.6	65.9
Arroyo Valle Stream flow (AF)	30538	28307	475	177	43749	9721	45800	5817	61427	125882	25653	7282	67903	3023	1506	1988	815
Water Year Type*	W	W	C	C	W	AN	W	D	W	W	AN	D	W	C	C	C	C
SUPPLY	**18,140**	**21,437**	**11,121**	**8,683**	**24,813**	**22,213**	**23,830**	**18,821**	**29,942**	**35,412**	**15,547**	**8,784**	**20,866**	**6,670**	**8,071**	**11,170**	**10,353**
Injection Well Recharge	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Stream Recharge	**11,340**	**15,400**	**6,910**	**3,820**	**16,330**	**16,110**	**16,480**	**15,040**	**16,420**	**17,158**	**9,486**	**4,747**	**9,045**	**3,565**	**4,549**	**7,880**	**7,026**
Artificial Stream Recharge	3,509	6,750	5,695	3,190	6,442	12,266	10,211	11,918	5,952	901	0	0	0	0	1,172	4,320	4,488
Natural Stream Recharge	6,060	7,110	1,100	630	8,850	2,860	4,850	2,200	8,620	14,387	8,326	3,541	8,168	2,696	2,653	2,589	2,250
Arroyo Valle Prior Rights	1,771	1,540	115	0	1,038	984	1,419	922	1,848	1,870	1,160	1,206	877	869	724	971	288
Rainfall Recharge	**3,031**	**2,523**	**0**	**0**	**4,398**	**2,002**	**3,891**	**967**	**11,423**	**16,357**	**3,110**	**1,249**	**9,008**	**290**	**398**	**283**	**141**
Pipe Leakage	**31**	**37**	**44**	**51**	**60**	**71**	**82**	**95**	**109**	**124**	**139**	**155**	**169**	**185**	**200**	**217**	**233**
Applied Water Recharge	**2,738**	**2,477**	**3,158**	**3,022**	**2,795**	**3,041**	**2,727**	**2,089**	**1,360**	**1,344**	**2,162**	**1,884**	**1,904**	**1,860**	**2,004**	**1,630**	**1,694**
Urban - Municipal	1,074	766	1,354	1,375	1,087	1,179	810	1,284	668	690	1,253	1,027	998	1,328	1,377	1,053	1,025
Urban - Groundwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban - Recycled Water	0	0	27	16	26	13	21	7	12	8	16	6	12	8	5	14	5
Agriculture - Municipal (SBA)	74	109	157	124	95	118	147	182	140	165	208	182	232	245	289	240	265
Agriculture/Golf - Groundwater	384	280	513	525	352	388	281	241	174	139	198	210	190	137	152	140	153
Agriculture/Golf - Recycled	0	0	64	68	75	73	73	60	54	63	62	55	61	47	63	60	64
Others	1,206	1,322	1,042	915	1,160	1,270	1,394	315	312	279	425	404	411	95	118	123	182
Subsurface Basin Inflow	**1,000**	**1,000**	**1,010**	**1,790**	**1,230**	**990**	**650**	**630**	**630**	**430**	**650**	**750**	**740**	**770**	**920**	**1,160**	**1,260**
DEMAND	**18,618**	**15,929**	**15,432**	**14,636**	**12,871**	**15,819**	**15,727**	**19,349**	**18,349**	**26,220**	**19,750**	**18,506**	**22,550**	**14,575**	**17,176**	**16,143**	**16,045**
Municipal Pumpage	**15,550**	**12,098**	**12,378**	**11,691**	**10,213**	**11,918**	**9,610**	**9,794**	**8,576**	**9,307**	**10,029**	**9,904**	**10,563**	**9,622**	**10,907**	**11,559**	**12,733**
Zone 7 (excluding DSRSD)	5,403	3,090	1,292	309	776	816	41	0	0	25	348	1,199	1,163	480	2,017	3,213	3,327
Zone 7 for DSRSD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Pleasanton	2,264	2,497	1,707	3,271	2,640	3,273	2,961	3,089	3,565	3,886	3,486	3,056	3,705	3,310	3,548	3,316	3,856
Cal. Water Service	2,612	2,852	2,781	1,312	1,964	2,358	2,489	2,695	2,286	2,660	3,035	2,788	2,774	3,276	2,761	2,850	3,073
Camp Parks	769	808	980	925	796	881	819	808	713	630	647	40	0	0	0	0	0
SFWD	302	242	495	374	397	413	372	402	348	321	378	353	484	491	472	443	362
Fairgrounds	200	200	200	200	200	200	200	267	217	242	281	272	280	280	280	280	280
Domestic	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Agricultural and Golf Pumpage	**3,900**	**2,309**	**4,823**	**5,200**	**3,340**	**3,877**	**2,628**	**2,433**	**1,347**	**1,443**	**1,754**	**2,096**	**2,057**	**1,685**	**1,729**	**1,357**	**1,735**
Agriculture	3,744	2,217	4,596	4,970	3,191	3,711	2,628	2,433	1,295	1,342	1,556	1,914	1,911	1,470	1,476	1,166	1,478
Golf Courses	156	92	227	230	149	166	0	0	52	101	198	182	146	215	253	191	257
Mining Use	**3,068**	**3,831**	**3,054**	**2,945**	**2,658**	**3,751**	**5,586**	**9,005**	**7,613**	**13,953**	**7,481**	**7,402**	**11,387**	**4,353**	**5,869**	**4,484**	**3,312**
Subsurface Basin Overflow	**0**	**0**	**0**	**0**	**0**	**150**	**530**	**550**	**2,160**	**2,960**	**2,240**	**1,200**	**600**	**600**	**400**	**100**	**0**
NET RECHARGE (AF)	**-478**	**5,508**	**-4,311**	**-5,953**	**11,942**	**6,394**	**8,103**	**-528**	**11,593**	**9,192**	**-4,203**	**-9,722**	**-1,684**	**-7,906**	**-9,106**	**-4,973**	**-5,692**
INVENTORY STORAGE (AF)	**211,522**	**217,030**	**212,719**	**206,766**	**218,708**	**225,102**	**233,205**	**232,677**	**244,270**	**253,462**	**249,259**	**239,537**	**237,853**	**229,947**	**220,841**	**215,868**	**210,176**

STORAGE CALCULATION	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
INVENTORY (Rounded to TAF)	212	217	213	207	219	225	233	233	244	253	249	240	238	230	221	216	210
GW ELEVATIONS (Rounded to TAF)	213	215	226	216	210	228	239	246	241	254	258	250	240	231	217	214	210
AVERAGE STORAGE (TAF)	**212**	**216**	**219**	**211**	**214**	**227**	**236**	**239**	**243**	**254**	**253**	**245**	**239**	**230**	**219**	**215**	**210**
AVAILABLE STORAGE (TAF)	**84**	**88**	**91**	**83**	**86**	**99**	**108**	**111**	**115**	**126**	**125**	**117**	**111**	**102**	**91**	**87**	**82**

Artificial Components Natural Components

*Water Year Type (CDEC Sacramento Valley)
W = Wet; AN = Above Normal;
BN = Below Normal; D = Dry; C = Critical

TABLE D-3
HISTORICAL GROUNDWATER STORAGE
HYDROLOGIC INVENTORY (HI) METHOD
1974-2024 WATER YEARS (in Acre-Feet, except where indicated)

	WATER YEAR (Oct - Sep)														
COMPONENTS	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
INDICES															
Rainfall at Livermore (in)	11.3	11.6	21.3	11.8	21.3	20.0	15.1	25.3	13.1	14.1	11.0	11.2	17.0	13.1	19.3
8 Station Rain Index (N. CA)(in)	32.2	36.0	65.3	31.8	85.4	61.3	68.8	82.4	54.8	56.7	33.0	46.3	59.7	47.3	57.4
Evap at Lake Del Valle (in)	64.7	68.2	64.2	65.5	58.3	71.6	69.5	57.2	61.0	68.3	68.5	73.2	69.9	72.1	63.6
Arroyo Valle Stream flow (AF)	9909	11692	52831	3424	67142	51058	54115	87819	15169	18949	8156	7848	19648	11410	26930
Water Year Type*	C	C	W	C	W	W	W	W	AN	AN	D	D	BN	D	W
SUPPLY	**12,715**	**10,610**	**28,529**	**16,095**	**29,095**	**22,556**	**24,184**	**27,853**	**20,780**	**23,211**	**15,691**	**24,052**	**29,840**	**19,778**	**31,021**
Injection Well Recharge	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**652**	**1,524**	**1,146**	**1**	**0**	**0**	**0**	**0**
Stream Recharge	**8,347**	**5,247**	**14,714**	**11,838**	**13,058**	**11,109**	**12,284**	**13,603**	**10,813**	**12,842**	**8,601**	**16,195**	**21,483**	**12,885**	**21,025**
Artificial Stream Recharge	3,261	914	5,621	7,883	4,672	2,968	5,314	2,343	5,174	8,019	3,428	10,588	11,409	8,084	11,143
Natural Stream Recharge	4,418	3,997	8,247	3,080	7,259	7,743	6,607	10,533	5,091	4,178	4,512	4,476	8,462	3,458	9,589
Arroyo Valle Prior Rights	668	337	846	876	1,127	398	362	727	548	644	660	1,131	1,612	1,343	293
Rainfall Recharge	**1,838**	**1,760**	**10,761**	**1,242**	**13,243**	**8,176**	**8,634**	**10,692**	**5,540**	**5,924**	**3,644**	**4,239**	**4,899**	**3,192**	**6,378**
Pipe Leakage	**249**	**267**	**285**	**304**	**324**	**344**	**365**	**387**	**410**	**434**	**461**	**490**	**518**	**548**	**579**
Applied Water Recharge	**602**	**1,766**	**1,440**	**1,621**	**1,480**	**2,007**	**2,221**	**1,709**	**1,743**	**1,960**	**1,985**	**2,129**	**1,940**	**2,153**	**2,039**
Urban - Municipal	222	1,288	1,108	1,252	1,060	1,467	1,632	1,472	1,549	1,743	1,770	1,888	1,749	1,926	1,834
Urban - Groundwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban - Recycled Water	2	0	11	14	13	18	21	15	12	21	19	30	10	14	15
Agriculture - Municipal (SBA)	242	279	177	192	257	347	401	104	57	64	59	67	66	64	63
Agriculture/Golf - Groundwater	109	133	96	100	92	100	109	68	60	67	67	73	68	73	70
Agriculture/Golf - Recycled	26	66	48	63	58	75	58	50	65	66	69	72	47	75	58
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subsurface Basin Inflow	**1,680**	**1,570**	**1,330**	**1,090**	**990**	**920**	**680**	**810**	**750**	**906**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
DEMAND	**21,104**	**17,237**	**13,555**	**15,503**	**16,064**	**20,683**	**25,574**	**25,342**	**25,691**	**26,885**	**27,357**	**23,991**	**21,531**	**24,338**	**17,828**
Municipal Pumpage	**17,737**	**13,686**	**9,345**	**6,717**	**4,744**	**6,536**	**9,090**	**10,337**	**11,913**	**15,750**	**18,034**	**19,427**	**17,216**	**19,728**	**14,774**
Zone 7 (excluding DSRSD)	8,119	5,136	2,215	213	368	2,388	1,565	1,682	4,912	6,140	9,864	11,047	7,734	11,175	6,213
Zone 7 for DSRSD	0	0	0	0	0	0	0	0	0	0	0	0	645	645	645
City of Pleasanton	4,164	3,368	3,252	2,578	1,262	1,333	3,208	3,935	2,563	4,558	3,112	3,579	3,674	3,688	3,604
Cal. Water Service	3,966	3,744	2,570	2,626	2,053	1,551	2,947	3,595	3,271	3,567	3,707	3,458	3,979	2,911	3,166
Camp Parks	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
SFWD	408	410	414	396	370	411	477	460	380	532	472	448	423	481	436
Fairgrounds	346	336	282	325	285	343	342	230	333	369	318	423	327	365	284
Domestic	100	113	113	116	116	117	117	113	116	109	109	134	134	167	131
Agricultural and Golf Pumpage	**634**	**577**	**499**	**463**	**289**	**394**	**435**	**323**	**337**	**475**	**450**	**337**	**301**	**295**	**295**
Agriculture	382	355	213	218	150	212	266	73	81	231	227	119	93	92	88
Golf Courses	252	222	286	245	139	182	169	249	256	245	223	218	208	203	207
Mining Use	**3,367**	**3,551**	**4,210**	**8,786**	**11,120**	**13,381**	**15,724**	**14,255**	**13,416**	**11,010**	**9,324**	**4,564**	**4,314**	**4,610**	**3,055**
Subsurface Basin Overflow	**0**	**0**	**0**	**0**	**200**	**766**	**760**	**750**	**362**	**125**	**0**	**0**	**0**	**0**	**0**
NET RECHARGE (AF)	**-8,389**	**-6,628**	**14,974**	**592**	**13,031**	**1,873**	**-1,390**	**2,511**	**-4,911**	**-3,674**	**-11,666**	**62**	**8,309**	**-4,560**	**13,193**
INVENTORY STORAGE (AF)	**201,787**	**195,159**	**210,133**	**210,725**	**223,756**	**225,629**	**224,239**	**226,750**	**221,839**	**218,165**	**206,499**	**206,561**	**214,870**	**210,310**	**223,503**

STORAGE CALCULATION	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
INVENTORY (Rounded to TAF)	202	195	210	211	224	226	224	227	222	218	206	207	215	210	224
GW ELEVATIONS (Rounded to TAF)	195	184	211	216	226	224	223	226	223	222	204	212	221	214	237
AVERAGE STORAGE (TAF)	**198**	**190**	**211**	**213**	**225**	**225**	**223**	**226**	**222**	**220**	**205**	**210**	**218**	**212**	**230**
AVAILABLE STORAGE (TAF)	**70**	**62**	**83**	**85**	**97**	**97**	**95**	**98**	**94**	**92**	**77**	**82**	**90**	**84**	**102**

Artificial Components Natural Components

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W = Wet; AN = Above Normal;
BN = Below Normal; D = Dry; C = Critical

TABLE D-3
HISTORICAL GROUNDWATER STORAGE
HYDROLOGIC INVENTORY (HI) METHOD
1974-2024 WATER YEARS (in Acre-Feet, except where indicated)

	WATER YEAR (Oct - Sep)														
COMPONENTS	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
INDICES															
Rainfall at Livermore (in)	17.5	9.7	10.7	11.4	14.8	16.2	8.8	10.7	6.8	13.1	15.4	25.6	12.4	17.1	10.5
8 Station Rain Index (N. CA)(in)	80.1	37.3	34.9	46.8	53.6	72.8	41.5	46.3	31.3	37.2	57.8	94.6	40.9	70.7	31.7
Evap at Lake Del Valle (in)	68.6	68.9	72.7	71.6	64.0	64.5	73.2	73.9	78.3	73.6	72.6	69.3	73.4	72.8	76.4
Arroyo Valle Stream flow (AF)	28325	2027	18059	11231	12914	28634	1557	7801	272	2217	19436	89173	2783	36944	2701
Water Year Type*	W	C	C	BN	AN	W	D	C	C	C	D	W	BN	W	D
SUPPLY	**23,960**	**14,998**	**16,258**	**18,659**	**25,382**	**27,315**	**18,442**	**20,158**	**10,452**	**18,753**	**29,018**	**38,181**	**17,943**	**23,096**	**14,021**
Injection Well Recharge	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Stream Recharge	**13,418**	**9,154**	**8,448**	**11,249**	**17,144**	**17,595**	**12,734**	**13,457**	**5,820**	**11,469**	**18,083**	**20,495**	**9,560**	**10,605**	**5,972**
Artificial Stream Recharge	4,583	4,811	2,229	3,984	6,773	4,555	8,778	7,887	3,826	3,766	8,910	9,615	6,773	2,943	2,461
Natural Stream Recharge	6,905	3,536	5,913	6,018	10,371	11,272	3,355	4,200	1,987	6,822	8,289	10,433	1,938	6,439	2,595
Arroyo Valle Prior Rights	1,930	807	306	1,247	0	1,768	601	1,370	7	881	884	447	849	1,223	916
Rainfall Recharge	**6,969**	**1,987**	**3,782**	**3,375**	**4,315**	**5,771**	**1,462**	**2,708**	**1,075**	**3,735**	**6,368**	**12,377**	**3,926**	**7,628**	**3,593**
Pipe Leakage	**610**	**642**	**675**	**708**	**742**	**776**	**811**	**847**	**884**	**921**	**958**	**996**	**1,034**	**1,146**	**1,209**
Applied Water Recharge	**1,962**	**2,214**	**2,353**	**2,327**	**2,181**	**2,172**	**2,435**	**2,147**	**1,674**	**1,629**	**2,609**	**3,313**	**2,423**	**2,717**	**2,247**
Urban - Municipal	1,747	1,983	2,124	2,064	1,894	1,849	2,061	1,750	1,229	1,143	1,523	2,156	1,393	1,778	1,250
Urban - Groundwater	0	0	0	0	0	0	0	0	0	0	61	82	67	80	62
Urban - Recycled Water	26	24	7	52	84	133	159	189	220	275	160	147	106	119	140
Agriculture - Municipal (SBA)	63	62	68	68	67	61	68	64	66	61	735	801	716	616	656
Agriculture/Golf - Groundwater	67	75	80	78	72	70	78	69	86	85	72	67	74	69	72
Agriculture/Golf - Recycled	59	71	74	66	64	59	70	75	73	65	59	60	66	57	67
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subsurface Basin Inflow	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
DEMAND	**15,169**	**18,636**	**19,269**	**23,656**	**21,091**	**20,421**	**28,880**	**25,700**	**22,604**	**12,717**	**13,457**	**14,182**	**17,456**	**19,703**	**22,055**
Municipal Pumpage	**11,785**	**12,769**	**13,612**	**18,117**	**16,158**	**13,515**	**20,558**	**17,310**	**17,303**	**8,874**	**9,860**	**11,369**	**12,657**	**15,309**	**17,069**
Zone 7 (excluding DSRSD)	3,157	4,146	6,210	9,439	8,274	5,618	11,461	8,909	8,137	1,920	1,357	3,243	4,215	8,021	11,101
Zone 7 for DSRSD	645	645	645	645	645	646	644	646	645	645	645	645	645	645	645
City of Pleasanton	3,587	3,638	2,387	3,660	3,280	3,435	3,900	3,301	3,740	2,775	3,752	4,222	3,913	3,785	2,701
Cal. Water Service	3,106	2,971	3,143	3,123	2,844	2,673	3,333	2,770	3,085	2,012	2,575	1,878	2,389	1,296	904
Camp Parks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFWD	467	494	492	446	417	442	482	482	398	309	286	214	253	286	322
Fairgrounds	441	443	289	335	284	301	318	350	286	268	231	208	196	270	321
Domestic	93	96	109	123	112	107	90	105	115	112	110	107	115	116	108
Agricultural and Golf Pumpage	**287**	**336**	**337**	**345**	**302**	**293**	**331**	**746**	**897**	**834**	**904**	**853**	**931**	**890**	**967**
Agriculture	88	87	96	95	94	85	95	486	640	590	684	655	691	674	720
Golf Courses	199	249	241	250	208	208	236	260	257	243	220	198	240	216	247
Mining Use	**3,385**	**4,947**	**4,452**	**5,346**	**4,934**	**6,906**	**8,322**	**8,391**	**5,302**	**3,843**	**3,597**	**2,813**	**4,236**	**3,585**	**4,840**
Subsurface Basin Overflow	**0**	**921**	**1,205**	**194**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**564**	**809**	**146**
NET RECHARGE (AF)	**8,790**	**-3,639**	**-3,011**	**-4,997**	**4,290**	**6,893**	**-10,438**	**-5,542**	**-12,153**	**6,037**	**15,561**	**23,999**	**487**	**3,394**	**-8,034**
INVENTORY STORAGE (AF)	**232,293**	**228,654**	**225,643**	**220,646**	**224,936**	**231,829**	**221,391**	**215,849**	**203,696**	**209,733**	**225,294**	**249,293**	**249,780**	**253,174**	**245,140**

STORAGE CALCULATION	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
INVENTORY (Rounded to TAF)	232	229	226	221	225	232	221	216	204	210	225	249	250	253	245
GW ELEVATIONS (Rounded to TAF)	239	232	235	233	234	235	228	221	209	215	226	245	245	248	238
AVERAGE STORAGE (TAF)	**236**	**231**	**230**	**227**	**230**	**234**	**225**	**219**	**207**	**212**	**226**	**247**	**248**	**251**	**241**
AVAILABLE STORAGE (TAF)	**108**	**103**	**102**	**99**	**102**	**106**	**97**	**91**	**79**	**84**	**98**	**119**	**120**	**123**	**113**

Artificial Components Natural Components

*Water Year Type (CDEC Sacramento Valley)
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TABLE D-3
HISTORICAL GROUNDWATER STORAGE
HYDROLOGIC INVENTORY (HI) METHOD
1974-2024 WATER YEARS (in Acre-Feet, except where indicated)

COMPONENTS	WATER YEAR (Oct - Sep) 2021	2022	2023	2024	1974 - 2024 AVG	Sust Avg	TOTAL
INDICES							
Rainfall at Livermore (in)	5.1	11.0	24.4	14.7	14		
8 Station Rain Index (N. CA)(in)	24.0	43.0	66.6	48.2	52		
Evap at Lake Del Valle (in)	80.2	74.9	66.9	67.8	68		
Arroyo Valle Stream flow (AF)	2423	11866	106027	28182	25,858		**1,318,734**
Water Year Type*	C	C	W	AN			
SUPPLY	**9,803**	**14,599**	**42,872**	**25,012**	**20,408**	**19,800**	**1,040,805**
Injection Well Recharge	**0**	**0**	**0**	**0**	**65**	**0**	**3,322**
Stream Recharge	**2,703**	**6,172**	**24,898**	**13,899**	**11,926**	**11,900**	**608,224**
Artificial Stream Recharge	277	1,301	6,734	7,812	5,209	5,300	265,652
Natural Stream Recharge	1,887	4,581	18,121	5,244	5,852	5,700	298,447
Arroyo Valle Prior Rights	539	290	43	843	865	900	44,124
Rainfall Recharge	**2,818**	**3,884**	**12,623**	**5,998**	**4,777**	**4,300**	**243,626**
Pipe Leakage	**1,248**	**1,287**	**1,326**	**1,365**	**513**	**1,000**	**26,148**
Applied Water Recharge	**2,035**	**2,256**	**3,024**	**2,750**	**2,140**	**1,600**	**109,149**
Urban - Municipal	1,016	1,278	1,891	1,662	1,414	1,280	72,098
Urban - Groundwater	54	63	225	214	18	26	908
Urban - Recycled Water	148	128	107	120	54	0	2,756
Agriculture - Municipal (SBA)	670	669	675	616	239	92	12,210
Agriculture/Golf - Groundwater	79	75	91	86	141	158	7,185
Agriculture/Golf - Recycled	68	42	36	52	59	44	3,019
Others	0	0	0	0	215	0	10,973
Subsurface Basin Inflow	**1,000**	**1,000**	**1,000**	**1,000**	**987**	**1,000**	**50,336**
DEMAND	**28,668**	**25,995**	**12,587**	**10,954**	**19,482**	**18,800**	**1,056,797**
Municipal Pumpage	**23,597**	**21,497**	**9,987**	**7,104**	**12,940**	**13,700**	**659,935**
Zone 7 (excluding DSRSD)	15,795	14,641	4,578	2,347	4,605	5,300	234,840
Zone 7 for DSRSD	645	645	645	645	278	645	14,191
City of Pleasanton	3,802	2,587	270	0	3,138	3,500	160,045
Cal. Water Service	1,475	1,756	2,653	2,574	2,711	3,070	138,238
Camp Parks	0	0	0	0	173	0	8,819
SFWD	360	406	449	136	398	450	20,307
Fairgrounds	353	357	290	288	291	310	14,816
Domestic	107	107	69	59	107	200	5,465
Agricultural and Golf Pumpage	**1,059**	**998**	**1,033**	**1,054**	**1,239**	**625**	**63,214**
Agriculture	791	752	813	836	1,037	400	52,871
Golf Courses	269	246	220	218	203	225	10,343
Mining Use	**5,072**	**4,497**	**2,600**	**3,837**	**6,183**	**4,600**	**315,343**
Subsurface Basin Overflow	**0**	**0**	**0**	**13**	**359**	**100**	**18,305**
NET RECHARGE (AF)	**-18,865**	**-11,395**	**30,284**	**14,058**	**926**	**1,000**	**47,222**
INVENTORY STORAGE (AF)	**226,275**	**214,880**	**245,164**	**259,222**	**224,740**	**13,400**	

STORAGE CALCULATION	2021	2022	2023	2024
INVENTORY (Rounded to TAF)	226	215	245	259
GW ELEVATIONS (Rounded to TAF)	217	210	232	250
AVERAGE STORAGE (TAF)	**221**	**212**	**239**	**254**
AVAILABLE STORAGE (TAF)	**93**	**84**	**111**	**126**

Artificial Components | Natural Components

*Water Year Type (CDEC Sacramento Valley)
W = Wet; AN = Above Normal;
BN = Below Normal; D = Dry; C = Critical

Appendix E

Groundwater Quality
Supplemental Data

Some contours are based on past data from wells not sampled in this Water Year. Maximum shown if multiple samples were taken in Water Year.

LEGEND

TDS Contours (mg/L)
- <500
- 500-1,000
- 1,000-5,000
- >5,000

Wells
- Supply
- Monitor
- Nested
- Pond
- Representative Monitoring Site

- Township-Range
- Streams
- Mining Area Ponds
- Main Basin
- Fringe Area
- Upland Area

2S/1W 2S/1E 2S/2E 2S/3E
3S/1W 3S/1E 3S/2E 3S/3E
4S/1W 4S/1E 4S/2E 4S/3E

N W E S

0 2 4
Miles

DATE: Mar 6, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E01-02-TDSMap2024.aprx

Figure E-1
TDS Concentrations (mg/L)
Upper Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
CWS = Cal Water Service
St = Stoneridge (Zone 7)
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

TDS Contours (mg/L)
- <500
- 500-1,000
- 1,000-5,000
- >5,000

Wells
- Supply
- Monitor
- Nested

- Pond
- Representative Monitoring Site
- Streams
- Township/Range
- Mining Area Ponds
- Main Basin
- Fringe Area
- Upland Area

2S/1W 2S/2E 3S/1W 3S/1E 3S/2E 3S/3E 4S/1W 4S/1E 4S/2E 4S/3E

N W E S

0 2 4
Miles

DATE: Mar 6, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E01-02-TDSMap2024.aprx

Figure E-2
TDS Concentrations (mg/L)
Lower Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

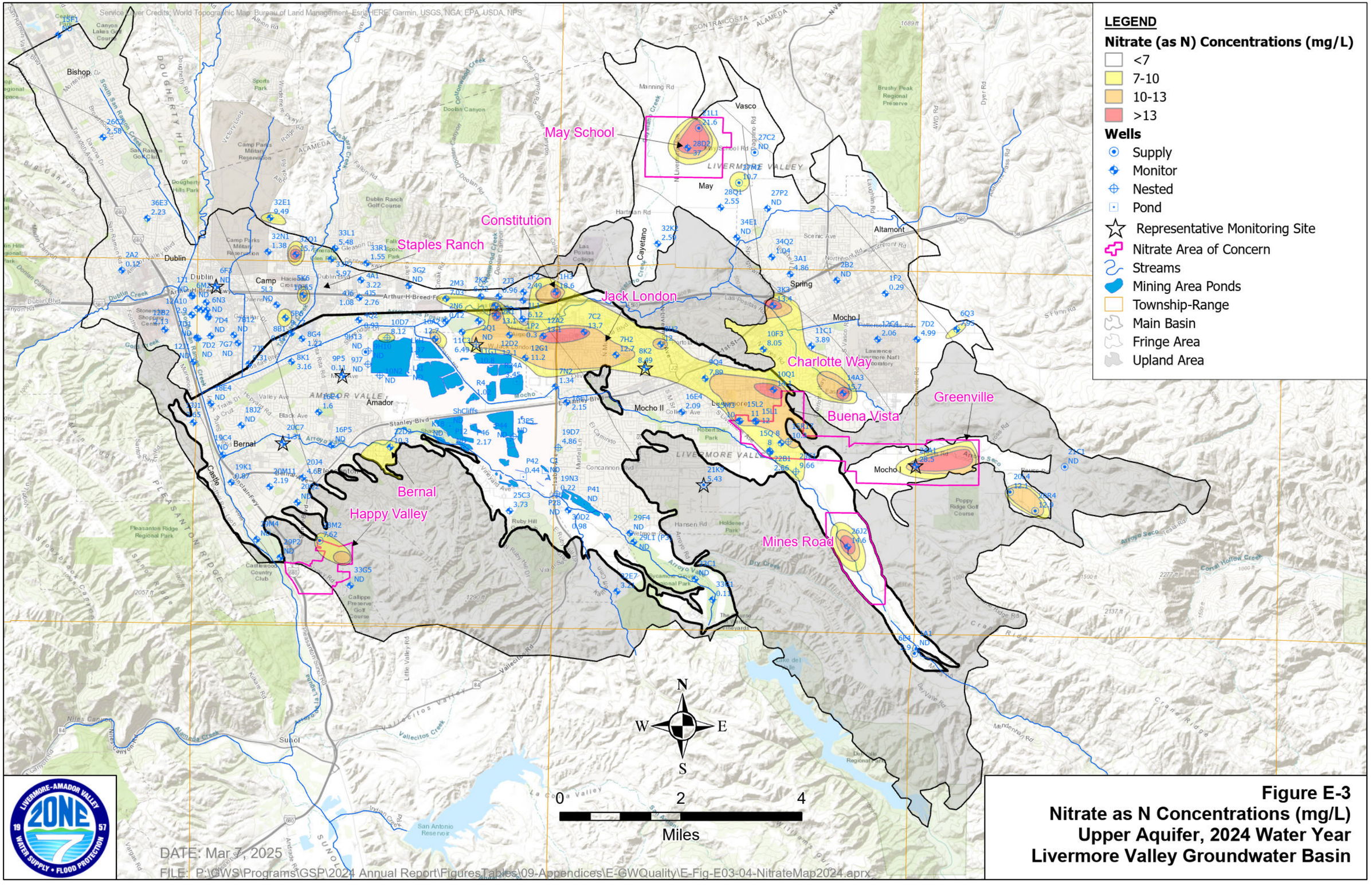

Figure E-3
Nitrate as N Concentrations (mg/L)
Upper Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
CWS = Cal Water Service
St = Stoneridge (Zone 7)
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

Nitrate (as N) Concentrations (mg/L)
- <7
- 7-10
- 10-13
- >13

Wells
- Supply
- Monitor
- Nested
- Pond

- Representative Monitoring Site
- Nitrate Area of Concern
- Streams
- Mining Area Ponds
- Township-Range

Basin Regions
- Main Basin
- Fringe Area
- Upland Area
- SubBasins

2S/1W
2S/2E
3S/1W
3S/1E
3S/2E
3S/3E
4S/1W
4S/1E
4S/2E
4S/3E

May School
Constitution
Staples Ranch
Jack London
Charlotte Way
Greenville
Buena Vista
Bernal
Happy Valley
Mines Road

Dublin
Pleasanton
Livermore
Suñol

N
W E
S

0 2 4
Miles

DATE: Mar 6, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E03-04-NitrateMap2024.aprx

Figure E-4
Nitrate as N Concentrations (mg/L)
Lower Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

Service Layer Credits: World Topographic Map: Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA

LEGEND

Boron Concentrations (ug/L)

- <1,000
- 1,000-1,400
- 1,400-3,000
- >3,000

Wells

- Supply
- Monitor
- Nested
- Pond
- Representative Monitoring Site

- Streams
- Mining Area Ponds
- Township-Range
- Main Basin
- Fringe Area
- Upland Area

N
W E
S

0 2 4
Miles

DATE: Mar 18, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E05-06-BoronMap2024.aprx

Figure E-5
Boron Concentrations (µg/L)
Upper Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

Service Layer Credits: World Topographic Map: Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
CWS = Cal Water Service
St = Stoneridge (Zone 7)
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

Boron Concentrations (ug/L)
- <1,000
- 1,000-1,400
- 1,400-3,000
- >3,000
- Pond
- Representative Monitoring Site
- Streams
- Township-Range
- Mining Area Ponds
- Main Basin
- Fringe Area
- Upland Area

Wells
- Supply
- Monitor
- Nested
- Supply-Municipal
- Supply-Industrial

N
W E
S

0 2 4
Miles

DATE: Mar 18, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E05-06-BoronMap2024.aprx

Figure E-6
Boron Concentrations (µg/L)
Lower Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

Service Layer Credits: World Topographic Map: Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

LEGEND

2024 Chromium (Total) (µg/L)

- <10
- 10 to 30
- 30 to 50
- >50

Wells

- Supply
- Monitor
- Nested
- Pond
- Representative Monitoring Site

- Streams
- Mining Area Ponds
- Township-Range
- Main Basin
- Fringe Area
- Upland Area

2S/1W 2S/1E 2S/2E 2S/3E

3S/1W 3S/1E 3S/2E 3S/3E

4S/1W 4S/1E 4S/2E 4S/3E

AMADOR VALLEY LIVERMORE VALLEY

N W E S

0 2 4 Miles

DATE: Mar 18, 2025

FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E07-08-ChromiumMap2024.aprx

Figure E-7
Chromium (Total) Concentrations (µg/L)
Upper Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

ABBREVIATIONS FOR MUNICIPAL WELLS
COL = Chain of Lakes (Zone 7)
M = Mocho (Zone 7)
H = Hopyard (Zone 7)
CWS = Cal Water Service
St = Stoneridge (Zone 7)
P = Pleasanton
SF = San Francisco Public Utilities Commission

LEGEND

2024 Chromium (Total) (µg/L)
- <10
- 10 to 30
- 30 to 50
- >50

Wells
- Supply
- Monitor
- Nested
- Supply-Municipal
- Pond
- Representative Monitoring Site
- Streams
- Township-Range
- Mining Area Ponds
- Main Basin
- Fringe Area
- Upland Area

N
W E
S

0 2 4
Miles

DATE: Mar 6, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E07-08-ChromiumMap2024.aprx

Figure E-8
Chromium (Total) Concentrations (µg/L)
Lower Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

Concentration shown based on 2025 WY result.
Laboratory error resulted in no sample result for 2024 WY.

LEGEND

PFOS Concentrations (ng/L)
- 4-39 ppt
- 40-70 ppt
- >70 ppt

Wells
- Supply
- Monitor
- Nested
- Pond

- Streams
- Mining Area Ponds
- Township-Range
- Main Basin
- Fringe Area
- Upland Area
- SubBasins
- PFAS Investigation Site (RWQCB)

Abbreviations:
ng/L: Nanogram per Liter
ND: Non-Detect
RWQCB: Regional Water Quality Control Board

N
W E
S

0 2 4
Miles

DATE: Mar 14, 2025
FILE: \\ZONE7-FILE\public_files\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E09-10-PFOSMap2024.ap

Figure E-9
PFOS Concentrations (ng/L)
Upper Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

Service Layer Credits: World Topographic Map: Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA

LEGEND

PFOS Concentrations (ng/L)

- 4-39 ppt
- 40-70 ppt
- >70 ppt

Wells

- Supply
- Monitor
- Nested
- Supply-Municipal
- Supply-Industrial

- Streams
- Mining Area Ponds
- Main Basin
- Fringe Area
- Upland Area
- PFAS Investigation Site (RWQCB)

Abbreviations:
ng/L: Nanogram per Liter
ND: Non-Detect
RWQCB: Regional Water Quality Control Board

N
W E
S

0 2 4
Miles

DATE: Mar 12, 2025
FILE: P:\GWS\Programs\GSP\2024 Annual Report\FiguresTables\09-Appendices\E-GWQuality\E-Fig-E09-10-PFOSMap2024.aprx

Figure E-10
PFOS Concentrations (ng/L)
Lower Aquifer, 2024 Water Year
Livermore Valley Groundwater Basin

TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
2S1E32E001	Static-Monitor	N/A	1/25/24	ZONE7	17.2	1288	7	139	34	123	1.6	598	29	130	9.49	42.8	< 200	6.6	328	< 2	836	487	-	-	-
2S1E32N001	Static-Monitor	N/A	1/24/24	ZONE7	17.8	526	7.4	48	12	49	1.3	162	19	76	1.38	16.9	200	< 1	< 100	3.1	309	169	-	-	-
2S1E32Q001	Static-Monitor	N/A	1/25/24	ZONE7	14.8	1993	7	171	75	212	2.1	687	116	309	15.7	34.2	700	2.1	< 100	7	1327	736	-	-	-
2S1E33L001	Static-Monitor	N/A	3/18/24	ZONE7	21.6	1399	7.1	129	32	168	2.5	592	55	181	5.48	27.8	400	1.9	< 100	4.4	928	454	-	-	-
2S1E33P002	Static-Monitor	N/A	4/2/24	ZONE7	19.1	1988	7.1	147	70	219	6.5	836	35	282	5.97	30	930	6.7	1690	34	1228	655	-	-	-
2S1E33R001	Static-Monitor	N/A	1/30/24	ZONE7	20.5	742	7.5	66	16	81	1.1	293	23	78	1.55	27.8	130	2.8	< 100	12	445	231	-	-	-
2S1W15F001	Static-Monitor	N/A	9/25/24	ZONE7	20.1	62	6.6	8	1	4	1.1	27	2	4	< 0.1	3.6	< 100	< 1	1020	< 1	37	24	-	-	-
2S1W26C002	Static-Monitor	N/A	9/23/24	ZONE7	19.5	612	6.9	89	16	41	0.8	354	22	28	2.58	30	130	2.9	< 100	< 1	413	288	-	-	-
2S1W36E003	Static-Monitor	N/A	9/23/24	ZONE7	20.9	878	7	125	22	63	0.6	388	83	66	2.23	38.5	130	3.8	< 100	< 1	599	403	-	-	-
2S1W36F001	Static-Nested	N/A	6/26/24	ZONE7	17.4	720	7.4	57	21	83	1.3	398	18	41	< 0.1	21.4	280	7.1	< 100	< 1	440	228	-	-	-
2S2E21L001	Supply-Domestic	N/A	4/15/24	ZONE7	16.6	1417	7.8	57	39	173	1.2	392	40	181	21.6	27.8	460	4.9	< 100	4.4	809	303	-	-	-
2S2E27C002	Supply-Domestic	N/A	6/13/24	ZONE7	19.3	3073	8	38	22	653	0.7	453	79	745	< 0.1	25.7	26200	< 5	< 500	17	1790	186	-	-	-
2S2E27M002	Supply-Domestic	N/A	4/15/24	ZONE7	15.6	2085	8	49	65	289	0.6	531	145	320	10.7	30	2390	6.1	< 200	11	1210	390	-	-	-
2S2E27P002	Static-Monitor	N/A	7/8/24	ZONE7	25.7	4475	7.7	78	36	924	2	214	< 1	1446	< 0.1	27.8	33200	< 5	600	28	2620	343	-	-	-
2S2E28D002	Static-Monitor	N/A	9/9/24	ZONE7	32.2	1498	7.5	77	39	188	3.9	245	49	222	37	30	800	3.5	< 100	4.8	894	353	-	-	-
2S2E28J002	Supply-Industrial	N/A	9/10/24	ZONE7	19.9	967	8.4	4	3	228	0.5	359	64	89	< 0.1	19.3	1600	< 1	< 100	< 1	601	22	-	-	-
2S2E28Q001	Static-Monitor	N/A	7/8/24	ZONE7	23.2	1253	7.9	41	35	213	0.9	404	120	169	2.55	34.2	850	10	< 100	2.9	826	246	-	-	-
2S2E32K002	Static-Monitor	N/A	9/9/24	ZONE7	28.4	992	7.7	39	30	137	1.6	313	59	122	2.59	36.4	510	5.4	< 100	10	591	221	-	-	-
2S2E34E001	Static-Monitor	N/A	9/26/24	ZONE7	22.6	736	7.7	24	11	160	1.4	455	4	30	< 0.1	25.7	720	11	< 200	< 2	483	105	-	-	-
2S2E34Q002	Static-Monitor	N/A	7/8/24	ZONE7	22.6	1722	7.6	74	61	238	1.2	275	158	416	1.04	32.1	3800	3.8	< 100	5.3	1121	436	-	-	-
3S1E01F002	Static-Monitor	N/A	2/20/24	ZONE7	15.9	1440	7	125	40	130	0.5	556	47	156	2.49	42.8	240	4.5	< 100	3.6	826	477	22	12	11
3S1E01H003	Static-Monitor	N/A	4/17/24	LWRP	-	1929	-	75	44	273	1.5	-	71	275	18.1	31	1300.	-	-	-	1107	-	-	-	-
3S1E01H003	Static-Monitor	N/A	9/11/24	LWRP	-	1893	-	62	39	249	1.1	-	72	263	18.6	31	1190.	-	-	-	1140	-	-	-	-
3S1E01L001	Static-Monitor	N/A	3/11/24	ZONE7	14.1	1256	7.3	61	26	209	1.8	556	52	111	6.12	32.1	1900	4.2	< 100	8.4	794	259	16	5.5	10
3S1E01P002	Static-Monitor	N/A	3/27/24	ZONE7	14.5	1398	7.5	71	50	176	2.3	467	84	220	0.27	32.1	2800	9.3	2120	38	867	383	25	< 2	13
3S1E01P002	Static-Monitor	N/A	4/17/24	LWRP	-	1515	-	85	55	183	3.6	-	77	217	0.1	37	3000.	-	-	-	884	-	-	-	-
3S1E01P002	Static-Monitor	N/A	9/11/24	LWRP	-	1488	-	66	47	172	1.8	-	74	214	0.3	22	3400.	-	-	-	930	-	-	-	-
3S1E01P003	Supply-Unspecified	N/A	3/27/24	ZONE7	16.3	825	7.8	54	48	45	1.8	330	53	78	5.47	23.5	480	1.1	< 100	3.2	491	333	4	< 2	4.9
3S1E02J002	Static-Monitor	N/A	6/11/24	ZONE7	18.5	3500	7.2	208	106	529	1.4	590	259	878	11.1	27.8	5510	< 5	< 500	15	2349	956	50	< 2	39
3S1E02J003	Static-Monitor	N/A	2/20/24	ZONE7	12.4	1317	7.4	56	40	174	4.5	416	27	210	0.96	21.4	600	4.7	< 100	4.5	742	305	< 2	< 2	2.9
3S1E02K002	Static-Monitor	N/A	2/20/24	ZONE7	15.8	1204	7.7	23	20	224	1.5	437	45	117	6.72	19.9	850	6.2	< 100	13	696	139	810	40	500
3S1E02M003	Static-Monitor	N/A	2/20/24	ZONE7	15.3	1800	7.3	67	34	319	2.9	651	83	216	7.03	25.7	2230	8.4	704	11	1100	307	-	-	-
3S1E02N006	Static-Monitor	N/A	6/17/24	ZONE7	23	1685	7.3	92	53	229	1.4	564	90	226	0.12	19.7	3460	3.3	< 100	5.3	990	448	46	3.3	20
3S1E02P003	Supply-Domestic	N/A	2/21/24	ZONE7	11.1	925	8	37	29	132	1.7	324	53	113	1.61	21	870	2.6	< 100	3.8	555	211	-	-	-
3S1E02Q001	Static-Monitor	N/A	6/11/24	ZONE7	19	670	7.2	29	10	83	15	260	17	71	< 0.1	20.5	790	4.8	1260	43	374	113	< 2	< 2	< 2

- = Not Analyzed

Highlighted = Representative Monitoring Site

Municipal Wells are Bold

TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

								Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E02R001	Static-Monitor	N/A	4/17/24	LWRP	-	2161	-	118	85	212	1.6	-	87	343	12.9	27	2800.	-	-	-	1234	-	-	-	-
3S1E02R001	Static-Monitor	N/A	6/11/24	ZONE7	28.8	2252	7.2	116	83	236	1.6	592	111	338	11.4	25.7	2740	5.2	< 200	5.6	1254	632	49	27	14
3S1E02R001	Static-Monitor	N/A	6/25/24	ZONE7	32.1	2016	7.2	119	83	243	1.6	588	119	357	13.1	25.7	2760	5.1	< 200	5.6	1296	639	50	26	14
3S1E02R001	Static-Monitor	N/A	9/11/24	LWRP	-	2103	-	102	77	198	1.4	-	101	312	11.9	26	3650.	-	-	-	1260	-	-	-	-
3S1E03G002	Static-Monitor	N/A	4/2/24	ZONE7	22.1	1734	7.5	58	33	266	1.8	596	56	230	< 0.1	18.8	1990	5.7	< 100	5.7	958	281	-	-	-
3S1E04A001	Static-Monitor	N/A	2/7/24	ZONE7	15.8	1499	7.3	134	31	194	1.4	307	51	294	3.22	23.5	320	2.3	< 100	5.8	895	463	21	19	25
3S1E04J005	Static-Monitor	N/A	1/8/24	ZONE7	16.6	2572	7.9	23	32	571	0.7	880	169	398	2.76	15.6	8800	10	< 200	8.9	1659	189	34	< 1.7	14
3S1E04J006	Static-Monitor	N/A	1/8/24	ZONE7	14.6	1264	7.5	92	34	162	3.5	334	65	224	1.08	18.2	1460	2.7	< 100	4	768	370	5.8	< 1.6	3.6
3S1E04Q002	Static-Monitor	N/A	1/17/24	ZONE7	15.9	1575	7.5	80	46	189	1.6	420	89	278	0.93	21.4	1750	3.8	< 100	6.1	916	389	-	-	-
3S1E05K006	Static-Monitor	N/A	1/10/24	ZONE7	15.7	2031	7.6	131	54	254	1.3	682	229	205	10.65	20.3	1780	2.1	< 200	4.3	1279	549	-	-	-
3S1E05K006	Static-Monitor	N/A	1/17/24	ZONE7	17	2054	7.4	138	55	268	1.3	695	225	199	9.99	21.4	1880	2.4	< 200	5.2	1295	571	-	-	-
3S1E05K007	Static-Monitor	N/A	1/17/24	ZONE7	17.3	1202	10.8	95	2	134	4.1	5	107	252	5.16	0.9	690	< 1	< 100	5.1	648	245	-	-	-
3S1E05L003	Static-Monitor	N/A	10/16/23	ZONE7	22.3	1135	7.8	64	35	170	0.9	420	170	100	< 0.1	23.5	950	3.1	< 100	1.8	772	304	-	-	-
3S1E05P006	Static-Monitor	N/A	10/16/23	ZONE7	20.9	3653	7.2	257	149	543	1.4	585	1100	556	9.77	27.8	1770	< 5	< 500	9.2	2966	1256	-	-	-
3S1E05P006	Static-Monitor	N/A	6/10/24	ZONE7	25.2	3568	7.1	230	143	506	1	617	978	479	9.37	27.8	1660	< 5	< 500	7.4	2710	1163	4.7	< 2	4.4
3S1E06F003	Static-Monitor	N/A	1/8/24	ZONE7	19	4195	7.2	309	128	568	2.5	581	699	915	< 0.1	21.4	3030	< 5	< 500	19	2929	1299	< 1.7	< 1.7	< 1.7
3S1E06M002	Static-Monitor	N/A	11/15/23	DSRSD	17.6	8645	7.08	-	-	-	-	-	3060	189	< 2	-	-	-	-	-	7100	-	-	-	-
3S1E06M002	Static-Monitor	N/A	4/16/24	DSRSD	17.8	8547	7.66	-	-	-	-	-	3140	389	< 2	-	-	-	-	-	7160	-	-	-	-
3S1E06N002	Static-Monitor	N/A	11/15/23	DSRSD	18.2	24540	6.86	-	-	-	-	-	1340	9000	< 2	-	-	-	-	-	37900	-	-	-	-
3S1E06N002	Static-Monitor	N/A	4/16/24	DSRSD	20.1	21610	7.38	-	-	-	-	-	1650	7470	< 2	-	-	-	-	-	14400	-	-	-	-
3S1E06N003	Static-Monitor	N/A	11/15/23	DSRSD	17.8	11300	7.47	-	-	-	-	-	177	3960	< 2	-	-	-	-	-	6950	-	-	-	-
3S1E06N003	Static-Monitor	N/A	4/16/24	DSRSD	19.1	11110	7.77	-	-	-	-	-	106	3420	< 2	-	-	-	-	-	6790	-	-	-	-
3S1E06N004	Static-Monitor	N/A	11/15/23	DSRSD	19.5	2489	7.46	-	-	-	-	-	542	134	1.6	-	-	-	-	-	1720	-	-	-	-
3S1E06N004	Static-Monitor	N/A	4/16/24	DSRSD	20.1	2502	8	-	-	-	-	-	575	149	0.5	-	-	-	-	-	1760	-	-	-	-
3S1E06N005	Static-Monitor	N/A	11/14/23	DSRSD	21.5	19190	7.3	-	-	-	-	-	6630	4320	< 2	-	-	-	-	-	17700	-	-	-	-
3S1E06N005	Static-Monitor	N/A	4/15/24	DSRSD	20.5	22040	8.15	-	-	-	-	-	6450	4600	< 2	-	-	-	-	-	19200	-	-	-	-
3S1E06N006	Static-Monitor	N/A	11/14/23	DSRSD	19.7	24520	7.03	-	-	-	-	-	1470	9170	< 2	-	-	-	-	-	22200	-	-	-	-
3S1E06N006	Static-Monitor	N/A	4/15/24	DSRSD	19.6	25290	6.86	-	-	-	-	-	1640	8350	< 2	-	-	-	-	-	17400	-	-	-	-
3S1E07B002	Static-Monitor	N/A	10/16/23	ZONE7	21.6	623	8.4	18	10	117	4.8	205	36	82	< 0.1	7.9	600	2.2	< 100	1.6	378	86	-	-	-
3S1E07B012	Static-Monitor	N/A	10/16/23	ZONE7	22.5	17430	7.1	709	584	3570	3.4	339	2554	6338	< 0.1	30	2100	23	< 2000	< 20	13955	4178	-	-	-
3S1E07D001	Static-Monitor	N/A	11/14/23	DSRSD	20.8	4420	7.22	-	-	-	-	-	109	1160	< 2	-	-	-	-	-	3720	-	-	-	-
3S1E07D001	Static-Monitor	N/A	4/15/24	DSRSD	18.9	4263	7.95	-	-	-	-	-	114	1160	< 2	-	-	-	-	-	2900	-	-	-	-
3S1E07D002	Static-Monitor	N/A	11/14/23	DSRSD	21.3	24600	7	-	-	-	-	-	8980	3670	< 2	-	-	-	-	-	23500	-	-	-	-
3S1E07D002	**Static-Monitor**	N/A	4/15/24	DSRSD	18.7	25630	7.76	-	-	-	-	-	10500	4130	< 2	-	-	-	-	-	23900	-	-	-	-
3S1E07D003	**Static-Monitor**	N/A	11/14/23	DSRSD	22.3	21500	7.15	-	-	-	-	-	377	8140	< 2	-	-	-	-	-	25200	-	-	-	-

- = Not Analyzed

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TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E07D003	**Static-Monitor**	N/A	4/15/24	DSRSD	18.9	21890	6.77	-	-	-	-	-	423	8510	< 2	-	-	-	-	-	15400	-	-	-	-
3S1E07D004	Static-Monitor	N/A	11/14/23	DSRSD	20.6	27850	6.99	-	-	-	-	-	6270	7690	< 2	-	-	-	-	-	24400	-	-	-	-
3S1E07D004	Static-Monitor	N/A	4/15/24	DSRSD	20.1	15050	7.05	-	-	-	-	-	5440	2690	< 2	-	-	-	-	-	13200	-	-	-	-
3S1E07G007	Static-Monitor	N/A	10/16/23	ZONE7	22.1	18180	7.2	515	573	4200	4.6	469	3442	6165	< 0.1	21.4	5710	< 20	< 2000	119	15152	3648	-	-	-
3S1E07J005	**Static-Monitor**	N/A	10/30/23	ZONE7	18.2	2095	7.3	94	72	325	1.5	746	243	217	< 0.1	23.5	5820	2.6	< 200	3.9	1344	531	-	-	-
3S1E07J005	**Static-Monitor**	N/A	6/10/24	ZONE7	24.9	2076	7.3	95	77	328	1.6	778	252	200	0.31	25.7	5880	3.1	< 200	4.1	1365	554	2.9	< 2	3.3
3S1E08B001	**Static-Monitor**	N/A	10/30/23	ZONE7	18.7	1861	7.9	92	63	249	1.5	410	268	285	0.11	21.4	2550	3.3	208	3.9	1183	489	-	-	-
3S1E08B001	**Static-Monitor**	N/A	6/17/24	ZONE7	18.2	1802	7.7	94	63	238	1.5	400	289	274	< 0.1	21.4	2470	3	449	3.7	1178	494	< 2	< 2	< 2
3S1E08G004	**Static-Monitor**	N/A	1/17/24	ZONE7	15.1	2377	7.2	104	88	339	1.8	763	380	257	1.22	27.8	4190	2.4	< 200	7.8	1579	622	-	-	-
3S1E08H009	**Static-Nested**	N/A	3/5/24	ZONE7	15.6	877	7.5	65	49	82	1.9	365	64	97	4.32	27.8	670	1.8	< 100	11	586	364	4.1	< 2	5.3
3S1E08H010	**Static-Nested**	N/A	3/5/24	ZONE7	15.5	1280	7.5	67	49	185	2.5	502	109	152	2.87	27.8	1870	1.6	< 100	8.6	853	369	17	3.2	17
3S1E08H011	Static-Nested	N/A	3/5/24	ZONE7	15.2	778	7.4	52	35	76	2	328	64	70	2.39	27.8	570	< 1	< 100	9.3	499	274	6.2	< 2	6.2
3S1E08H013	Static-Monitor	N/A	3/12/24	ZONE7	17.1	753	7.1	66	33	52	1.5	284	47	90	3.54	36.4	< 200	4.6	4970	11	482	301	4.9	< 2	5.5
3S1E08H018	Supply-Municipal	**Mocho 4**	**10/3/23**	**ZONE7**	**20.5**	**797**	**7.6**	**53**	**34**	**75**	**2.2**	**319**	**61**	**84**	**2.43**	**25.7**	**580**	**1.2**	**< 100**	**4.9**	**503**	**272**	**-**	**-**	**-**
3S1E08H018	Supply-Municipal	**Mocho 4**	**10/4/23**	**ZONE7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7.6**	**< 2**	**6.9**
3S1E08H018	Supply-Municipal	**Mocho 4**	**1/9/24**	**ZONE7**	**19.7**	**829**	**7.6**	**52**	**33**	**74**	**2.3**	**320**	**61**	**75**	**2.26**	**27.8**	**680**	**1.1**	**< 100**	**9**	**494**	**266**	**7.3**	**< 1.8**	**6.6**
3S1E08H018	**Supply-Municipal**	**Mocho 4**	**4/15/24**	**ZONE7**	**19.1**	**821**	**7.6**	**54**	**30**	**81**	**2**	**325**	**64**	**71**	**2.23**	**27.8**	**670**	**1.2**	**< 100**	**6.7**	**500**	**259**	**8.6**	**< 2**	**7.8**
3S1E08H018	**Supply-Municipal**	**Mocho 4**	**7/22/24**	**ZONE7**	**21.2**	**878**	**7.6**	**56**	**37**	**81**	**2.3**	**326**	**61**	**79**	**1.94**	**27.8**	**610**	**1.3**	**< 100**	**6.5**	**514**	**293**	**-**	**-**	**-**
3S1E08H018	**Supply-Municipal**	**Mocho 4**	**8/12/24**	**ZONE7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**	**< 2**	**9.5**
3S1E08K001	**Static-Monitor**	N/A	1/23/24	ZONE7	15.4	1847	7.3	146	114	119	2.8	687	223	205	3.16	27.8	1830	1.2	< 100	7.7	1195	834	5.2	3	8.3
3S1E08K002	**Static-Monitor**	N/A	1/10/24	ZONE7	17.7	1539	7.8	149	87	67	2.4	688	90	149	7.28	23.5	520	1.5	< 100	13	940	730	-	-	-
3S1E08K002	**Static-Monitor**	N/A	1/25/24	ZONE7	19	1340	8.3	88	52	169	3.3	560	93	136	4.45	20.3	470	2.1	< 100	3.3	859	434	2.1	2.1	3.9
3S1E08K003	**Static-Monitor**	N/A	1/10/24	ZONE7	19.1	888	7.9	82	49	50	1.8	417	62	72	3.75	21.4	310	1.3	< 100	17	561	407	-	-	-
3S1E08K003	**Static-Monitor**	N/A	1/24/24	ZONE7	18.4	891	7.6	58	37	96	2.1	384	67	66	2.52	21.4	300	2.8	< 100	5	549	297	< 2	< 2	< 2
3S1E09B001	Supply-Municipal	**Stoneridge**	**10/2/23**	**ZONE7**	**-**	**937**	**7.7**	**-**	**-**	**-**	**-**	**357**	**56**	**121**	**3.73**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**35**	**4.3**	**29**
3S1E09B001	Supply-Municipal	**Stoneridge**	**11/15/23**	**ZONE7**	**19.3**	**911**	**7.5**	**67**	**56**	**66**	**2.2**	**356**	**51**	**108**	**3.92**	**25.7**	**580**	**1.5**	**< 100**	**6.8**	**570**	**398**	**26**	**3.5**	**26**
3S1E09B001	Supply-Municipal	**Stoneridge**	**5/6/24**	**ZONE7**	**19.1**	**972**	**7.7**	**67**	**59**	**66**	**2.2**	**382**	**58**	**106**	**2.81**	**25.7**	**600**	**1.6**	**< 100**	**6.3**	**585**	**410**	**-**	**-**	**-**
3S1E09B001	Supply-Municipal	**Stoneridge**	**6/3/24**	**ZONE7**	**19.3**	**972**	**7.6**	**60**	**56**	**60**	**2.1**	**385**	**58**	**116**	**3.09**	**25.7**	**590**	**1.6**	**< 100**	**7.1**	**582**	**381**	**-**	**-**	**-**
3S1E09B001	Supply-Municipal	**Stoneridge**	**7/22/24**	**ZONE7**	**19.6**	**997**	**7.6**	**72**	**62**	**68**	**2.4**	**375**	**57**	**112**	**2.64**	**27.8**	**510**	**1.7**	**< 100**	**7.4**	**598**	**435**	**-**	**-**	**-**
3S1E09B001	Supply-Municipal	**Stoneridge**	**8/5/24**	**ZONE7**	**19.5**	**970**	**7.6**	**68**	**59**	**65**	**2.2**	**377**	**56**	**100**	**3.15**	**25.7**	**510**	**1.6**	**< 100**	**7**	**577**	**413**			
3S1E09B001	Supply-Municipal	**Stoneridge**	**9/10/24**	**ZONE7**	**19.6**	**883**	**7.5**	**61**	**49**	**60**	**2**	**328**	**50**	**95**	**4.06**	**27.8**	**400**	**1.4**	**< 100**	**5.8**	**525**	**354**	**-**	**-**	**-**
3S1E09H010	Static-Nested	N/A	1/23/24	ZONE7	18.4	848	7.6	48	48	68	1.5	283	47	120	< 0.1	18	610	1.1	< 100	2.2	491	318	38	3.1	28
3S1E09H011	Static-Nested	N/A	1/23/24	ZONE7	17.9	867	7.7	42	46	72	1.5	334	27	110	0.23	23.5	800	1	< 100	2.6	489	294	88	6.9	47
3S1E09H013	Supply-Domestic	N/A	4/16/24	ZONE7	18.1	893	7.8	50	48	63	1.6	305	54	109	< 0.1	16.3	600	< 1	< 100	1.7	493	323	31	2.8	25
3S1E09J007	Static-Nested	N/A	1/30/24	ZONE7	17	837	7.4	59	39	68	1.9	267	52	115	< 0.1	16.7	570	< 1	< 100	2.5	483	308	25	2.3	21

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GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E09J008	Static-Nested	N/A	1/30/24	ZONE7	21.3	815	7.5	77	36	52	1.8	290	46	103	< 0.1	20.3	590	< 1	< 100	2.7	479	340	43	5.2	23
3S1E09M003	**Supply-Municipal**	**Mocho 2**	**10/4/23**	**ZONE7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**41**	**5.8**	**32**
3S1E09M003	**Supply-Municipal**	**Mocho 2**	**11/15/23**	**ZONE7**	**17.6**	**837**	**7.4**	**74**	**44**	**54**	**1.9**	**285**	**55**	**112**	**0.8**	**23.5**	**520**	**< 1**	**< 100**	**4.3**	**509**	**366**	-	-	-
3S1E09M003	Supply-Municipal	**Mocho 2**	**1/9/24**	**ZONE7**	**16.5**	**861**	**7.4**	**67**	**39**	**48**	**1.9**	**285**	**58**	**109**	**0.81**	**23.5**	**540**	**< 1**	**< 100**	**4.2**	**491**	**328**	**37**	**5**	**30**
3S1E09M003	Supply-Municipal	**Mocho 2**	**4/15/24**	**ZONE7**	**17.3**	**846**	**7.3**	**72**	**36**	**49**	**1.7**	**291**	**60**	**101**	**0.6**	**20.1**	**470**	**< 1**	**< 100**	**4.6**	**486**	**328**	**40**	**5**	**30**
3S1E09M003	Supply-Municipal	**Mocho 2**	**8/12/24**	**ZONE7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**36**	**4.8**	**28**
3S1E09M004	Supply-Municipal	**Mocho 3**	**1/9/24**	**ZONE7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**38**	**4.7**	**26**
3S1E09M004	Supply-Municipal	**Mocho 3**	**4/15/24**	**ZONE7**	**18.6**	**987**	**7.5**	**54**	**37**	**103**	**1.9**	**362**	**76**	**108**	**1.92**	**25.7**	**1080**	**1.2**	**< 100**	**6.3**	**593**	**287**	**40**	**4.3**	**27**
3S1E09M004	Supply-Municipal	**Mocho 3**	**8/12/24**	**ZONE7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**35**	**3.9**	**24**
3S1E09P005	Static-Monitor	N/A	4/1/24	ZONE7	13.8	715	7.1	55	29	54	1.9	229	56	106	0.09	16.3	490	< 1	< 100	2.2	431	256	26	8.3	16
3S1E09P005	**Static-Monitor**	N/A	8/28/24	ZONE7	24.2	761	7.2	60	31	58	2	243	48	103	0.11	18	510	< 1	< 100	< 1	440	278	23	8	17
3S1E09P010	Static-Nested	N/A	4/1/24	ZONE7	17.6	814	7.2	72	39	48	1.7	294	57	109	0.16	19.3	470	< 1	< 100	3.4	492	341	34	5.2	23
3S1E09P010	Static-Nested	N/A	8/28/24	ZONE7	26.7	816	7.3	71	36	48	1.6	289	50	104	0.12	19.9	470	< 1	< 100	1.6	474	325	34	5.6	21
3S1E09P011	Static-Nested	N/A	4/1/24	ZONE7	20.1	1006	7.3	71	64	51	1.8	399	67	122	2.05	23.5	600	< 1	< 100	6.6	606	441	21	3.3	23
3S1E09P011	Static-Nested	N/A	8/28/24	ZONE7	28.4	804	7.3	74	37	51	1.6	290	49	102	0.12	21	490	< 1	< 100	1.9	479	337	35	5.8	21
3S1E10A002	Static-Monitor	N/A	6/25/24	ZONE7	32.5	1985	7.2	89	83	256	2.1	534	137	354	12.7	32.1	2920	< 2	< 200	9	1273	564	160	9	67
3S1E10B008	Static-Nested	N/A	3/19/24	ZONE7	13.9	1285	7.4	73	65	116	1.9	484	75	150	8.51	30	1320	1.9	< 100	5.9	787	450	170	14	82
3S1E10B009	Static-Nested	N/A	3/19/24	ZONE7	13.4	626	7.8	37	29	65	1.5	228	48	63	0.73	21	680	5.5	< 100	3.2	381	210	4.4	< 2	4.3
3S1E10B010	Static-Nested	N/A	3/19/24	ZONE7	17	726	7.5	50	41	47	1.4	287	46	66	3.83	25.7	380	6	213	9.2	436	294	19	< 2	5.9
3S1E10B011	Static-Nested	N/A	3/19/24	ZONE7	18.4	669	7.4	49	37	35	1.7	269	42	57	4.95	27.8	190	< 1	< 100	6.6	404	274	14	< 2	11
3S1E10B014	**Static-Monitor**	N/A	7/31/24	ZONE7	26	679	7.4	48	49	35	1.6	287	40	63	3.42	25.7	270	1.1	< 100	8.4	419	324	-	-	-
3S1E10B016	Supply-Municipal	**COL 5**	**12/13/23**	**ZONE7**	-	**678**	**7.5**	**46**	**44**	**37**	**1.7**	**294**	**42**	**57**	**4.13**	**25.7**	**300**	**1.1**	**224**	**12**	**417**	**296**			
3S1E10B016	Supply-Municipal	**COL 5**	**6/17/24**	**ZONE7**	**19.7**	**656**	**7.6**	**49**	**47**	**36**	**1.7**	**299**	**40**	**52**	**3.56**	**27.8**	**320**	**5.2**	**2570**	**81**	**417**	**316**	**11**	**< 2**	**7.5**
3S1E10D002	Static-Nested	N/A	10/18/23	ZONE7	17.4	1342	7.5	77	71	128	2.1	481	82	151	11	30	1860	1.9	< 100	8.5	827	484	110	14	99
3S1E10D003	Static-Nested	N/A	10/18/23	ZONE7	17.9	994	7.7	66	56	78	2.1	352	60	120	8.84	27.8	750	1.8	< 100	9.9	624	396	48	< 2	27
3S1E10D004	Static-Nested	N/A	10/18/23	ZONE7	20.1	785	7.8	37	26	98	1.4	273	52	78	1.14	27.8	680	3.6	< 100	7.4	461	199	< 2	< 2	< 2
3S1E10D005	Static-Nested	N/A	10/31/23	ZONE7	17.8	575	7.5	39	24	65	1.8	263	38	42	2.32	27.8	310	2.5	< 100	15	378	196	< 2	< 2	< 2
3S1E10D007	Static-Nested	N/A	4/2/24	ZONE7	17.8	1440	7.3	68	77	123	2.1	558	80	160	8.12	25.7	2250	1.8	< 100	13	847	487	< 1.6	38	< 1.6
3S1E10D008	Static-Nested	N/A	4/2/24	ZONE7	17.7	960	7.2	58	58	61	3	397	44	99	1.65	23.5	690	1.9	< 100	2.1	550	384	160	11	110
3S1E10K002	Static-Monitor	N/A	6/26/24	ZONE7	21.7	851	7.4	75	43	48	1.8	312	45	94	2.74	21.4	450	< 1	< 100	5.3	494	364	77	8.8	57
3S1E10K003	Supply-Municipal	**COL 1**	**6/17/24**	**ZONE7**	**18.7**	**932**	**7.4**	**71**	**63**	**46**	**1.9**	**354**	**54**	**113**	**4.54**	**25.7**	**430**	**4.9**	**957**	**54**	**570**	**436**	**49**	**6.5**	**41**
3S1E10N002	Static-Nested	N/A	10/17/23	ZONE7	19.2	900	7.6	52	47	72	2.4	251	66	135	< 0.1	13.9	620	< 1	< 100	2	512	324	41	10	30
3S1E10N003	Static-Nested	N/A	10/17/23	ZONE7	20.7	855	7.7	36	54	66	2.6	280	45	132	< 0.1	14.6	600	< 1	< 100	2	489	312	28	3.4	20
3S1E11C003	Static-Monitor	N/A	6/11/24	ZONE7	21.8	1982	7.4	96	68	244	1.4	592	110	276	6.49	21.4	2780	3.5	< 100	5.5	1138	520	-	-	-
3S1E11C003	Static-Monitor	N/A	7/15/24	ZONE7	25.6	1807	6.1	100	65	209	1.6	617	87	252	1.67	21.4	2950	3.8	< 100	5.7	1047	518	170	11	64

- = Not Analyzed

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TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E11G001	Static-Nested	N/A	4/3/24	ZONE7	16.2	1190	7.2	66	91	65	2.7	486	71	121	10.8	32.1	750	1.4	< 100	7.5	736	540	110	19	110
3S1E11G002	Static-Nested	N/A	4/3/24	ZONE7	17.4	967	7.5	51	58	72	1.9	390	53	105	5.47	23.5	820	< 1	< 100	9.6	581	366	8.7	2.6	6.7
3S1E11G003	Static-Nested	N/A	4/3/24	ZONE7	17.2	616	7.5	41	46	27	1.6	296	40	45	3.11	25.7	250	< 1	< 100	11	386	291	< 2	< 2	< 2
3S1E11G004	Static-Nested	N/A	4/3/24	ZONE7	17.4	946	7.5	53	58	75	2	389	53	105	5.46	23.5	810	< 1	< 100	9.9	585	371	18	2.7	8.5
3S1E11M002	Static-Monitor	N/A	7/31/24	ZONE7	24.9	1042	7.3	61	68	72	2.2	381	58	117	5.24	21.4	820	< 1	< 100	9.1	611	433	-	-	-
3S1E11M003	Supply-Municipal	**COL 2**	**6/17/24**	**ZONE7**	**19.5**	**913**	**7.8**	**58**	**64**	**45**	**1.8**	**356**	**52**	**96**	**4.83**	**25.7**	**360**	**< 1**	**< 100**	**8.9**	**540**	**409**	**22**	**4.2**	**15**
3S1E11P006	Supply-Domestic	N/A	6/26/24	ZONE7	21.5	694	7.5	65	32	41	1.6	241	46	86	0.79	19.5	390	< 1	< 100	3.6	415	293	12	3.6	14
3S1E12A002	Static-Monitor	N/A	4/17/24	LWRP	-	1779	-	66	90	62	2.6	-	61	118	12.8	33	600.	-	-	-	692	-	-	-	-
3S1E12A002	Static-Monitor	N/A	7/15/24	ZONE7	19.6	1163	7	70	89	76	2.8	484	63	111	10.2	34.2	470	3.8	< 100	7	729	542	100	26	30
3S1E12A002	Static-Monitor	N/A	9/11/24	LWRP	-	1272	-	61	83	58	2.5	-	65	117	13.1	35	700.	-	-	-	750	-	-	-	-
3S1E12D002	**Static-Monitor**	N/A	4/17/24	LWRP	-	1565	-	85	84	148	2.1	-	68	93	10.8	35	2000.	-	-	-	919	-	-	-	-
3S1E12D002	**Static-Monitor**	N/A	7/15/24	ZONE7	20.4	1384	7.1	80	74	163	2.2	644	66	116	10.1	34.2	2120	3.6	< 100	30	897	505	120	4.5	48
3S1E12D002	**Static-Monitor**	N/A	9/11/24	LWRP	-	1517	-	68	71	140	1.8	-	72	129	12.1	35	3000.	-	-	-	940	-	-	-	-
3S1E12G001	**Static-Monitor**	N/A	3/27/24	ZONE7	16.6	1070	7.1	55	67	61	2.1	447	61	98	9.1	30	490	1.5	< 100	10	635	413	45	19	12
3S1E12G001	**Static-Monitor**	N/A	4/17/24	LWRP	-	1170	-	63	82	63	2.5	-	53	108	10.3	33	600.	-	-	-	640	-			
3S1E12G001	**Static-Monitor**	N/A	9/11/24	LWRP	-	1138	-	53	70	55	2.4	-	53	102	11.2	32	820.	-	-	-	650	-			
3S1E12H004	Static-Nested	N/A	2/21/24	ZONE7	17	805	7.3	51	63	36	1.6	349	44	67	2.91	27.8	320	1.1	< 100	8.8	475	386	7.2	3.7	4.8
3S1E12H005	Static-Nested	N/A	2/21/24	ZONE7	16.8	639	7.5	45	45	33	1.8	329	37	31	1.98	30	230	1.5	< 100	33	394	297			
3S1E12H006	Static-Nested	N/A	2/21/24	ZONE7	15.9	651	7.7	44	47	34	2.2	328	38	33	2.26	36.4	250	5.3	1600	21	407	304	< 2	< 2	< 2
3S1E12K002	Static-Nested	N/A	3/26/24	ZONE7	14.7	605	7.3	35	37	32	1.1	217	42	64	1.65	23.5	200	< 1	< 100	3.1	349	239	6.6	3.7	2.5
3S1E12K003	Static-Nested	N/A	3/26/24	ZONE7	15.9	607	7.6	35	38	32	1.2	226	40	65	1.16	21.4	210	< 1	< 100	< 1	350	243	6.4	3.7	2.5
3S1E12K004	Static-Nested	N/A	3/26/24	ZONE7	16.8	297	7.8	15	13	29	1	137	7	21	0.57	14.8	110	< 1	< 100	< 1	171	91	< 2	< 2	< 2
3S1E13P005	Static-Nested	N/A	8/6/24	ZONE7	19.2	705	7.6	51	27	55	1.6	203	50	98	< 0.1	14.6	350	< 1	< 100	1.6	398	238	4.8	3.4	2.5
3S1E13P006	Static-Nested	N/A	8/6/24	ZONE7	25.5	628	7.6	94	1	33	4.5	200	45	63	0.5	130.5	390	6.2	35900	39	473	238	< 2	< 2	< 2
3S1E14B001	Supply-Industrial	N/A	7/15/24	ZONE7	18.1	768	7.5	82	30	48	1.8	292	40	78	6.79	21.2	420	< 1	< 100	3.6	476	329	6.8	2	7.7
3S1E15M003	**Static-Monitor**	N/A	3/12/24	ZONE7	16.5	746	7.4	53	36	60	1.8	302	54	74	1.83	27.8	480	4.6	239	6.4	464	280	11	5.7	6.6
3S1E16A004	**Static-Monitor**	N/A	3/6/24	ZONE7	15.1	865	7.4	99	35	41	1.7	331	56	98	1.25	23.5	250	< 1	< 100	3.6	523	391	41	5.5	29
3S1E16C002	**Static-Nested**	N/A	3/4/24	ZONE7	13.6	830	7.4	70	33	63	1.8	244	62	111	0.78	21.4	550	< 1	< 100	3.8	486	310	45	4.9	30
3S1E16C003	Static-Nested	N/A	3/4/24	ZONE7	14.7	850	7.3	97	39	51	2.2	234	71	122	1.52	25.7	550	< 1	< 100	5	530	403			
3S1E16C004	Static-Nested	N/A	3/4/24	ZONE7	14.2	872	7.5	90	36	43	1.9	313	61	102	1.86	23.5	310	< 1	< 100	4.2	520	373			
3S1E16E004	Static-Monitor	N/A	1/17/24	ZONE7	14.9	985	7	83	39	63	2.1	365	64	110	1.6	20.8	610	< 1	< 100	4.4	569	368			
3S1E16L005	**Supply-Municipal**	**Pleas 5**	**11/30/23**	**UNKN**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15**	**4.2**	**11**
3S1E16L005	Supply-Municipal	**Pleas 5**	**8/20/24**	**UNKN**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13**	**4.6**	**7.9**
3S1E16L005	Supply-Municipal	**Pleas 5**	**8/29/24**	**UNKN**	**-**	**700**	**7.6**	**62**	**27**	**42**	**< 2**	**-**	**46**	**62**	**1.1**	**-**	**-**	**< 2**	**< 30**	**< 10**	**390**	**270**	**-**	**-**	**-**
3S1E16L007	Supply-Municipal	**Pleas 6**	**10/4/23**	**UNKN**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13**	**3**	**18**

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TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E16L007	Supply-Municipal	**Pleas 6**	**8/20/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**23**	**3.6**	**19**
3S1E16L007	Supply-Municipal	**Pleas 6**	**8/29/24**	**UNKN**	-	**870**	**7.7**	**73**	**34**	**53**	**< 2**	-	**55**	**97**	**1.2**	-	-	**< 2**	**110**	**< 10**	**510**	**330**	-	-	-
3S1E16P005	Static-Monitor	N/A	2/6/24	ZONE7	15	404	7.3	35	19	32	2.4	170	35	34	< 0.1	7.7	180	< 1	< 100	< 1	249	165	21	19	25
3S1E17B004	Supply-Unspecified	N/A	1/10/24	ZONE7	16.5	1323	7.3	102	60	60	1.9	495	73	135	6.56	21.2	730	< 1	< 100	5.1	726	502	9.4	3.7	15
3S1E17D003	Static-Nested	N/A	3/13/24	ZONE7	15.1	1031	7.5	91	58	55	1.9	448	78	91	4.48	19.5	420	4.5	1020	< 2	635	466	3.1	< 2	6
3S1E17D004	Static-Nested	N/A	3/13/24	ZONE7	15.6	1276	8.6	15	4	271	0.7	291	15	276	< 0.1	16.5	2120	7.6	< 100	7	750	53	< 2	< 2	< 2
3S1E17D005	Static-Nested	N/A	3/13/24	ZONE7	17.6	1243	8.9	18	6	257	0.6	274	2	268	< 0.1	12	2050	38	301	6.2	719	70	< 2	< 2	< 2
3S1E17D006	Static-Nested	N/A	3/13/24	ZONE7	17.7	1407	8.8	10	4	293	0.9	220	< 1	346	< 0.1	16.9	1400	3.8	< 100	< 1	789	41	< 2	< 2	< 2
3S1E17D007	Static-Nested	N/A	3/18/24	ZONE7	16.4	1293	8.7	10	4	276	1.4	146	< 1	364	< 0.1	2.1	1700	10	< 100	< 1	735	41	< 2	< 2	< 2
3S1E17D011	Static-Monitor	N/A	10/30/23	ZONE7	23.4	1431	8.2	18	4	281	0.8	272	2	306	< 0.1	23.5	2760	12	< 100	5.4	776	61	-	-	-
3S1E17D011	Static-Monitor	N/A	3/18/24	ZONE7	17.4	1267	8.3	19	4	284	0.6	288	< 1	298	< 0.1	23.5	2360	20	234	< 2	775	63	-	-	-
3S1E17D012	Supply-Municipal	**Hopyard 9**	**10/3/23**	**ZONE7**	**17.5**	**903**	**7.5**	**75**	**47**	**63**	**2**	**379**	**51**	**108**	**3.86**	**21.4**	**540**	**1.1**	**< 100**	**5.3**	**572**	**381**	-	-	-
3S1E17D012	Supply-Municipal	**Hopyard 9**	**4/8/24**	**ZONE7**	**17.7**	**896**	**7.5**	**78**	**42**	**57**	**1.8**	**378**	**59**	**83**	**4.18**	**21.4**	**510**	**1**	**< 100**	**6.9**	**548**	**368**	**< 2**	**< 2**	**< 2**
3S1E18A006	Supply-Municipal	**Hopyard 6**	**10/3/23**	**ZONE7**	**17.9**	**1054**	**7.5**	**92**	**59**	**80**	**2**	**448**	**97**	**106**	**3.27**	**25.7**	**550**	**1.3**	**< 100**	**4.2**	**697**	**473**	-	-	-
3S1E18A006	Supply-Municipal	**Hopyard 6**	**1/8/24**	**ZONE7**	**17.3**	**1176**	**7.5**	**99**	**62**	**72**	**2.2**	**517**	**98**	**105**	**3.49**	**23.5**	**700**	**1.2**	**< 100**	**5.2**	**732**	**502**	**< 1.7**	**< 1.7**	**2**
3S1E18A006	Supply-Municipal	**Hopyard 6**	**4/8/24**	**ZONE7**	**18.4**	**1055**	**7.5**	**87**	**49**	**78**	**1.8**	**429**	**94**	**100**	**3.04**	**23.5**	**600**	**1.3**	**< 100**	**5.6**	**660**	**419**	**< 2**	**< 2**	**< 2**
3S1E18A006	Supply-Municipal	**Hopyard 6**	**7/23/24**	**ZONE7**	**18**	**1129**	**7.5**	**88**	**58**	**79**	**2**	**428**	**91**	**92**	**2.49**	**25.7**	**500**	**1.4**	**< 100**	**5.6**	**658**	**459**	-	-	-
3S1E18A006	Supply-Municipal	**Hopyard 6**	**8/12/24**	**ZONE7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**< 2**	**< 2**	**< 2**
3S1E18E004	Static-Monitor	N/A	1/16/24	ZONE7	14.3	751	7.6	63	22	80	0.8	330	69	59	< 0.1	21.4	490	< 1	439	1.4	478	248	-	-	-
3S1E18E004	Static-Monitor	N/A	6/10/24	ZONE7	17.9	756	7.5	62	23	78	0.8	316	67	63	< 0.1	23.5	400	< 1	458	1.3	474	247	< 2	< 2	< 2
3S1E18J002	Static-Monitor	N/A	1/16/24	ZONE7	15.4	3580	7.3	171	267	483	1.4	1310	964	394	< 0.1	27.8	2440	31	< 500	11	2954	1527	-	-	-
3S1E19A010	Supply-Municipal	**SFWD South (E**	**6/13/24**	**UNKN**	-	**1420**	**7.28**	**143**	**70.4**	**58.7**	-	-	**111**	**139**	**2.13**	-	-	**< 2**	**< 100**	**< 10**	**812**	**644**	-	-	-
3S1E19A010	Supply-Municipal	**SFWD South (E**	**8/15/24**	**ZONE7**	**17.5**	**1321**	**7.5**	**124**	**62**	**57**	**2.2**	**548**	**108**	**122**	**1.94**	**19.5**	**410**	**< 1**	**< 100**	**4.3**	**774**	**565**	**2.2**	**< 2**	**3.5**
3S1E19A011	Supply-Municipal	**SFWD North (A**	**6/13/24**	**UNKN**	-	**1270**	**7.32**	**131**	**70.3**	**52.2**	-	-	**93.4**	**118**	**2.72**	-	-	**< 2**	**< 100**	**< 10**	**702**	**570**	-	-	-
3S1E19A011	Supply-Municipal	**SFWD North (A**	**8/15/24**	**ZONE7**	**18.4**	**1226**	**7.5**	**123**	**65**	**56**	**2.7**	**501**	**94**	**113**	**2.37**	**20.8**	**340**	**< 1**	**< 100**	**4.8**	**732**	**575**	**< 2**	**< 2**	**3.7**
3S1E19C004	Static-Monitor	N/A	6/25/24	ZONE7	22	798	7.9	39	54	57	2.5	319	46	99	< 0.1	7.5	390	< 1	< 100	1.2	464	319	4.1	-	4.3
3S1E19K001	Static-Monitor	N/A	1/16/24	ZONE7	14.5	1119	7.3	100	60	102	1.2	651	125	30	0.87	19.3	760	5.8	< 100	< 1	762	497	-	-	-
3S1E20B002	Supply-Unspecified	N/A	10/27/23	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	2.3	20
3S1E20B002	Supply-Unspecified	N/A	11/20/23	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	3	25
3S1E20B002	Supply-Unspecified	N/A	1/16/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	3.6	22
3S1E20B002	Supply-Unspecified	N/A	2/15/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	4.1	28
3S1E20B002	Supply-Unspecified	N/A	3/4/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	3.6	22
3S1E20B002	Supply-Unspecified	N/A	4/1/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	3.3	22
3S1E20B002	Supply-Unspecified	N/A	6/3/24	UNKN	-	-	-	-	-	-	-	-	-	-	3.2	-	-	-	-	-	-	-	9.9	2.5	15
3S1E20B002	Supply-Unspecified	N/A	7/1/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	2.2	11

- = Not Analyzed

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Municipal Wells are Bold

TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1E20B002	Supply-Unspecified	N/A	8/5/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9	< 2	11
3S1E20B002	Supply-Unspecified	N/A	9/3/24	UNKN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	< 2	5.6
3S1E20B002	Supply-Unspecified	N/A	9/16/24	UNKN	-	-	-	79	39	-	-	-	-	-	-	-	-	-	-	-	-	360	-	-	-
3S1E20C007	Static-Monitor	N/A	2/1/24	ZONE7	13.9	657	7	58	33	51	2.1	289	45	54	1.31	18.6	320	< 1	< 100	3.2	410	281	7.5	5.2	15
3S1E20C008	Static-Nested	N/A	2/1/24	ZONE7	14.8	868	7.3	90	46	44	1.9	388	49	73	4.99	21.4	240	< 1	< 100	4.9	539	414	< 2	< 2	< 2
3S1E20J004	Static-Monitor	N/A	2/1/24	ZONE7	16.1	1059	6.8	66	42	133	1.1	434	65	110	4.39	32.1	560	< 1	< 100	3.6	682	338	-	-	-
3S1E20J004	Static-Monitor	N/A	6/10/24	ZONE7	22.4	1073	6.8	61	40	134	1.1	418	69	108	4.63	32.1	600	< 1	< 100	2.8	672	317	13	4.5	8.8
3S1E20M011	Static-Monitor	N/A	6/25/24	ZONE7	28.9	861	7.1	84	41	61	2	373	66	79	2.19	23.5	380	< 1	< 100	2.2	550	379	8.2	6.8	7.7
3S1E20Q002	Static-Monitor	N/A	2/6/24	ZONE7	15.8	1810	7	125	120	171	1.3	1003	109	133	< 0.1	25.7	950	< 1	7720	2.9	1180	806	4.4	< 2	< 2
3S1E20Q002	**Static-Monitor**	N/A	6/10/24	ZONE7	23.2	1858	7.1	118	123	174	2	1078	75	145	< 0.1	20.8	1020	< 1	12900	2.3	1189	802	30	32	28
3S1E22D002	**Static-Monitor**	N/A	10/17/23	ZONE7	22.4	960	6.8	43	40	120	0.9	274	65	132	10.3	44.9	< 100	< 1	< 100	3.9	626	272	-	-	-
3S1E23A005	Static-Nested	N/A	5/13/24	ZONE7	-	872	7.5	58	33	72	2.3	317	57	89	2.23	18	390	< 1	< 100	2.2	495	281	-	-	-
3S1E23A006	Static-Monitor	N/A	5/13/24	ZONE7	-	805	7.8	53	23	81	2.7	313	78	56	2.23	21.2	370	1	< 100	3.7	479	227	-	-	-
3S1E23A007	Static-Monitor	N/A	5/14/24	ZONE7	-	741	8.4	36	24	83	2.2	291	51	62	1.98	23.5	270	< 1	< 100	2.2	434	189	-	-	-
3S1E23J001	Supply-Domestic	N/A	8/28/24	ZONE7	25.2	872	7	52	42	69	1.1	170	13	178	5.17	34.2	110	< 1	< 100	< 1	496	303	-	-	-
3S1E25C003	**Static-Monitor**	N/A	6/17/24	ZONE7	24.6	868	7.3	56	30	79	1.3	252	31	122	3.73	25.7	340	< 1	< 100	2.8	486	264	-	-	-
3S1E28M002	**Supply-Unspecified**	N/A	4/16/24	ZONE7	18.1	1118	7.3	65	40	138	0.5	489	45	95	7.62	23.5	560	1.4	< 100	1.9	682	327	-	-	-
3S1E29M004	**Static-Monitor**	N/A	2/6/24	ZONE7	13.6	543	6.7	38	22	65	2.1	195	68	48	< 0.1	19	330	2.1	2760	1.4	358	186	-	-	-
3S1E29P002	Static-Monitor	N/A	2/6/24	ZONE7	15.9	1257	7.2	92	74	107	1.9	666	4	149	< 0.1	20.8	900	< 1	1050	2.3	777	535	-	-	-
3S1E33G005	**Static-Monitor**	N/A	1/10/24	ZONE7	14.9	1586	6.7	103	73	128	0.5	356	142	278	< 0.1	18.4	390	2.1	221	3.8	918	558	-	-	-
3S1W01J001	**Static-Monitor**	N/A	11/15/23	DSRSD	18.2	2846	7.45	-	-	-	-	-	504	250	< 2	-	-	-	-	-	1930	-	-	-	-
3S1W01J001	Static-Monitor	N/A	4/16/24	DSRSD	20.2	2911	7.91	-	-	-	-	-	511	250	< 2	-	-	-	-	-	1990	-	-	-	-
3S1W01J002	Static-Monitor	N/A	11/15/23	DSRSD	19.9	2947	7.55	-	-	-	-	-	709	152	7.8	-	-	-	-	-	2100	-	-	-	-
3S1W01J002	Static-Monitor	N/A	4/16/24	DSRSD	20.5	2701	8.01	-	-	-	-	-	621	131	12	-	-	-	-	-	1920	-	-	-	-
3S1W02A002	Static-Monitor	N/A	2/7/24	ZONE7	16.3	1592	6.8	220	46	110	0.6	691	91	211	0.12	23.5	380	1.8	< 100	2.9	1043	738	-	-	-
3S1W12A009	Static-Monitor	N/A	11/15/23	DSRSD	17.7	7192	7.2	-	-	-	-	-	145	2390	< 2	-	-	-	-	-	4190	-	-	-	-
3S1W12A009	Static-Monitor	N/A	11/17/23	DSRSD	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2J	-	< 5	-	-	-	-	-
3S1W12A009	Static-Monitor	N/A	4/17/24	DSRSD	23.7	7453	6.98	-	-	-	-	-	149	2460	< 2	-	-	-	-	-	4420	-	-	-	-
3S1W12A009	Static-Monitor	N/A	4/25/24	DSRSD	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	-	< 5	-	-	-	-	-
3S1W12A010	Static-Monitor	N/A	11/15/23	DSRSD	18.9	2063	7.58	-	-	-	-	-	288	193	2.9	-	-	-	-	-	1260	-	-	-	-
3S1W12A010	Static-Monitor	N/A	11/17/23	DSRSD	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5J	-	< 5	-	-	-	-	-
3S1W12A010	Static-Monitor	N/A	4/17/24	DSRSD	22	2617	7.41	-	-	-	-	-	626	132	2.6	-	-	-	-	-	1790	-	-	-	-
3S1W12A010	Static-Monitor	N/A	4/25/24	DSRSD	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	-	< 5	-	-	-	-	-
3S1W12B002	Static-Monitor	N/A	2/7/24	ZONE7	15.3	977	6.7	109	34	66	0.5	299	139	90	2.13	32.1	170	< 1	< 100	2	627	412	-	-	-
3S1W12J001	Static-Monitor	N/A	1/16/24	ZONE7	16.1	1246	7.5	81	27	175	0.8	413	170	145	< 0.1	23.5	630	2.5	< 100	2.6	826	313	-	-	-

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2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S1W13J001	Static-Monitor	N/A	1/16/24	ZONE7	15.5	898	6.9	92	41	46	0.6	312	101	87	3.65	25.7	190	< 1	< 100	2	563	399	-	-	-
3S2E01F002	Static-Monitor	N/A	9/9/24	ZONE7	29.1	1170	7.4	124	35	118	5.4	618	35	84	0.29	38.5	690	1.7	< 100	1.2	746	454	-	-	-
3S2E02B002	Static-Monitor	N/A	9/26/24	ZONE7	25.6	359	6.4	33	6	31	3.9	134	< 1	46	< 0.1	15	< 200	3.8	2730	3.6	201	107	-	-	-
3S2E03A001	Static-Monitor	N/A	7/8/24	ZONE7	22.7	977	7.7	55	30	134	1.1	310	85	135	4.86	38.5	1660	3.2	< 100	23	654	261	-	-	-
3S2E03K003	Static-Monitor	N/A	7/8/24	ZONE7	23.2	1120	7.6	66	43	134	2.1	338	97	143	13.4	30	1370	1.7	< 100	14	742	342	-	-	-
3S2E05N001	Supply-Unspecified	N/A	9/10/24	ZONE7	21.3	1002	7.6	61	61	46	2.1	336	52	93	8.85	30	440	< 1	3810	3.8	550	403	-	-	-
3S2E07C002	Static-Monitor	N/A	3/11/24	ZONE7	14.6	1292	7.2	71	99	77	3.6	522	83	130	12.7	36.4	290	1.3	< 100	11	813	585	110	28	58
3S2E07C002	Static-Monitor	N/A	4/17/24	LWRP	-	1365	-	68	103	66	3.7	-	75	128	12.9	36	600.	-	-	-	760	-	-	-	-
3S2E07C002	**Static-Monitor**	N/A	9/11/24	LWRP	-	1344	-	58	92	60	3.2	-	74	122	13.7	35	740.	-	-	-	810	-	-	-	-
3S2E07H002	**Static-Monitor**	N/A	3/11/24	ZONE7	19	1222	7.1	59	70	125	2.8	430	150	96	12.7	30	540	< 1	< 100	2	801	435	< 2	< 2	< 2
3S2E07N002	Static-Monitor	N/A	3/26/24	ZONE7	13.3	510	7.4	30	30	30	1.2	186	37	50	1.34	23.5	180	< 1	< 100	2.3	299	199	6.8	4.1	< 2
3S2E07P003	**Supply-Municipal**	**CWS 24**	**6/27/24**	**UNKN**	-	-	-	-	-	-	-	-	**18**	-	**3.3**	-	-	-	-	-	-	-	-	-	-
3S2E08F001	Supply-Municipal	**CWS 10**	**7/18/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**	**5.5**	**8.2**
3S2E08H002	Static-Monitor	N/A	3/11/24	ZONE7	19.6	1686	7	64	125	121	0.9	550	133	233	12	32.1	280	1.2	< 100	7.4	1033	675	44	12	17
3S2E08H003	Static-Nested	N/A	9/18/24	ZONE7	20.8	1083	7.4	67	70	72	4.2	362	66	142	9.08	25.7	420	< 1	< 100	4.3	6660	455	-	-	-
3S2E08H004	Static-Nested	N/A	9/18/24	ZONE7	22.1	1007	7.6	46	43	127	2.1	353	35	139	4.83	27.8	690	6.9	< 200	6.3	616	292	-	-	-
3S2E08K002	Static-Monitor	N/A	6/26/24	ZONE7	25.1	1045	7.4	59	80	62	2	365	75	113	8.49	32.1	450	< 1	< 100	5.2	641	476	22	24	7.8
3S2E08N002	Supply-Municipal	**CWS 14**	**6/11/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	**< 2**	**< 30**	**< 10**	-	-	-	-	-
3S2E08N002	Supply-Municipal	**CWS 14**	**6/18/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	**< 2**	**< 30**	**< 10**	-	-	-	-	-
3S2E08N002	Supply-Municipal	**CWS 14**	**7/25/24**	**UNKN**	-	**820**	-	**42**	**50**	**36**	**< 2**	-	**50**	**75**	**3.6**	-	-	**< 2**	**< 30**	**< 10**	**490**	**310**	-	-	-
3S2E08Q009	Static-Monitor	N/A	7/31/24	ZONE7	26.6	895	7.4	50	69	45	2.2	329	55	90	4.6	23.5	310	< 1	< 100	4.8	518	410	12	8.8	4.7
3S2E09Q001	Supply-Municipal	**CWS 9**	**5/15/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	**1.7**	-	**11.3**	-	-	-	-	-
3S2E09Q001	Supply-Municipal	**CWS 9**	**7/24/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	**5.9**	-	-	-	-	-	-	-	**14**	**3.6**	**11**
3S2E09Q001	Supply-Municipal	**CWS 9**	**7/25/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**13**	**3.2**	**9**
3S2E09Q004	**Static-Monitor**	N/A	5/6/24	ZONE7	17.2	1210	7.4	46	89	82	1.3	395	97	149	7.54	36.4	920	< 1	< 100	6	729	482	-	-	-
3S2E09Q004	Static-Monitor	N/A	5/29/24	ZONE7	18.2	1218	7.3	45	90	85	1.4	402	96	156	7.89	36.4	600	< 1	< 100	5.2	743	483	11	10	3.5
3S2E10F003	Static-Monitor	N/A	5/7/24	ZONE7	16.5	1574	7.1	86	113	116	1.5	579	99	225	8.05	32.1	1310	1.3	< 100	5.8	994	680	-	-	-
3S2E10F003	Static-Monitor	N/A	5/29/24	ZONE7	27.8	684	7.1	63	28	78	4.5	251	33	83	2.04	30	690	1.1	< 100	4	452	274	22	< 20	< 20
3S2E10Q001	Static-Monitor	N/A	5/6/24	ZONE7	18.6	1562	7.1	73	109	117	1.2	513	116	213	14.1	34.2	1540	< 1	< 100	4.6	979	631	-	-	-
3S2E10Q001	Static-Monitor	N/A	5/29/24	ZONE7	18.3	1524	7.1	72	106	116	1.4	507	111	209	13.21	34.2	1490	< 1	< 100	4.2	958	617	23	7.9	3.7
3S2E10Q002	**Static-Monitor**	N/A	3/12/24	ZONE7	-	707	7.9	51	34	56	1.6	219	52	81	6.46	27.8	680	1.3	< 100	8.9	441	267	-	-	-
3S2E11C001	**Static-Monitor**	N/A	5/7/24	ZONE7	18.4	625	7.3	69	10	83	2.5	240	45	53	2.84	30	370	5.3	256	40	424	216	-	-	-
3S2E11C001	**Static-Monitor**	N/A	5/29/24	ZONE7	19.7	968	7.5	86	34	102	2.5	414	42	113	3.89	32.1	310	< 1	< 100	6.1	633	355	< 2	< 2	< 2
3S2E12C004	**Static-Monitor**	N/A	3/12/24	ZONE7	-	1323	7.7	73	24	190	1.6	319	106	220	2.06	38.5	2570	1.9	< 100	22	821	281	-	-	-
3S2E12J003	**Static-Monitor**	N/A	3/12/24	ZONE7	-	703	8.1	45	14	78	2.9	67	68	144	0.32	25.7	300	1.9	< 100	3.2	413	170	-	-	-

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SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
3S2E14A003	**Static-Monitor**	N/A	9/18/24	ZONE7	22.1	1132	7.2	117	46	80	2.6	518	32	90	15.7	30	510	< 1	< 100	6.8	722	481	-	-	-
3S2E14B001	**Supply-Domestic**	N/A	9/18/24	ZONE7	20.3	985	7.6	80	41	82	2	359	45	115	9.35	27.8	650	< 1	< 100	9.2	612	369	-	-	-
3S2E15L001	Static-Monitor	N/A	9/5/24	UNKN	21.4	-	7.2	52	110	73	1.6	400	130	150	11	-	-	-	-	-	-	560	-	-	-
3S2E15L002	Static-Monitor	N/A	9/5/24	UNKN	22.1	-	7.14	51	110	75	1.5	410	130	150	10	-	-	-	-	-	-	560	-	-	-
3S2E15M002	Static-Monitor	N/A	9/5/24	UNKN	22	-	7.1	72	84	36	2.4	360	88	120	13	-	-	-	-	-	-	530	-	-	-
3S2E15M003	Static-Monitor	N/A	9/5/24	UNKN	20	-	7.33	61	99	61	1.8	440	100	130	7.7	-	-	-	-	-	-	560	-	-	-
3S2E15Q008	Static-Monitor	N/A	9/5/24	UNKN	22.6	-	7.18	59	100	62	1.7	440	130	130	7	-	-	-	-	-	-	580	-	-	-
3S2E15R017	Static-Nested	N/A	5/7/24	ZONE7	19.8	1011	7.6	41	85	43	1.9	372	70	100	10.3	27.8	630	1.1	< 100	8.4	598	452	-	-	-
3S2E15R017	Static-Nested	N/A	5/28/24	ZONE7	24.1	1008	7.5	43	83	45	1.7	376	70	110	4.64	30	500	1.1	< 100	8.2	589	449	< 2	< 2	< 2
3S2E15R018	**Static-Nested**	N/A	5/7/24	ZONE7	19.7	662	7.6	46	45	33	1.6	309	43	44	0.93	27.8	250	1	< 100	< 1	397	300	-	-	-
3S2E15R018	Static-Nested	N/A	5/29/24	ZONE7	25.3	642	7.7	49	44	32	1.6	302	42	42	0.87	30	170	< 1	< 100	< 1	394	304	< 2	< 2	< 2
3S2E15R020	Static-Monitor	N/A	9/5/24	UNKN	21.4	-	7.13	47	91	72	1.7	410	82	140	6.8	-	-	-	-	-	-	490	-	-	-
3S2E16A003	Supply-Irrigation	N/A	5/6/24	ZONE7	18.5	1127	7.7	50	93	51	1.5	386	91	122	9.41	30	470	< 1	< 100	4	671	508	-	-	-
3S2E16A003	Supply-Irrigation	N/A	5/29/24	ZONE7	22.1	1093	7.6	54	98	56	1.6	387	89	129	9.55	30	340	< 1	< 100	4.4	691	539	7.8	4.9	6.4
3S2E16C001	Supply-Municipal	**CWS 15**	**10/23/23**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**180**	-	-	-	**< 2**	**< 2**	**< 2**
3S2E16C001	Supply-Municipal	**CWS 15**	**12/11/23**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**< 2**	**< 2**	**< 2**
3S2E16E004	**Static-Monitor**	N/A	5/7/24	ZONE7	17.3	656	7.1	30	43	49	2.1	268	47	62	1.83	18.8	310	< 1	< 100	2.4	392	252	-	-	-
3S2E16E004	Static-Monitor	N/A	5/28/24	ZONE7	15.8	670	7.1	27	47	48	2.1	276	47	64	2.09	18.8	320	< 1	< 100	2.1	399	261	2.9	< 2	< 2
3S2E18B001	Supply-Municipal	**CWS 20**	**10/31/23**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**2.9**	**3.1**
3S2E18B001	Supply-Municipal	**CWS 20**	**1/31/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.8**	**3.2**	**2.5**
3S2E18B001	Supply-Municipal	**CWS 20**	**4/4/24**	**UNKN**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2.7**	**2.9**	**2.8**
3S2E18B001	Supply-Municipal	**CWS 20**	**5/15/24**	**UNKN**	-	-	-	**29**	**30**	**48**	**1.6**	-	-	-	-	-	**126**	-	**< 20**	-	-	-	-	-	-
3S2E18B001	Supply-Municipal	**CWS 20**	**7/18/24**	**UNKN**	-	-	-	-	-	-	-	-	**24**	-	**6.8**	-	-	-	-	-	-	-	**3.1**	**3.3**	**3.5**
3S2E18E001	Static-Monitor	N/A	2/20/24	ZONE7	12.1	527	7.4	35	34	25	1.7	226	36	36	2.15	25.7	200	< 1	< 100	3.3	315	227	-	-	-
3S2E19D007	Static-Nested	N/A	3/25/24	ZONE7	14.8	1284	7.2	124	71	43	2.3	402	39	243	4.86	25.7	< 100	< 1	< 100	5.5	768	602	< 2	< 2	< 2
3S2E19D008	Static-Nested	N/A	3/25/24	ZONE7	14	1264	7.3	121	70	43	2.3	394	39	237	4.92	25.7	< 100	< 1	< 100	5.5	754	590	< 2	< 2	< 2
3S2E19D009	Static-Nested	N/A	3/25/24	ZONE7	15.3	412	7.5	43	11	28	1.1	164	8	38	7.52	25.7	< 200	5.2	< 200	5.6	269	152	< 2	< 2	< 2
3S2E19D010	Static-Nested	N/A	3/25/24	ZONE7	15.2	777	7.2	70	32	49	1.6	232	35	110	8.57	27.8	< 100	< 1	< 100	1	478	307	9.2	12	4.5
3S2E19N003	Static-Nested	N/A	8/6/24	ZONE7	26.4	525	7.6	38	20	51	1.5	252	23	37	0.22	25.7	200	1.8	< 100	< 1	323	177	-	-	-
3S2E19N004	Static-Nested	N/A	8/6/24	ZONE7	29.7	599	7.9	25	13	96	1.4	245	19	60	< 0.1	15.6	280	37	< 100	1.1	353	114	-	-	-
3S2E21K009	Supply-Domestic	N/A	4/17/24	ZONE7	19.1	1272	7.6	55	59	99	2.1	192	12	298	5.43	25.7	110	1.3	< 100	3.8	670	380	-	-	-
3S2E21N001	Supply-Irrigation	N/A	4/17/24	ZONE7	20	802	7.9	46	37	71	1.4	304	49	81	0.08	23.5	340	< 1	< 100	1.6	460	267	-	-	-
3S2E22B001	Static-Monitor	N/A	5/6/24	ZONE7	19.9	1524	7.3	78	130	84	1.6	553	211	174	2.66	32.1	470	< 1	< 100	2.8	995	730	-	-	-
3S2E22B001	Static-Monitor	N/A	5/28/24	ZONE7	24.6	1566	7.3	83	129	88	1.6	573	201	172	0.41	32.1	300	< 1	< 100	2.4	991	738	< 2	< 2	< 2
3S2E23E001	Static-Nested	N/A	5/6/24	ZONE7	20.6	880	7.5	39	66	50	1.8	366	46	71	9.66	23.5	450	< 1	< 100	3.4	521	369	-	-	-

- = Not Analyzed

Highlighted = Representative Monitoring Site

Municipal Wells are Bold

TABLE E-1
GROUNDWATER WELL QUALITY RESULTS FOR SELECT METALS, MINERALS AND PFAS
2024 WATER YEAR

SITE ID	Well Type	Municipal Well Name	DATE	By	TEMP °C	EC umhos/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS mg/L	Hard mg/L	PFAS (ng/L)		
								Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr			PFOS	PFOA	PFHxS
3S2E23E001	Static-Nested	N/A	5/28/24	ZONE7	24.7	924	7.3	44	67	54	5.6	490	46	70	< 0.1	21.4	440	4.2	< 200	28	550	386	2.2	< 2	< 2
4S3E06E004	Supply-Domestic	N/A	4/16/24	ZONE7	17.7	1656	7.9	35	62	211	5.1	468	64	285	2.9	18	2630	2.2	< 100	4.9	925	342	-	-	-

- = Not Analyzed
Highlighted = Representative Monitoring Site
Municipal Wells are Bold

Table E-2
SURFACE WATER QUALITY RESULTS
2024 WATER YEAR

SITE ID	Date	Time	FLOW (cfs)	TEMP. °C	SC mS/cm	pH	Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS mg/L	Hard mg/L
							Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr		
ADVP	12/19/2023	13:37	9.3	NA	174	7.2	13	7	10	2.4	51	10	20	0.57	3	< 100	< 1	< 100	< 1	93	61
ADVP	4/4/2024	14:22	18.3	15.3	405	7.8	31	20	25	1.9	170	32	26	< 0.1	3.2	150	1.1	< 100	< 1	223	159
ADVP	6/27/2024	16:11	0.8	24.9	463	8.1	33	22	40	2	180	42	38	< 0.1	2.1	260	1.7	< 100	7.4	269	173
AM_KB	12/19/2023	13:20	2.3	NA	157	7.6	10	7	13	2.4	61	8	12	0.37	3.9	< 100	< 1	< 100	< 1	88	54
AMNL	4/11/2024	16:56	0.3	21.1	688	8	36	67	30	2.3	367	79	26	< 0.1	8.6	370	1.1	< 100	< 1	438	366
AVNL	12/19/2023	14:10	1.7*	NA	455	7.9	40	24	29	2.5	202	52	24	< 0.1	13.5	340	1.7	< 100	< 1	286	199
AVNL	4/4/2024	15:35	8.2*	14	405	8	24	16	36	2	124	51	40	0.18	7.5	250	1.4	< 100	< 1	240	126
AVNL	6/27/2024	16:59	12.7*	17.3	379	8.2	36	20	21	1.9	176	44	12	0.18	11.3	160	1.5	< 100	7.4	236	172

* Daily mean flow

TABLE E-3
MINING POND WATER QUALITY RESULTS FOR SELECT METALS AND MINERALS
2024 WATER YEAR

			TEMP	EC		Mineral Constituents (mg/L)									Select Metals (ug/L)				TDS	Hard	PFAS (ng/L)		
SITE ID	DATE	By	°C	umhos/cm	pH	Ca	Mg	Na	K	HCO3	SO4	Cl	NO3N	SiO2	B	As	Fe	Cr	mg/L	mg/L	PFOS	PFOA	PFHxS
MA-C001	4/24/24	ZONE7	20.4	1257	8.9	45	72	119	3	271	96	245	< 0.1	0.4	590	2.7	< 100	3	727	408	-	-	-
MA-K015	4/24/24	ZONE7	21.4	636	8.8	36	30	59	3.4	214	65	74	< 0.1	2.4	360	2.3	< 100	1.2	385	214	2.6	4.2	2
MA-K018	4/30/24	ZONE7	22.2	427	8.7	34	21	30	1.7	179	40	31	< 0.1	3	200	1.5	4.9	< 1	255	171	-	-	-
MA-K028	4/24/24	ZONE7	18.8	964	8.6	35	60	90	2.5	334	74	127	0.31	14.3	840	3.1	< 100	2.5	578	334	50	9.8	40
MA-K030	4/24/24	ZONE7	19.8	655	8.7	39	41	43	2.6	241	50	76	< 0.1	6.9	330	3.1	< 100	1.5	386	266	6.8	5.2	6.9
MA-K037	4/24/24	ZONE7	19.8	820	8.9	32	52	63	2.6	260	62	109	< 0.1	3.4	580	3.9	< 100	1.8	467	294	49	6.8	29
MA-P012	4/30/24	ZONE7	19.8	433	8.6	35	20	30	1.7	188	42	33	< 0.1	4.9	200	1.5	< 100	< 1	265	169	-	-	-
MA-P028	4/30/24	ZONE7	20.7	484	8.7	37	23	35	2	192	50	40	< 0.1	7.3	240	1.2	< 100	< 1	293	187	-	-	-
MA-P041	4/30/24	ZONE7	22.8	462	9	32	23	36	1.9	166	50	42	< 0.1	6.9	240	1.3	< 100	< 1	286	175	-	-	-
MA-P042	4/30/24	ZONE7	21.6	600	8.2	51	25	51	1.4	230	46	63	0.1	16.3	290	< 1	< 100	1.1	368	230	-	-	-
MA-P044	4/30/24	ZONE7	20.4	653	8.7	43	26	58	2.1	189	55	88	< 0.1	9.6	380	1.4	< 100	1.7	379	214	-	-	-
MA-P046	4/30/24	ZONE7	23.2	740	8.4	53	31	59	2.5	250	57	93	0.49	11.6	420	< 1	< 100	1.7	436	260	-	-	-
MA-R003	4/24/24	ZONE7	19.2	544	8.5	27	32	38	2.2	190	35	74	< 0.1	0.6	250	1.9	< 100	1.2	304	199	6.8	4.2	5.6
MA-R004	4/24/24	ZONE7	19.7	639	8.5	43	36	41	2.3	226	47	74	0.23	11.8	300	1.2	< 100	2.1	373	255	12	3.9	4.8
MA-R022	4/24/24	ZONE7	20.3	632	8.7	39	39	40	1.7	224	46	79	0.35	11.8	280	1.5	< 100	2.4	377	258	5.3	4.4	4.8
MA-R023	4/24/24	ZONE7	19.6	637	8.6	41	38	40	2	218	46	78	0.26	10.5	280	1.5	< 100	2.1	370	258	5.3	4.3	5
MA-R024A	4/24/24	ZONE7	19.5	662	8.5	46	37	39	2.1	242	45	73	0.78	15.8	280	< 1	< 100	2.8	386	267	11	6.2	6.8

TABLE E-4
MAIN BASIN SALT LOADING
2024 WATER YEAR

INFLOW COMPONENTS	SURFACE WATER			RECHARGED WATER			SALT LOAD
	Volume Applied (AF)	TDS Conc (mg/L)	% Recharged	Volume Recharged (AF)	TDS Conc (mg/L)	Salt Load (Tons)	(Tons per TAF of Rch)
NATURAL STREAM RECHARGE	**49,304**	**346**	**11%**	**5,244**	**346**	**2,469**	**470**
Arroyo Valle	**41,354**	**241**	**10%**	**3,992**	**241**	**1,310**	**330**
Arroyo Mocho	3,127	438	20%	**633**	**438**	**377**	**600**
Arroyo Las Positas	4,822	930	13%	**619**	**930**	**782**	**1,260**
ARROYO VALLE PRIOR RIGHTS	**28,182**	**150**	**3%**	**843**	**150**	**172**	**200**
ARTIFICIAL STREAM RECHARGE	**11,187**	**157**	**70%**	**7,812**	**157**	**1,666**	**210**
Arroyo Valle	5,313	150	44%	**2,361**	**150**	**481**	**200**
Arroyo Mocho	5,874	160	93%	**5,451**	**160**	**1,185**	**220**
Arroyo Las Positas	0	160	0%	**0**	**160**	**0**	**0**
INJECTION WELL RECHARGE	**-**	**-**	**-**	**0**	**0**	**0**	**0**
RAINFALL RECHARGE	**24,174**	**0**	**25%**	**5,998**	**0**	**0**	**0**
LAKE RECHARGE	-	-	-	*5,401*	*386*	*2,832*	*520*
LEAKAGE	**-**	**-**	**-**	**1,365**	**500**	**927**	**680**
APPLIED WATER RECHARGE	**15,619**	**282**	**16%**	**2,536**	**1,734**	**5,974**	**2,360**
Urban - Municipal	11,753	246	14%	1,662	1,737	3,921	2,360
Urban - Recycled Water	600	629	20%	120	3,145	513	4,280
Agricultural - Municipal (SBA)	2,323	204	27%	616	769	644	1,050
Agricultural - Groundwater	681	574	13%	86	4,567	531	6,200
Golf Courses - Groundwater	0	363	0%	0	0	0	0
Golf Courses - Recycled Water	262	1,026	20%	52	5,140	365	6,980
SUBSURFACE BASIN INFLOW				**1,000**	**1,570**	**2,133**	**2,130**
TOTAL INFLOW				**24,798**	**396**	**13,341**	**540**

OUTFLOW COMPONENTS		WATER EXTRACTED			SALT REMOVED
		Volume Removed (AF)	TDS Conc (mg/L)	Salt Removed (Tons)	(Tons/TAF of Export)
MUNICIPAL PUMPAGE		**6,268**	**496**	**4,225**	**670**
Zone 7 Wells - Hop, Stone, COL		**1,507**	**599**	**1,226**	**810**
Zone 7 Wells - Mocho		**1,485**	**523**	**1,056**	**710**
Demin Salts Exported from Valley	*(subset of Zone 7 - Mocho)*	*151*	*2,148*	*442*	*2,920*
Other		**3,276**	**437**	**1,943**	**590**
AGRICULTURAL PUMPAGE (all salt is reapplied)		**836**	**574**	**652**	**780**
MINING USE		**3,837**	**70**	**362**	**90**
Stream Export		0	381	0	0
	Discharge to Cope	*6,112*	*386*	*3,205*	*520*
Evaporation		3,137	0	0	0
Processing Losses		700	381	362	520
GROUNDWATER BASIN OVERFLOW		**13**	**640**	**11**	**850**
TOTAL OUTFLOW		**10,954**	**353**	**5,250**	**480**

NET IN 2024 WY	**13,845**	**430**	**8,091**	