



DRAFT Technical Memorandum

To: Brian Villalobos/Geosciences Support Services, Inc.
Jeff Ford/Castaic Lake Water Agency

From: John Porcello /GSI Water Solutions, Inc.
Jeff Barry/GSI Water Solutions, Inc.

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Subject: Development of Groundwater Budget Terms for the Santa Clara River Valley
East Subbasin Salt and Nutrient and Management Plan (Santa Clarita Valley, CA)

1.0 Introduction

This memorandum presents the results of groundwater modeling work conducted by GSI Water Solutions, Inc. (GSI), to develop monthly and annual groundwater budgets for use in a Salt and Nutrient Management Plan (SNMP) that is being prepared by the Castaic Lake Water Agency (CLWA) and its retail water purveyors¹. The SNMP is being prepared for the Santa Clara River Valley East Subbasin, which is groundwater subbasin number 4-4.07 as defined by the California Department of Water Resources (DWR). The groundwater budget was developed using the local water purveyors' numerical model of the local groundwater basin (a model that is herein referred to as the "Purveyor" model). GSI's work was performed under contract to Geosciences Support Services, Inc. (GSSI), which is under contract to CLWA to develop the SNMP. This memorandum constitutes GSI's documentation of the groundwater budget modeling work, in accordance with the scope of work contained in the May 19, 2014 subcontract agreement between GSI and GSSI.

The Purveyor model is a multi-layered finite-element numerical model that simulates groundwater flow in the entire aquifer system in the East Subbasin, including the rates and variations in flow, groundwater recharge, groundwater discharge, and the amount of groundwater in storage. Figure 1 shows the area simulated by the model, superimposed on a geologic map of the valley's groundwater basin and adjoining areas. Figure 2 shows the model's layering and its relationship to the two principal aquifer

¹ The retail water purveyors are the Newhall County Water District (NCWD), the Santa Clarita Water Division (SCWD) of CLWA, Valencia Water Company (VWC), and Los Angeles County Waterworks District 36 (LACWWD36).

systems in the valley – the surficial Alluvial Aquifer and the underlying Saugus Formation. A description of the Purveyor model is contained in Appendix A. The original effort to develop and calibrate the model is described by CH2M HILL (2004). Subsequent refinements and updates to the model are presented in CH2M HILL (2005), GSI and LSCE (2013), and Appendix A of this technical memorandum.

The remainder of this technical memorandum presents the following topics:

- The general process that was used to develop the groundwater budget terms, including key data sources (Section 2)
- The hydrogeology of the Santa Clarita Valley (Section 3)
- The water supplies for the valley, and the local operating plan that governs the rates and year-to-year variability in local groundwater pumping (Section 4)
- The development of the primary input terms for the model simulation (Section 5)
- Highlights of the groundwater budget (Section 6)
- A list of references cited in this technical memorandum (Section 7)
- Appendices:
 - o A description of the groundwater flow model (Appendix A)
 - o Background information on the effect of year to year variations in the availability of imported water supplies on local groundwater pumping patterns (Appendix B)
 - o Background information on the physical setting and hydrogeology of the Santa Clarita Valley (Appendix C)
 - o Groundwater budget terms for the entire Alluvial Aquifer, each of its 6 SNMP management zones, and the aquifer system as a whole (presented annually in Appendix D, and monthly in Appendix E)

2.0 General Process for Groundwater Budget Development

The general process of developing the water budget consisted of simulating a future time period of anticipated hydrologic, land use, and groundwater pumping conditions, and running the model on a monthly basis to develop inflow and outflow terms for direct use in the salt balance calculations being conducted by GSSI. Monthly and annual groundwater budget terms were compiled for the entire aquifer system; for five localized management subareas in the surficial Alluvial Aquifer (SNMP Management Zones 1 through 5); and for the deep aquifer system that resides in the Saugus Formation (SNMP Management Zone 6). See Figure 3 for the locations of each SNMP management zone.

The processes for developing the groundwater budget were reviewed with the Los Angeles Regional Water Quality Control Board (LARWQCB) and were approved by the

LARWQCB in an email to CLWA dated July 21, 2014. Specific work activities for developing the groundwater budget terms were as follows:

- **Identifying a hydrologic time period to simulate.** Based on inspection of rainfall records, CLWA and the consulting team selected a 24-year period for running the model. This time period is for the years 2012 through 2035.
- **Developing time-varying pumping terms.** Year-to-year pumping volumes were developed from work conducted in support of previous hydrogeologic studies (particularly LSCE and GSI [2009], and GSI and LSCE [2014]) and previous water supply planning activities (including the 2010 Urban Water Management Plan [UWMP] prepared by KJC and others [2011]). As discussed in Section 4 and Appendix B of this technical memorandum, pumping from the Alluvial Aquifer system is based on a general set of rainfall-related rules, while pumping from the Saugus Formation is based on the availability of imported water supplies.
- **Developing land use details, including changes in land uses.** The groundwater model allows for specification of differences in the annual volumes of deep percolation of water that is used for irrigation or other outdoor purposes. The model distinguishes between the deep percolation rates for residential developments; commercial/industrial/retail land uses; schools, parks, and recreational facilities; and golf courses. Septic systems are also included in the model simulation in areas that are served by public water supplies but not served by sanitary sewers.
- **Developing time-varying recharge terms.** Recharge from rainfall and streams was based on projecting the historical variations in these recharge mechanisms (from 1980 through 2003) to the future simulation period (2012 through 2035). Recharge from irrigation was defined from existing land uses and from adjustments to land uses that account for the expected changes in land use patterns that are projected to occur between 2012 and 2035.
- **Conducting monthly simulations and post-processing activities.** The model was run with monthly time steps for the entire period 2012 through 2035. Post-processing was then conducted to generate water budget terms for the entire aquifer system and all six of the management zones of interest.

3.0 Santa Clarita Valley Hydrogeology

Detailed descriptions of the hydrogeologic setting of the Santa Clarita Valley are provided by CH2M HILL (2004) and in Appendix C of this report. The Santa Clara River Valley East Subbasin lies within the relatively flat-lying Santa Clarita Valley and portions of the surrounding hills and mountains. Figure 1 shows a geologic map of the groundwater basin and its surroundings. The groundwater basin is underlain and laterally bounded by non-water-bearing bedrock units that are Miocene, Oligocene, and pre-Tertiary in geologic age. The Saugus Formation, which is of Pliocene and Pleistocene age, overlies these rocks within much of the local groundwater basin, except where the Saugus Formation is absent at the far western and eastern ends of the basin

and in the upper reaches of some of the canyons. In these areas, the bedrock units are overlain by unconsolidated alluvium of Quaternary geologic age.

Developable quantities of groundwater are present in the alluvium and in portions of the Saugus Formation. Key attributes of the local aquifer system are as follows.

- The Alluvial Aquifer is present in the alluvial valley occupied by the Santa Clara River and also in alluvium that lies in each tributary. Recharge to the alluvium occurs from rainfall and storm-induced streamflow, primarily in the eastern half of the valley and primarily during years of above-average rainfall. Groundwater discharge from the Alluvial Aquifer occurs from pumping and from multiple natural processes (discharge to the river, evapotranspiration, and a minor amount of subsurface outflow) that occur in the Santa Clara River alluvial valley at the west end of the basin. Groundwater supply development from this unconfined aquifer has occurred primarily along the Santa Clara River and Castaic Creek, and also in the lower reaches of Bouquet Canyon and San Francisquito Canyon.
- Saugus Formation groundwater is present under unconfined conditions in the shallowest water-bearing zones where the Alluvial Aquifer is absent, and under semi-confined and confined conditions elsewhere. Groundwater in the Saugus Formation is recharged by two principal sources: (1) infiltration of precipitation in the exposed portions of the Saugus Formation in the highlands surrounding the valley, and (2) seepage from the Alluvial Aquifer along the Santa Clara River and its tributaries, particularly in the central portion of the Santa Clarita Valley (including along the South Fork of the Santa Clara River). The Saugus Formation contains lenticular and interfingering beds of poorly to well-consolidated sandstone, conglomerate, and siltstone that are at least 7,500 feet thick in the deepest part of the basin. RCS (1988 and 2002) found that the groundwater-yielding capability of the Saugus Formation is likely limited north and east of the San Gabriel Fault compared with areas lying south and west of the fault (where all Saugus groundwater development has occurred to date). Groundwater discharge from the Saugus Formation occurs as (1) groundwater pumping and (2) natural discharge into the Alluvial Aquifer at the west end of the valley (west of Interstate 5 [I-5]). Groundwater development in the Saugus Formation has been limited to the area south and west of the San Gabriel Fault.

4.0 Santa Clarita Valley Water Supplies and Local Groundwater Pumping Plan

This section discusses the local pumping plan for the Alluvial Aquifer and the Saugus Formation. The pumping plan is referred to as the Groundwater Operating Plan by CLWA and the local retail water purveyors. Pumping in accordance with this plan has a large effect on the overall water budget in the basin, and therefore is integral to the development of the SNMP. The Groundwater Operating Plan for the basin is designed to provide reliable groundwater supplies during years of reduced availability of

imported water supplies, while providing a minimal base supply during years when imported supplies are not significantly curtailed. As discussed in the 2010 UWMP (KJC and others, 2011), CLWA and the local retail water purveyors have secured multiple different water supplies that are available for importation into the valley as needed. These include State Water Project (SWP) water, transfers from water agencies outside the valley, and groundwater banking programs in other parts of the state. Although the purveyors have access to multiple sources of imported water, the majority of this water is provided by the SWP, which experiences year-to-year fluctuations in the amount of water that it can deliver.

Accordingly, the purveyors have designed the Groundwater Operating Plan for the local groundwater basin to account for fluctuations in local rainfall and fluctuations in the availability of SWP water. The Groundwater Operating Plan is designed to maximize the use of Alluvial Aquifer water supplies and imported water during years of normal rainfall and normal SWP water availability, while limiting the use of the Saugus Formation during these periods and then temporarily increasing groundwater pumping from the Saugus Formation during years when SWP supplies are significantly reduced. Details regarding SWP water availability and its relationship to the groundwater pumping strategy incorporated into the Groundwater Operating Plan and the UWMP are provided in Appendix B. As shown in Table 1, the Groundwater Operating Plan for the local groundwater basin is as follows:

- Pumping from the Alluvial Aquifer ranges between 30,000 and 40,000 acre-feet per year (afy) during years of normal and above-normal rainfall within the Santa Clarita Valley. However, because of operational constraints in the eastern part of the basin, pumping from the Alluvial Aquifer is reduced in that area during locally dry years, resulting in basin-wide Alluvial Aquifer pumping volumes of between 30,000 and 35,000 afy during locally dry years. These rates reflect current demands and the purveyors' collective experience operating wells in the Alluvial Aquifer.
- Pumping from the Saugus Formation ranges between 7,500 and 15,000 afy during average-year to wet-year conditions within the SWP system. Planned dry-year pumping from the Saugus Formation ranges between 15,000 and 25,000 afy during the first year of significant curtailments in SWP allocations. Saugus pumping increases to between 21,000 and 25,000 afy if SWP allocations are reduced for two consecutive years, and ranges between 21,000 and 35,000 afy if SWP allocations are reduced for three or more consecutive years.

As discussed in Section 6 and Appendix B, the two-part strategy of (1) maximizing the use of Saugus Formation wells only during extended periods of reduced SWP water availability and (2) maximizing the use of Alluvial Aquifer wells during all other years is viable on a long-term basis and does not create unsustainable conditions in the local groundwater basin. This finding supports the historical and ongoing confidence that groundwater pumping can continue to be a sustainable source of water supply under the Groundwater Operating Plan (and thereby under the 2010 UWMP).

5.0 Development of Primary Model Input Terms

Following are discussions of the simulation time period and its relationship to historical hydrology (Section 5.1); the definition of pumping (Section 5.2); the land uses programmed into the model for the years 2012 through 2035 (Section 5.3); the time-varying recharge rates for the 24-year simulation (Section 5.4); and the model simulation process (Section 5.5).

5.1 Simulation Time Period and Relationship to Historical Hydrology

The future hydrologic conditions for the 24-year period from 2012 through 2035 were simulated using the historically observed rainfall conditions that occurred in the Santa Clarita Valley from 1980 through 2003. This period included years of normal rainfall, above-normal rainfall, and multi-year drought periods (see Figures 4 and 5 and Table 2). Average precipitation for this period is 18.13 inches, which is identical to the long-term average precipitation for the period of record (18.13 inches from 1931 through 2011; see Figures 4 and 5).

5.2 Variations in Pumping from the Alluvial Aquifer and Saugus Formation

The cycles of groundwater pumping from both local aquifer systems during the period 2012 through 2035 are displayed in Table 3 and were based on the following:

- For the Alluvial Aquifer, pumping was defined from the occurrence of dry years versus normal/above-normal years, as defined by rainfall data from the Newhall-Soledad rain gage (Station No. FC32CE). Dry-year pumping was used when the annual rainfall in the prior year was 12.5 inches or less at this rain gage.
- For the Saugus Formation, pumping was defined by the availability of imported water supplies (primarily from the SWP). In general, increased Saugus pumping is modeled for years when SWP deliveries could be 40% or less of the “Table A” annual volume that is available to CLWA during years of no SWP curtailments.

Annual production volumes for each purveyor-owned well are identified in the most recent (2014) version of the Groundwater Operating Plan (LSCE and GSI, 2009) using recent and planned production schedules for each well; information on the depths and lengths of the intake sections (open intervals) of each well; and a pumping strategy that is designed to minimize the potential for spreading of a perchlorate plume that is present in a localized portion of the Saugus Formation (GSI and LSCE, 2014). The well-specific production volumes are listed in Table 4 for the Alluvial Aquifer and in Table 5 for the Saugus Formation.

The monthly variations in pumping for irrigation wells and purveyor-owned municipal water supply wells are shown in Table 6.² The percentages of annual use that occur in any given month are different for irrigation wells than for municipal wells because the

² Irrigation wells are VWC's well V160, LACWWD36's well 19, and the Robinson Ranch well, which each provide water exclusively to golf courses; and certain wells owned by the Newhall Land & Farming Company, which provide agricultural irrigation water. All other wells simulated in the model are used for municipal supply purposes.

irrigation wells provide water exclusively for golf courses and irrigated agriculture, whereas municipal wells provide water that is used both indoors (for potable uses at rates that vary only minimally from month to month) and outdoors (for landscape irrigation and other urban/suburban uses).

5.3 Current and Future Land Uses

Categories of land use were defined from geographic information system (GIS) coverages obtained from the following sources: (1) the Southern California Association of Governments (SCAG) 2008 land use survey; (2) the One Valley One Vision (OVOV) land use planning process; and (3) the Newhall Ranch planned community.

Construction of Newhall Ranch is currently scheduled to begin in 2016, with full build-out anticipated to be complete by the year 2035. Full build-out in the remainder of the Santa Clarita Valley is anticipated to occur by the year 2050. Table 7 shows the modified 2008 SCAG land use categories in acres, the OVOV acreages for each land use category at full build-out, and the change in land use per year in each of the 6 areas that comprise the SNMP management zones.

5.4 Time-Varying Recharge Rates

The Purveyor model simulates recharge to the water table from irrigation (on urban and agricultural lands), septic systems, and precipitation, as well as recharge that occurs as stormwater and direct discharges into the Santa Clara River from water reclamation plants (WRPs). The recharge that arises from these local hydrologic processes was defined using a pre-processing tool called the Surface Water Routing Model (SWRM), which was developed in Microsoft Visual Basic at the same time that the regional model was developed.³ Besides defining these recharge terms and their monthly variation, the SWRM also tracks stormwater flows, WRP discharges to the Santa Clara River, and the amount of rejected recharge that is calculated by the groundwater model. The procedures used to quantitatively derive the time-varying values of these processes for the SNMP groundwater budget were the same as those described in the model development report (CH2M HILL, 2004) and used in recent modeling studies (LSCE and GSI, 2009; GSI and LSCE, 2014) that are the basis for the design of the Groundwater Operating Plan. Details regarding these processes are described in the following sections.

5.4.1 Recharge from Urban Irrigation and Septic Systems

The estimated long-term infiltration rates of applied irrigation water beneath urban areas are estimated to be 1.0 inches per year (in/yr) for industrial and retail lands, 2.2 in/yr for residential developments, 3.4 in/yr for parks and recreation centers, and 4.6 in/yr for golf courses. These rates were applied during each year (and each month) of the 24-year simulation period.

Recharge from septic systems was defined for residential developments that are served by public water supplies, but not sanitary storm sewers. In these developments, the

³ See Appendix C of the model development and calibration report (CH2M HILL, 2004) for details of the SWRM's design, construction, and usage.

onsite treatment of wastewater (via septic systems) represents an importation of water with subsequent recharge to groundwater from the septic systems. The locations of these areas were obtained by coupling census tract maps developed by Los Angeles County (using data from the 2010 census; see Los Angeles County, 2010) with sewer infrastructure information provided by the City of Santa Clarita, Los Angeles County Sanitation District, and the Los Angeles Department of Public Works. Personal communications by GSSI with these agencies determined that areas beyond the sewered system were likely to be on a septic system. The rates of septic system discharges were defined from a U.S. Geological Survey (USGS) study (USGS, 2003) and from Bouwer (1978), which estimates that residential and commercial land use septic systems seep as much as 70 gallons per day (gal/day) per capita (GCD) and 1,000 gal/day per acre, respectively. Two other studies (Systech, 2002; and the 2010 UWMP [KJC and others, 2011]) estimate household septic uses to occur at rates of 75 gal/day per capita and 77 gal/day per capita, respectively. Based upon a population of approximately 29,343 living in unsewered areas (as determined from the census data for areas outside sewered areas), and based on an average 74 gal/day per capita of flow into septic systems⁴, the recharge from septic systems was estimated to be 2,432 afy. Although some of the areas contributing this volume of recharge do not lie directly over the aquifer, they are in close proximity. Consequently, in order to account for their potential to load salt into the groundwater system, this volume of recharge was distributed over the nearest model grid nodes where septic systems were present, so that the full volume of 2,432 afy would be loaded to the aquifer. The corresponding rates of recharge at aquifer nodes where this loading was specified in the model are listed by census tract in Table 8.

5.4.2 Recharge from Agricultural Irrigation

As discussed by CH2M HILL (2002 and 2004), a portion of the irrigation water applied to agricultural lands owned by the Newhall Land & Farming Company (NLF) seeps downward past the root zone and recharges the underlying Alluvial Aquifer. The source of agricultural irrigation water is groundwater pumping from the Alluvial Aquifer. Under full valley build-out conditions, the currently irrigated lands no longer will be irrigated because their water source will be used as part of the water supply for the planned Newhall Ranch development.

5.4.3 Precipitation Recharge

Infiltration from direct precipitation within the model domain was defined using data from the Newhall-Soledad and NCWD rain gages, an isohyet map of rainfall throughout the watershed, and a power-function equation developed by Turner (1986) that (as shown in Figure 6) describes the relationship between annual rainfall and annual groundwater recharge within the valley. Details concerning the derivation of precipitation infiltration rates from these data are contained in Appendix C to the model development and calibration report (CH2M HILL, 2004). Table 9 lists the

⁴ This is the average of 70 gpd/person (USGS, 2003), 75 gpd/person (Systech, 2002), and 77 gpd/person (KJC and others, 2011).

simulated monthly precipitation at the NCWD rain gage for the 24-year simulation period⁵.

5.4.4 Stormwater Flows and Recharge from Streams

For each month of the simulation, the SWRM calculated the amounts of stormwater flow and groundwater recharge in all streams, plus the amount of flow and groundwater recharge arising from projected future WRP discharges to the Santa Clara River (including from the future Newhall WRP, which will service the planned Newhall Ranch development). For the Santa Clara River, the volume of streamflow into the local groundwater basin area was defined from measured and estimated streamflow data at the Lang stream gage (Table 10). For Castaic Creek, the volume of streamflow was defined from historical California Department of Water Resources operations of releases of water from Castaic Lake, and through consideration of the corresponding hydrologic year type (Table 11). For the remaining Santa Clara River tributaries, streamflow volumes were defined by the SWRM using monthly rainfall data and the Turner (1986) method that quantifies the relationship between rainfall and the subsequent yield of water from each watershed.

5.4.5 WRP Discharges to the Santa Clara River

Treated water is currently discharged to the Santa Clara River from two WRPs that are present in the Santa Clara Valley. The Saugus WRP discharges to the river immediately above the mouth of the South Fork Santa Clara River, and the Valencia WRP discharges to the river just west of Interstate 5. The planned Newhall WRP will discharge to the river just east of the Los Angeles/Ventura County line for limited durations during the winter months. The discharges from these three WRPs will continue to occur predominantly in reaches of the Santa Clara River that are perennial (i.e., are flowing year-round). Accordingly, little of this water recharges the aquifer, though some limited recharge may occur from the river between the furthest upstream WRP (the Saugus WRP) and Interstate 5.

Under full valley build-out conditions, future flows into and from WRPs will be higher than historical flows because of increased development and the associated increases in (1) indoor water use volumes and (2) accordant wastewater flows into WRPs. Additionally, a portion of the future treated water will be reclaimed, as described in CLWA's recycled water master plan (KJC, 2002). As was done in prior modeling analyses of the Groundwater Operating Plan (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009; GSI and LSCE, 2014), future inflows to the Saugus and Valencia WRPs were estimated from projected future water demands and from comparisons of historical water use and measured inflows to both WRPs. Table 12 shows the derivation of urban water demands outside the Newhall Ranch development (which will be served by the future Newhall WRP). Table 13 shows the total amount of treated water generated by the Saugus and Valencia WRPs, and the amount of this water that is reclaimed and discharged to the river, by month. The values in Table 13 assume that the reclaimed

⁵ The simulated monthly precipitation was defined from measurements at the NCWD rain gage from 1979 through 2011, as well as by combining the isohyet map with measurements at the Newhall-Soledad rain gage from before 1979.

water volume will be no more than 16,000 afy, to maintain existing flow volumes in the Santa Clara River. For the Newhall Ranch WRP, discharges to the river will be 286 afy, occurring primarily in December and January, when demands for reclaimed water are at their seasonal low. The total combined volumes of treated water discharged to the Santa Clara River under full build-out conditions in the Santa Clarita Valley (including Newhall Ranch) are summarized by month in Table 14.

5.4.6 Monthly Assignment and Tracking of Surface Water Budget

The month-by-month assignment of the rates and locations of surface water infiltration to the underlying Alluvial Aquifer was performed by the SWRM using the procedures described in Section C.8.5 of Appendix C to the model development and calibration report (CH2M HILL, 2004). Streambed infiltration capacities for the 24-year simulation period (calendar years 2012 through 2035) were the same as those used in the calibrated model for the 24-year period 1980 through 2003.

For each month of the 24-year simulation period, the SWRM also tracked the volume of surface water that does not infiltrate to groundwater (i.e., rejected stream leakage). This rejected stream leakage occurs in the perennial reach of the Santa Clara River, which extends from near Round Mountain downstream to the Los Angeles/Ventura County Line. Rejected stream leakage also occurs periodically in ephemeral reaches when the groundwater table rises to the streambed following large rainfall and streamflow events. The amount of rejected stream leakage in any given month is calculated to remain as surface water in the Santa Clara River and eventually to exit the groundwater basin at the west end of the valley, at the County Line.

5.5 Model Simulation Process

As discussed in previous sections, the modeling evaluations were performed by simulating conditions on a monthly basis for the 24-year simulation period. The first step in this process consisted of running the SWRM to calculate the monthly distribution of recharge to the Alluvial Aquifer system (from rainfall, streamflow, irrigation, septic systems, and WRP discharges), and the monthly distribution of recharge to the Saugus Formation (from rainfall, irrigation, and septic systems) in areas where the Alluvial Aquifer is not present. The output from the SWRM consisted of monthly files that assigned recharge to each node in the 37,823-node model grid.

The model then was run using monthly time steps, in which pumping and recharge terms were varied each month. For each month, the model was run by solving the groundwater flow equations using a convergence criterion of 0.005 foot for groundwater elevations and a water budget convergence criterion of 2 cubic feet per day. For post-processing purposes, monthly groundwater budget terms were calculated and output to time-flux files across the entire model area, for the Alluvial Aquifer as a whole, for the Saugus Formation as a whole, and for each of the 6 individual SNMP management zones. The post-processing work included developing utilities that checked that individual components of the water budget were summed correctly, compared with the direct model results for larger systems. Specifically, the separate

analyses for SNMP Management Zones 1 through 5 were summed and compared with the analysis for the entire Alluvial Aquifer; and the separate analyses for the Alluvial Aquifer and for SNMP Management Zone 6 (the Saugus Formation) were summed and compared with the analysis for the entire aquifer system.

6.0 Results

Annual and monthly groundwater budget details are presented in a series of tables contained in Appendixes D and E, respectively. The tables include water budget details for each of the 6 SNMP management zones. Each table presents the individual components of recharge and discharge, as well as the total recharge and total discharge calculated by the model. Time-series plots of annual groundwater inflows (recharge) and outflows (discharge) are presented for the valley's aquifer systems as a whole in Figures 7 and 8, respectively. These figures show that total recharge to groundwater is highly variable from one year to the next, while total groundwater discharge is less so. Because significant changes in recharge can occur from year to year, the amount of groundwater in storage varies from year to year, as shown in Figure 9.

Each table in Appendixes D and E also shows the change in groundwater storage reported by the model (in green font) and the amount of model error, which is calculated as:

$$\text{Error} = \text{Modeled Total Recharge} - \text{Modeled Total Discharge} - \text{Modeled Change in Storage}$$

Each table also shows the cumulative change in the amount of stored groundwater as time progresses from the beginning of the model simulation. This cumulative change in storage is plotted in Figure 10, which shows that there is no long-term reduction in groundwater storage that would indicate an overdraft condition. During the 2012–2035 period, there are more years that showed groundwater level declines than groundwater level rises, and accordingly a small reduction in groundwater storage occurred; however, this appears to be strongly related to year-to-year variations in precipitation. The lack of a sustained decline in the groundwater storage volume is consistent with the year-to-year groundwater level trends seen across the basin during the past several decades. Over the long term, the water level monitoring network maintained by the purveyors has not shown a downward trend in groundwater levels, which is also consistent with modeling results for anticipated land use changes in the valley through 2035.

7.0 References

Bouwer, Herman. 1978. *Groundwater Hydrology*. New York, McGraw-Hill.

CH2M HILL. 2002. *Newhall Ranch Updated Water Resources Impact Evaluation*. Prepared for the Newhall Ranch Company. November 2002.

CH2M HILL. 2004. *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Santa Clarita Water Division of CLWA, Newhall County Water District, and Valencia Water Company). April 2004.

CH2M HILL. 2005. *Calibration Update of the Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, California*. Technical Memorandum prepared for The Santa Clarita Valley Water Purveyors. August 2005.

CH2M HILL and LSCE. 2005. *Analysis of Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County California*. Prepared for The Upper Basin Water Purveyors (Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water Company) by CH2M HILL and Luhdorff and Scalmanini Consulting Engineers (LSCE). August 2005.

GSI and LSCE. 2013. *Calibration Update of the Purveyors' Regional Groundwater Flow Model through 2011 (Santa Clarita Valley, California)*. Draft Technical Memorandum to Keith Abercrombie, Valencia Water Company, and Jim Leserman, Castaic Lake Water Agency. Prepared by GSI Water Solutions (GSI) and Luhdorff and Scalmanini Consulting Engineers (LSCE). December 16, 2013.

GSI and LSCE. 2014. *Draft Report: Perchlorate Containment Plan for Well V201 and Saugus Formation Groundwater in the Santa Clarita Valley (Task 3 of the Well V201 Restoration Program)*. Prepared for Valencia Water Company. Prepared by GSI Water Solutions (GSI) and Luhdorff and Scalmanini Consulting Engineers (LSCE). March 2014.

Impact Sciences, Inc. 2001. *Newhall Ranch Draft Additional Analysis*. Prepared for the Newhall Ranch Company. April 2001.

KJC. 2002. *Draft Report: Recycled Water Master Plan*. Prepared for Castaic Lake Water Agency (CLWA) by Kennedy/Jenks Consultants (KJC). May 2002.

KJC, N. Clemm, LSCE, and Stacy Miller Public Affairs. 2011. *2010 Urban Water Management Plan*. Prepared for Castaic Lake Water Agency (CLWA), CLWA Santa Clarita Water Division, Newhall County Water District, Valencia Water Company, and Los Angeles County Waterworks District No. 36 by Kennedy/Jenks Consultants (KJC), Nancy Clemm, Luhdorff & Scalmanini Consulting Engineers (LSCE), and Stacy Miller Public Affairs. June 2011.

Los Angeles County. 2010. *2010 Census – Census Tract Reference Map: Los Angeles County, CA*. Maps created by Geography Division. Map numbers 205006037007 and 205006037008. December 1, 2010.

LSCE. 2005. *2004 Santa Clarita Valley Water Report*. Prepared for Castaic Lake Water Agency (CLWA), Los Angeles County Waterworks District No. 36, Newhall County Water District, and Valencia Water Company by Luhdorff and Scalmanini Consulting Engineers (LSCE). May 2005.

LSCE and GSI. 2009. *Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin*. Prepared for the Santa Clarita Valley Municipal Water Purveyors by Luhdorff and Scalmanini Consulting Engineers (LSCE) and GSI Water Solutions (GSI). August 2009.

RCS. 1988. *Hydrogeologic Assessment of the Saugus Formation in the Santa Clarita Valley of Los Angeles County, California*. February 1988. Richard C. Slade and Associates, LLC (RCS).

RCS. 2002. *2001 Update Report: Hydrogeologic Conditions in the Alluvial and Saugus Formation Aquifer Systems*. Prepared for Santa Clarita Valley Water Purveyors by Richard C. Slade and Associates, LLC (RCS). July 2002.

Systech, 2002. *Final Task 1 Report For the Santa Clara Nutrient TMDL Analysis, Source Identification and Characterization*.

Turner, K.M. 1986. *Water Loss from Forest and Range Lands in California*. In *Proceedings of the Chaparral Ecosystems Research Meetings and Field Conference, Santa Barbara, California, May 16-17, 1986*, J. Devries (Editor). Water Resources Center, Report 62, University of California, Davis, California, pp. 63-66.

United States Geological Survey (USGS). 2003. *Evaluation of Source and Transport of High Nitrate Concentrations in Groundwater, Warren Subbasin, California*. Water-Resources Investigations Report 03-4009.

TABLES

Table 1

Annual Basin-Wide Pumping Volumes under the Groundwater Operating Plan

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Local Hydrology^a	Alluvial Aquifer Pumping (afy)	SWP Hydrology^b	Saugus Formation Pumping (afy)
Normal	30,000 to 40,000	Normal	7,500 to 15,000
Dry Year 1	30,000 to 35,000	Drought Year 1	15,000 to 25,000
Dry Year 2	30,000 to 35,000	Drought Year 2	21,000 to 25,000
Dry Year 3	30,000 to 35,000	Drought Year 3	21,000 to 35,000

^a Defined by rainfall data at rain gage located at the Newhall County Water District (NCWD) office.

^b Defined by water year, using the California Department of Water Resources (DWR) Sacramento Valley Unimpaired Runoff Index. Wet = wettest, Critical = driest.

SWP = State Water Project

afy = acre-feet per year

Table 2

Local Hydrology and the Groundwater Operating Plan for the Alluvial Aquifer (1980-2011)

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan

(Santa Clara Valley, California)

Year	Local Rainfall (inches) ^a	Departure (inches) from 1931-2011 Average	Year Type for Alluvial Pumping	Alluvial Aquifer Pumping under the Groundwater Operating Plan (afy)
1980	27.00	8.87	Normal	30,000-40,000
1981	13.42	-4.71	Normal	30,000-40,000
1982	20.20	2.07	Dry Year 1	30,000-35,000
1983	39.07	20.94	Normal	30,000-40,000
1984	12.86	-5.27	Normal	30,000-40,000
1985	8.37	-9.76	Dry Year 1	30,000-35,000
1986	18.02	-0.11	Dry Year 2	30,000-35,000
1987	14.45	-3.68	Normal	30,000-40,000
1988	16.92	-1.21	Dry Year 1	30,000-35,000
1989	7.56	-10.57	Dry Year 2	30,000-35,000
1990	6.98	-11.15	Dry Year 3	30,000-35,000
1991	17.21	-0.92	Dry Year 4	30,000-35,000
1992	32.03	13.90	Dry Year 5	30,000-35,000
1993	32.72	14.59	Normal	30,000-40,000
1994	10.27	-7.86	Normal	30,000-40,000
1995	29.15	11.02	Dry Year 1	30,000-35,000
1996	15.88	-2.25	Normal	30,000-40,000
1997	13.35	-4.78	Normal	30,000-40,000
1998	30.73	12.60	Normal	30,000-40,000
1999	8.96	-9.17	Normal	30,000-40,000
2000	14.04	-4.09	Normal	30,000-40,000
2001	22.24	4.11	Dry Year 1	30,000-35,000
2002	7.90	-10.23	Dry Year 2	30,000-35,000
2003	15.70	-2.43	Dry Year 3	30,000-35,000
2004	22.79	4.66	Dry Year 4	30,000-35,000
2005	37.15	19.02	Normal	30,000-40,000
2006	13.89	-4.24	Normal	30,000-40,000
2007	5.78	-12.35	Dry Year 1	30,000-35,000
2008	18.21	0.08	Normal	30,000-40,000
2009	11.59	-6.54	Dry Year 1	30,000-35,000
2010	24.32	6.19	Normal	30,000-40,000
2011	16.03	-2.10	Normal	30,000-40,000

^aFrom records at Newhall-Soledad rain gage (Station No. FC32CE).

Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.

afy = acre-feet per year

Table 3

Alluvial and Saugus Formation Pumping Patterns for the Simulation of 1980-2035 Local and SWP Conditions

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Historic Year	Future Year	Local Rainfall (inches) ^a	SWP Allocations ^b			Simulated Pumping Conditions		Simulated Pumping Rates (afy)	
			2007 Conditions	2011 Conditions	2013 Future Conditions	Alluvium	Saugus	Alluvium	Saugus
1980	2012	27.00	66%	72%	92%	Normal	Normal	38,600	12,814
1981	2013	13.42	76%	63%	39%	Normal	Normal	38,600	12,814
1982	2014	20.20	71%	73%	100%	Dry Year 1	Normal	36,600	12,814
1983	2015	39.07	60%	70%	100%	Normal	Normal	38,600	12,814
1984	2016	12.86	78%	76%	79%	Normal	Normal	38,600	12,814
1985	2017	8.37	77%	71%	71%	Dry Year 1	Normal	36,600	12,814
1986	2018	18.02	56%	72%	76%	Dry Year 2	Normal	35,000	12,814
1987	2019	14.45	68%	49%	15%	Normal	Dry Year 1	38,600	19,125
1988	2020	16.92	12%	19%	26%	Dry Year 1	Dry Year 2	36,600	25,227
1989	2021	7.56	76%	62%	56%	Dry Year 2	Dry Year 1	35,000	34,977
1990	2022	6.98	9%	25%	15%	Dry Year 3	Dry Year 2	35,000	34,977
1991	2023	17.21	18%	33%	18%	Dry Year 4	Dry Year 3	35,000	34,977
1992	2024	32.03	26%	24%	21%	Dry Year 5	Dry Year 4	35,000	34,977
1993	2025	32.72	90%	66%	68%	Normal	Normal	38,600	12,814
1994	2026	10.27	51%	59%	35%	Normal	Dry Year 1	38,600	19,125
1995	2027	29.15	72%	71%	87%	Dry Year 1	Normal	36,600	12,814
1996	2028	15.88	83%	79%	73%	Normal	Normal	38,600	12,814
1997	2029	13.35	75%	77%	83%	Normal	Normal	38,600	12,814
1998	2030	30.73	73%	78%	88%	Normal	Normal	38,600	12,814
1999	2031	8.96	83%	79%	69%	Normal	Normal	38,600	12,814
2000	2032	14.04	84%	67%	65%	Normal	Normal	38,600	12,814
2001	2033	22.24	28%	35%	22%	Dry Year 1	Dry Year 1	36,600	19,125
2002	2034	7.90	52%	62%	59%	Dry Year 2	Normal	35,000	12,814
2003	2035	15.70	71%	70%	57%	Dry Year 3	Normal	35,000	12,814

^a From records at Newhall-Soledad rain gage (Station No. FC32CE). Pumping year type lags local rainfall by 1 year. Dry-year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue for one year after a high-rainfall year has occurred.

^b Table A delivery values are from Table B.3 in DWR (2008) for 2007 conditions; Table 9 in DWR (2012) for 2011 conditions; and pages 47 and 103 in DWR (2014) for 2013 Future Conditions.

DWR = California Department of Water Resources

SWP = California State Water Project

afy = acre-feet per year

Pumping Rates Simulated for Individual Alluvial Aquifer Wells under the Groundwater Operating Plan
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).
Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company NCWD = Newhall County Water District
SCWD = Santa Clarita Division of Castaic Lake Water Agency VWC = Valencia Water Company
WHR = Wayside Honor Rancho, whose wells are owned by the Los Angeles County Waterworks District No. 36

"Other Alluvial Usage" consists of pumping by NLF, WHR, and Robinson Ranch.
An additional 500 afy of pumping by other private well owners is not included in this table.

Table 5

Annual Groundwater Production Volumes (Acre-Feet) for Individual Saugus Formation Water Supply Wells under the Revised Groundwater Operating Plan
 Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Owner	Well Name	Year Type for State Water Project Allocation			
		Normal Years	Curtailment Year 1	Curtailment Year 2	Curtailment Year 3+
NCWD	NC12	1,765	2,494	2,494	2,494
	NC13	1,765	2,494	2,494	2,494
Total Pumping (NCWD Wells)		3,530	4,988	4,988	4,988
CLWA	Saugus 1	1,772	1,772	1,772	1,772
	Saugus 2	1,772	1,772	1,772	1,772
Total Pumping (CLWA Wells)		3,544	3,544	3,544	3,544
LACWWD36	LACWWD36-19	500	500	500	500
Total Pumping (LACWWD36)		500	500	500	500
VWC	V159	50	50	50	50
	V160 (Municipal)	0	0	0	0
	V160 (Val. Ctry Club)	500	500	500	500
	V201	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777
	V205	366	2,184	4,355	4,355
	V206 and V207*	547	3,582	3,757	6,905
Total Pumping (VWC Wells)		4,690 to 5,240	9,543 to 10,093	11,889 to 12,439	15,037 to 15,587
CLWA	Future Wells	0	0	3,756	10,358
Total Pumping (Future Wells)		0	0	3,756	10,358
Total Pumping (All Saugus Water Supply Wells)		12,264 to 12,814	18,575 to 19,125	24,677 to 25,227	34,427 to 34,977

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).

Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company

CLWA = Castaic Lake Water Agency

LACWWD36 = Los Angeles County Waterworks District #36

NCWD = Newhall County Water District

VWC = Valencia Water Company

* Wells V206, V207, and the three future CLWA wells together will comprise the Magic Mountain wellfield.

Accordingly, the distribution of pumping between these various wells may differ from the values shown in this table.

Table 6

Allocation of Pumping by Month for Private Agricultural Wells and Purveyor-Owned Municipal Production Wells
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan (Santa Clara Valley, California)

Month	Percent of Annual Water Use, Agricultural Wells	Percent of Annual Water Use, Municipal Supply Wells	Percent of May through October Water Use, Municipal Supply Wells
January	3.75	5.2	
February	5.1	3.7	
March	6.6	5.2	
April	9.1	6.6	
May	10.55	8.7	13.2
June	11.4	10.4	15.8
July	14.1	13	19.7
August	12.95	13.6	20.6
September	10.2	10.9	16.6
October	7.5	9.3	14.1
November	5	7.1	
December	3.75	6.3	
Total	100	100	100

Table 7
Estimation of Land Use Changes Using SCAG 2008 and OVOV Land Use Information
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

SCAG 2008 Land Use (acres)															
SNMP Management Zone	Ag	Parks/ Golf Courses	Commercial	Industrial	Industrial - Open Space	Public Facilities	Residential - High density	Residential - Low Density	Residential - Medium Density	Open Space	Non-Irrigated Ag	Commercial Recreation	Unclassified	Impervious	Water Surface
Zone 1: Santa Clara -Mint Canyon	71	404	833	603	220	918	2,153	2,372		38,878	487	68	409	18	
Zone 2: Placerita Canyon		5	190	12	72	65	43	200		2,671	23		4		
Zone 3: South Fork	14	254	450	418	229	377	1,388	58	8	13,363	49	5	40	78	
Zone 4: SC-Bouquet/SF Canyon	270	272	498	706	30	1,333	1,585	571		59,265	456	162	154	65	136
Zone 5: Castaic Valley	684	156	97	531	616	2,113	571	402		27,600	84	3	114	21	527
Zone 6: Saugus Formation	143	378	704	714	1,526	1,182	4,031	758		22,871	171	79	421	26	

SCAG Categories Combined to Match OVOV Categories (acres)						
SNMP Management Zone	Ag/Parks/G C	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon	476	2,574	4,525	39,842	18	0
Zone 2: Placerita Canyon	5	339	243	2,698	0	0
Zone 3: South Fork	269	1,472	1,453	13,457	78	0
Zone 4: SC-Bouquet/SF Canyon	542	2,567	2,156	60,037	65	136
Zone 5: Castaic Valley	840	3,357	973	27,801	21	527
Zone 6: Saugus Formation	521	4,127	4,789	23,543	26	0
Total	2,653	14,437	14,140	167,377	208	663

OVOV Land Use (acres)						
SNMP Management Zone	Ag/Parks/G C	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon		2,535	10,457	33,204	2,943	123
Zone 2: Placerita Canyon		144	449	2,722	34	
Zone 3: South Fork		1,244	2,789	10,500	2,924	
Zone 4: SC-Bouquet/SF Canyon		2,436	3,689	62,941	213	275
Zone 5: Castaic Valley		2,957	16,783	18,183	786	200
Zone 6: Saugus Formation		6,068	18,853	11,390	294	7
Total	0	15,383	53,020	138,940	7,193	605

Change Per Year to Full Build-Out (acres)						
SNMP Management Zone	Ag/Parks/G C	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon	11	1	-141	158	-70	-3
Zone 2: Placerita Canyon	0	5	-5	-1	-1	0
Zone 3: South Fork	6	5	-32	70	-68	0
Zone 4: SC-Bouquet/SF Canyon	13	3	-36	-69	-4	-3
Zone 5: Castaic Valley	6	10	-376	229	-18	8
Zone 6: Saugus Formation	12	-46	-335	289	-6	0

Table 8
Derivation of Recharge Rates from Septic Systems to Groundwater
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Cenus Tract Number	Location	Population	Septic Contribution Assuming 70 GDC* (afy)	Septic Contribution Assuming 75 GDC** (afy)	Septic Contribution Assuming 77 GDC*** (afy)	Average Septic Contribution (afy)	Area Overlying Aquifer System (acres)	Fraction of Census Tract Overlying Aquifer System	Average Septic Contribution to Aquifers (afy)	Average Septic Contribution to Aquifers (feet/yr)	Average Septic Contribution to Aquifers (inches/yr)
9108.07 (1/3)	East of Sand Canyon Rd. and Highway 14	1829	143	154	158	152	NOT IN MODEL				
9108.08 (1/2)	Mint Canyon	1,768	139	149	153	147	383	100%	223	0.58	7.00
9108.09	Iron Canyon South of Santa Clara River	2,235	175	188	193	185	1,430	100%	282	0.20	2.37
9108.1 (1/2)	Tick Canyon	1,382	108	116	119	115	NOT IN MODEL				
9200.26	Bouquet Canyon	419	33	35	36	35	123	100%	53	0.43	5.16
9200.32 (1/3)	Bouquet Canyon	1,448	114	122	125	120	90	100%	183	2.03	24.42
9200.33	Bouquet Canyon	515	40	43	44	43	NOT IN MODEL				
9200.34 (1/2)	North of Nadal Street	1,814	142	152	156	150	NOT IN MODEL				
9200.40 (1/2)	West of Sand Canyon Rd. and Highway 14	1,676	131	141	145	139	NOT IN MODEL				
9200.43 (1/2)	Placerita Canyon	2,855	224	240	246	237	NOT IN MODEL				
9201.02 (1/4)	Upper San Fransiquito Creek and Vicinity	1,417	111	119	122	117	31	100%	179	5.81	69.68
9201.04	Hasley Canyon	2,798	219	235	241	232	848	100%	353	0.42	5.00
9201.06	Val Verde	3,110	244	261	268	258	511	100%	393	0.77	9.21
9203.12 (1/2)	Newhall Creek	2,634	207	221	227	218	284	100%	332	1.17	14.04
9203.32	East of Railroad and Dockweiler Drive	2,897	227	243	250	240	481	100%	366	0.76	9.11
9302.00	Whitney Canyon Rd.	546	43	46	47	45	259	100%	69	0.27	3.19
TOTAL		29,343	2,301	2,465	2,531	2,432	4,440		2,432	0.55	6.57

* Source: Bouwer (1978) and USGS (2003)

GDC = gallons per day per capita yr = year afy = acre-feet per year

Census data are from the following sources:

http://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06037_los_angeles/DC10CT_C06037_008.pdf

http://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06037_los_angeles/DC10CT_C06037_007.pdf

<http://www.census.gov/2010census/popmap/>

** Source: Page 23 of Systech 2002

*** Source: Table 4-2 of 2010 UWMP, with sewerred flows adjusted by factor of 90% for losses to surface vegetation and evaporation (86 gal/day/capita = 2,827 adjust by 90%= 77 gal/day/capita)

Table 9

Simulated Monthly Precipitation at the Newhall County Water District Rain Gage for the 24-year Simulation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clara Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2012	1980	10.36	14.63	4.84	0.36	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.36	31.95
2013	1981	4.76	1.66	5.50	0.46	0.00	0.00	0.00	0.00	0.00	0.58	3.62	0.22	16.80
2014	1982	3.33	1.21	9.50	1.09	0.13	0.00	0.00	0.00	1.02	0.25	5.34	2.95	24.82
2015	1983	8.67	6.85	13.07	4.61	0.20	0.00	0.00	1.17	1.85	1.74	5.04	5.13	48.33
2016	1984	0.00	0.00	0.27	0.07	0.00	0.00	0.00	0.00	0.05	0.16	3.87	8.13	12.55
2017	1985	0.78	1.20	1.04	0.14	0.07	0.00	0.06	0.00	0.12	0.54	5.11	0.70	9.76
2018	1986	5.84	6.65	5.39	0.88	0.00	0.00	0.05	0.00	1.78	0.68	1.55	0.24	23.06
2019	1987	2.10	0.61	1.69	0.14	0.00	0.00	0.09	0.02	0.00	3.47	3.84	4.80	16.76
2020	1988	3.27	3.39	1.16	3.98	0.09	0.00	0.00	0.00	0.10	0.00	0.92	7.14	20.05
2021	1989	0.89	4.13	1.30	0.30	0.00	0.00	0.00	0.00	0.62	0.86	0.37	0.00	8.47
2022	1990	2.89	4.23	0.22	0.48	0.88	0.00	0.00	0.00	0.00	0.00	0.63	0.01	9.34
2023	1991	1.11	5.72	11.33	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	5.95	24.61
2024	1992	3.28	16.64	9.73	0.15	0.34	0.00	0.30	0.00	0.00	1.55	0.00	7.25	39.24
2025	1993	17.11	11.73	4.27	0.00	0.00	0.65	0.00	0.00	0.00	0.57	0.75	1.00	36.08
2026	1994	0.48	5.31	2.33	0.42	0.00	0.00	0.00	0.00	0.00	0.78	0.71	1.94	11.97
2027	1995	21.98	1.93	8.30	0.72	0.26	0.76	0.00	0.00	0.00	0.00	0.00	2.33	36.28
2028	1996	2.97	6.73	2.08	0.13	0.68	0.00	0.00	0.00	0.00	1.30	1.06	8.70	23.65
2029	1997	6.67	0.23	0.00	0.00	0.00	0.00	0.05	0.00	0.53	0.00	3.73	6.72	17.93
2030	1998	3.49	22.00	3.98	2.28	5.50	0.06	0.00	0.00	0.21	0.33	1.36	1.39	40.60
2031	1999	2.08	0.65	3.00	3.78	0.00	0.48	0.00	0.00	0.01	0.00	0.00	0.05	10.05
2032	2000	1.21	9.43	3.15	2.10	0.00	0.00	0.00	0.31	0.00	1.13	0.00	0.00	17.33
2033	2001	5.84	10.76	3.38	2.56	0.00	0.00	0.00	0.00	0.00	0.22	3.18	1.30	27.24
2034	2002	1.55	0.51	0.38	0.05	0.12	0.01	0.00	0.00	0.02	0.00	3.01	5.85	11.50
2035	2003	0.00	9.03	2.38	2.35	1.70	0.00	0.02	0.00	0.00	1.10	0.63	2.57	19.78

Note: All values are in units of inches.

Table 10

Simulated Monthly Streamflows in the Santa Clara River at the Lang Gage for the 24-year Simulation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clara Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Prototype Year
2012	1980	1,310	7,449	1,213	568	218	78	6	0	37	274	467	553	12,175	1980
2013	1981	594	98	339	240	107	18	18	12	338	321	258	394	2,739	1981
2014	1982	333	1,420	785	283	238	0	0	0	0	95	178	855	4,188	1982
2015	1983	1,922	16,971	2,755	2,576	958	523	639	512	0	0	0	0	26,855	1983
2016	1984	0	596	405	240	143	166	228	411	154	220	904	578	4,044	1984
2017	1985	483	461	274	215	77	0	0	0	12	179	221	301	2,224	1985
2018	1986	483	1,138	488	283	107	6	0	12	6	12	80	129	2,744	1986
2019	1987	117	117	65	31	12	0	0	0	0	0	258	516	1,116	1987
2020	1988	222	209	506	117	77	68	0	0	0	0	12	25	1,236	1988
2021	1989	50	111	60	25	6	0	0	0	102	94	34	18	499	1989
2022	1990	212	276	230	46	46	5	0	0	0	27	36	147	1,025	1990
2023	1991	162	775	879	736	145	142	14	0	45	69	62	263	3,291	1991
2024	1992	336	534	429	398	117	84	16	5	108	144	498	1,446	4,115	1992
2025	1993	14,709	5,336	1,194	530	239	110	54	10	64	145	264	281	22,937	1993
2026	1994	388	493	497	319	163	80	20	7	37	102	193	941	3,239	1994
2027	1995	1,211	1,421	954	802	268	156	62	8	6	1	27	189	5,104	1995
2028	1996	666	896	730	315	151	46	7	0	54	154	307	510	3,836	1996
2029	1997	517	346	140	85	33	5	4	50	66	240	566	809	2,859	1997
2030	1998	18,997	8,508	3,837	961	667	347	81	91	70	139	190	186	34,074	1998
2031	1999	92	85	204	224	197	107	80	46	52	54	31	80	1,252	1999
2032	2000	117	117	65	31	12	0	0	0	0	0	258	516	1,116	1987
2033	2001	333	1,420	785	283	238	0	0	0	0	95	178	855	4,188	1982
2034	2002	50	111	60	25	6	0	0	0	102	94	34	18	499	1989
2035	2003	666	896	730	315	109	0	0	0	0	0	0	0	2,715	1996 and 2003

Note: All values are in units of acre-feet.

Table 11

Simulated Monthly Water Releases from Castaic Lagoon to Castaic Creek for the 24-year Simulation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Prototype Year
2012	1980	0	0	0	0	0	834	1,052	919	0	0	0	0	2,805	1980
2013	1981	105	0	0	1,490	46	0	0	0	0	0	0	0	1,641	1986
2014	1982	0	0	0	0	0	667	842	735	0	0	0	0	2,244	1982
2015	1983	0	0	0	0	0	1,168	1,473	1,287	0	0	0	0	3,928	1983
2016	1984	0	0	0	0	0	0	0	0	0	0	0	0	0	1984
2017	1985	0	0	0	0	0	0	0	0	0	0	0	0	0	1985
2018	1986	105	0	0	1,490	46	0	0	0	0	0	0	0	1,641	1986
2019	1987	105	0	0	1,490	46	0	0	0	0	0	212	0	1,853	1987
2020	1988	0	0	809	341	900	0	0	0	0	0	0	0	2,050	1988
2021	1989	0	0	0	0	0	0	0	0	0	0	0	0	0	1989
2022	1990	0	0	0	0	0	0	0	0	0	0	0	0	0	1990
2023	1991	0	0	0	0	0	0	0	0	0	0	0	66	66	1991
2024	1992	0	0	580	3,052	667	127	24	0	0	0	0	0	4,450	1992
2025	1993	0	140	186	3,031	1,901	635	341	337	813	0	0	341	7,725	1993
2026	1994	210	0	0	2,979	93	0	0	0	0	0	0	0	3,282	1994
2027	1995	0	0	0	0	0	1,668	2,104	1,839	0	0	0	0	5,611	1995
2028	1996	0	0	0	4,961	671	0	0	0	0	0	0	0	5,632	1996
2029	1997	0	0	8,701	873	0	0	0	0	0	0	0	310	9,884	1997
2030	1998	1,186	19,545	10,747	4,566	7,561	47	1,370	436	464	302	652	926	47,802	1998
2031	1999	612	691	0	3,187	1,191	149	0	0	0	0	0	0	5,830	1999
2032	2000	0	660	855	0	2,087	3,484	0	0	0	0	0	0	7,086	2000
2033	2001	0	389	1,218	0	0	0	0	0	0	0	0	0	1,607	2001
2034	2002	0	0	0	0	0	0	0	0	0	0	0	0	0	2002
2035	2003	0	0	0	2,286	418	315	0	0	0	0	0	0	3,019	2003

Note: All values are in units of acre-feet.

Table 12

Water Demands and Indoor Water Use under Valley Full Build-out Conditions in 2050 (Excluding Newhall Ranch)

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin

Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Year 2000 Actual (afy)	Full Build-out Conditions (afy)	Comments
Annual Urban Water Use Outside Newhall Ranch		
60,988	123,038	Year 2000 value is retail purveyor demand plus other demands in Table II-6 of the <i>2004 Santa Clarita Valley Water Report</i> (LSCE, 2005). Year 2045 value is from Table 2.5-4 of the <i>Newhall Ranch Draft Additional Analysis</i> (Impact Sciences, Inc., 2001). Consists of 89,805 afy Development Monitoring System^a demand, plus 55,995 afy additional urban demand, minus 14,480 afy conservation, minus 5,193 afy agricultural uses and 3,089 afy “other” uses. Does not include 4,500 afy for aquifer storage and recovery or 17,680 afy of demand for the Newhall Ranch Specific Plan.
Annual Indoor Water Use Outside Newhall Ranch (Equal to LACSD WRP Influent Volumes)		
18,723	40,313 (average year)	The year 2000 volume is from the Saugus and Valencia WRPs for the period January 2000 through December 2000. The long-term current generated effluent volume is based on the influent volume estimated from water balance calculations performed for the chloride mass balance analysis. The effluent volume is 32.8 percent of the total urban water production of 123,038 afy, which includes other uses.

^aDevelopment Monitoring System water demands are demands associated with future build-out of developments identified in Los Angeles County's Development Monitoring System for the Santa Clarita Valley.

Table 13

Treated Water Discharges from the Saugus and Valencia WRPs to the Santa Clara River under Valley Full Build-out Conditions in 2050

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin

Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Month	Treated Water Volume (2000) ^a	Treated Water Volume (Full Build-out Conditions) ^b	Percent of Annual Outdoor Demand	Reclaimed Volume under Full Build-out Conditions (Before Maintaining Existing Streamflows)	Reclaimed Volume under Full Build-out Conditions (After Maintaining Existing Streamflows)	WRP Discharges to River under Full Build-out Conditions ^c	Month
January	1,503	3,237	3.75	637	637	2,600	January
February	1,443	3,106	5.1	867	867	2,239	February
March	1,528	3,290	6.6	1,122	1,122	2,168	March
April	1,505	3,240	9.1	1,547	1,547	1,693	April
May	1,569	3,379	10.55	1,794	1,794	1,585	May
June	1,543	3,322	11.4	1,938	1,781	1,541	June
July	1,606	3,459	14.1	2,397	1,854	1,605	July
August	1,649	3,550	12.95	2,202	1,902	1,648	August
September	1,593	3,430	10.2	1,734	1,734	1,696	September
October	1,631	3,512	7.5	1,275	1,275	2,237	October
November	1,546	3,329	5	850	850	2,479	November
December	1,607	3,459	3.75	637	637	2,822	December
Total Annual	18,723	40,313	100	17,000	16,000	24,313	Total Annual

^aValues shown are the actual volumes of treated water discharged to the Santa Clara River from the Saugus and Valencia WRPs during calendar year 2000. (See also Table 12.)

^bValues shown are the combined treated water volumes estimated to be produced by the Saugus and Valencia WRPs for full build-out conditions in the Santa Clarita Valley. These values do not include the future Newhall Ranch WRP, which will be operated by LACSD.

^cValues shown do not include discharges of treated water to the river from the future Newhall Ranch WRP. These volumes are 10 acre-feet in November, 138 acre-feet in December, and 138 acre-feet in January. During the other nine months of the year, this WRP will not discharge treated water to the river (see the *Newhall Ranch Draft Additional Analysis* [Impact Sciences, Inc., 2001] for further details). The combined total discharge from the Saugus, Valencia, and Newhall Ranch WRPs is summarized in Table 14.

Note: All volumes are in acre-feet.

WRP = water reclamation plant

Table 14

Simulated Monthly Treated Wastewater Discharges from Santa Clarita Valley WRPs under Valley Full Build-out Conditions in 2050

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

WRP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Saugus	493	487	500	490	503	466	457	508	586	555	514	596	6,155
Valencia	2,107	1,752	1,668	1,203	1,082	1,075	1,148	1,140	1,110	1,682	1,965	2,226	18,158
Newhall	138	0	0	0	0	0	0	0	0	0	10	138	286
Total	2,738	2,239	2,168	1,693	1,585	1,541	1,605	1,648	1,696	2,237	2,489	2,960	24,599

Note: All volumes are in acre-feet.

WRP = water reclamation plant

FIGURES

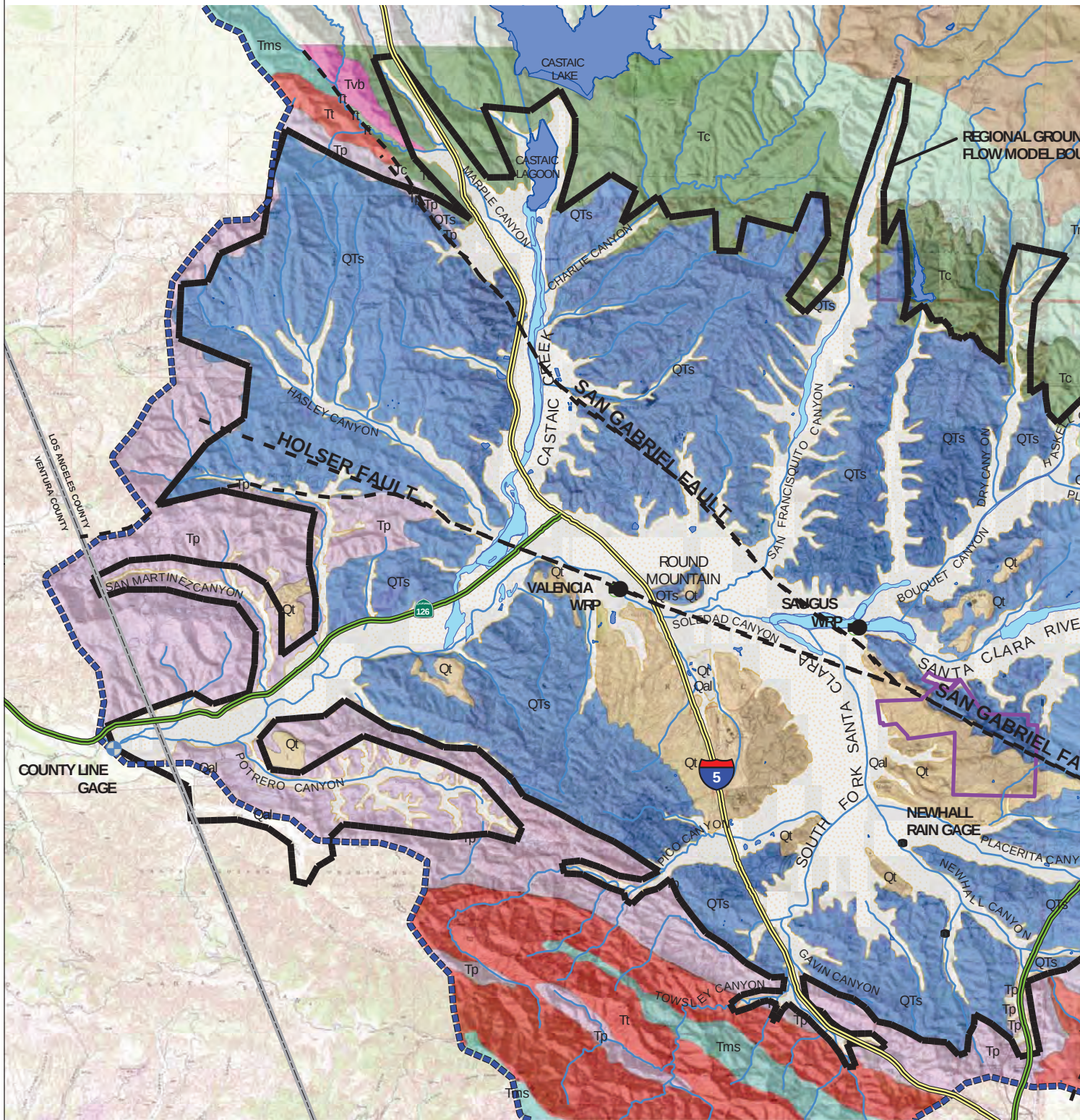
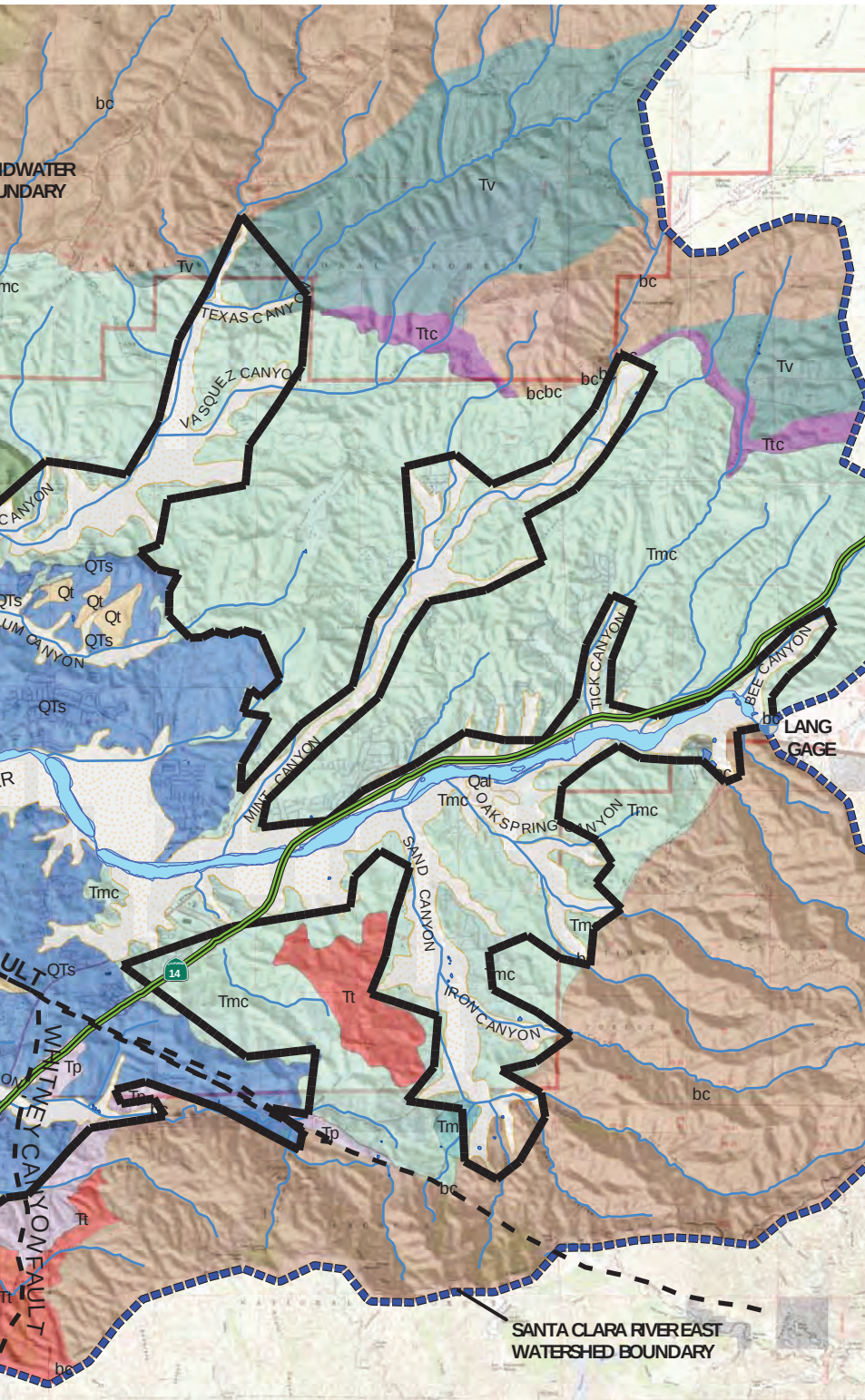


FIGURE 1

Model Domain and Basin Geologic Map
Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)



LEGEND
GEOLOGY

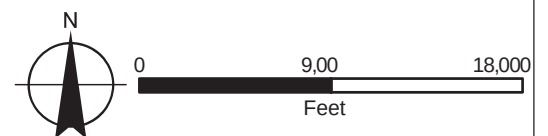
- UNDIFFERENTIATED ALLUVIUM (Qal)
- TERRACE DEPOSITS (Qt)
- SAUGUS FORMATION (QTs)
- PICO FORMATION (Tp)
- TOWSLEY FORMATION (Tt)
- MODELO FORMATION (Tms)
- CASTAIC FORMATION (Tc)
- VIOLIN BRECCIA (Tvb)
- MINT CANYON FORMATION (Tmc)
- TICK CANYON FORMATION (Ttc)
- VASQUEZ FORMATION (Tv)
- UNDIFFERENTIATED BASEMENT COMPLEX (bc)

HYDROGRAPHY

- LAKE
- STREAM
- STREAM GAGE

MAJOR ROAD

- INTERSTATE
- STATE HIGHWAY
- WHITTAKER-BERMITE PROPERTY BOUNDARY



SOURCE: CH2M HILL, 2004



FIGURE 2

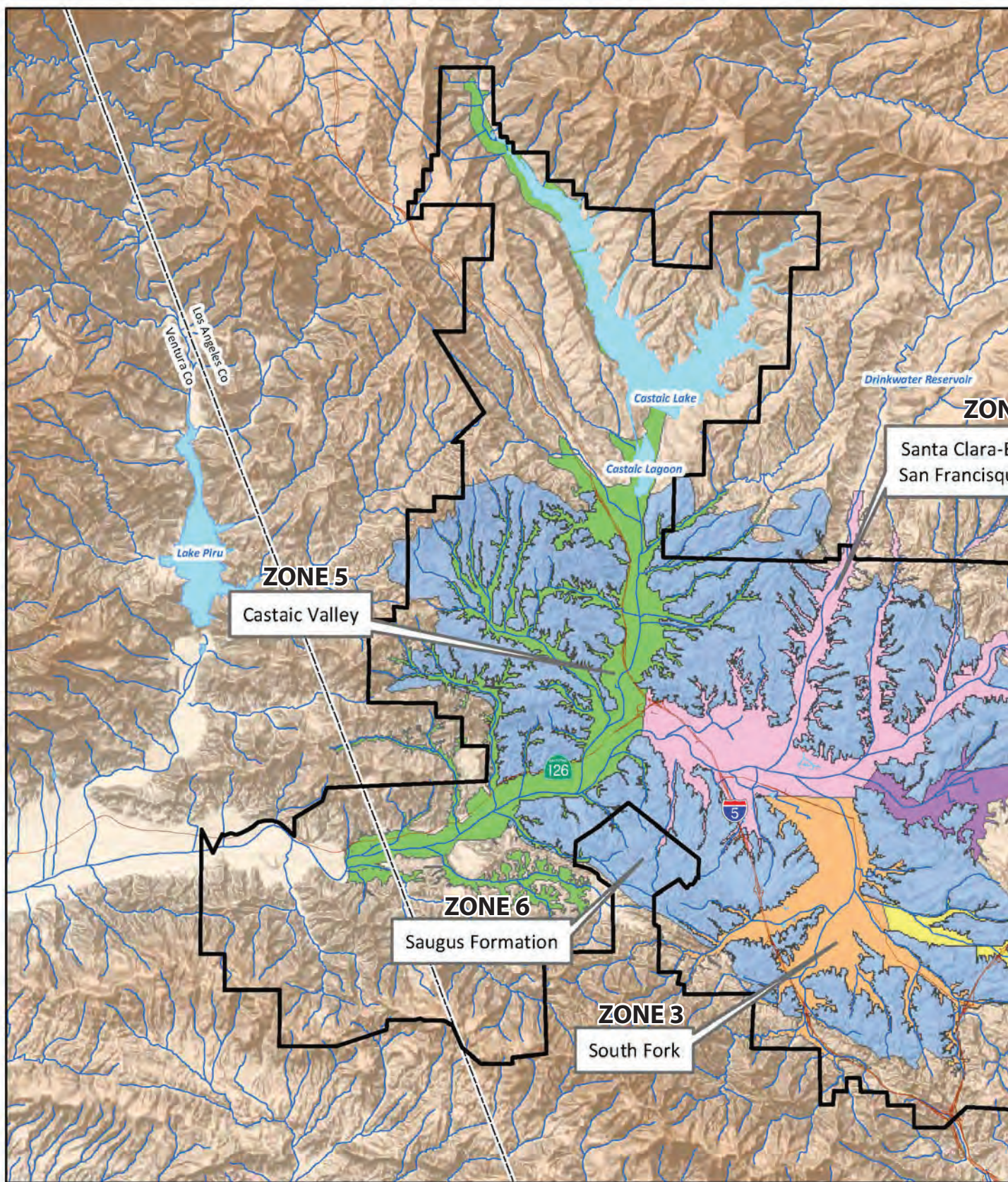
Schematic Diagram of Model's
Representation of Basin Stratigraphy
Development of
Groundwater Budget Terms for the
Santa Clara River Valley
East Subbasin
Salt and Nutrient Management Plan
(Santa Clara Valley, California)

NOTE:

The blue triangles represent the
long-term water table surface in
model layer 1.



Stratigraphy	Model Layer Number	Thickness (feet)
 Alluvium SAUGUS	1	500
	2	
	3	250
	4	250
	5	500
	6	500
	7	500
Sunshine Ranch Member	8	Variable



15-Oct-12

Prepared by: DWB. Map Projection: UTM 1927, Zone 11.

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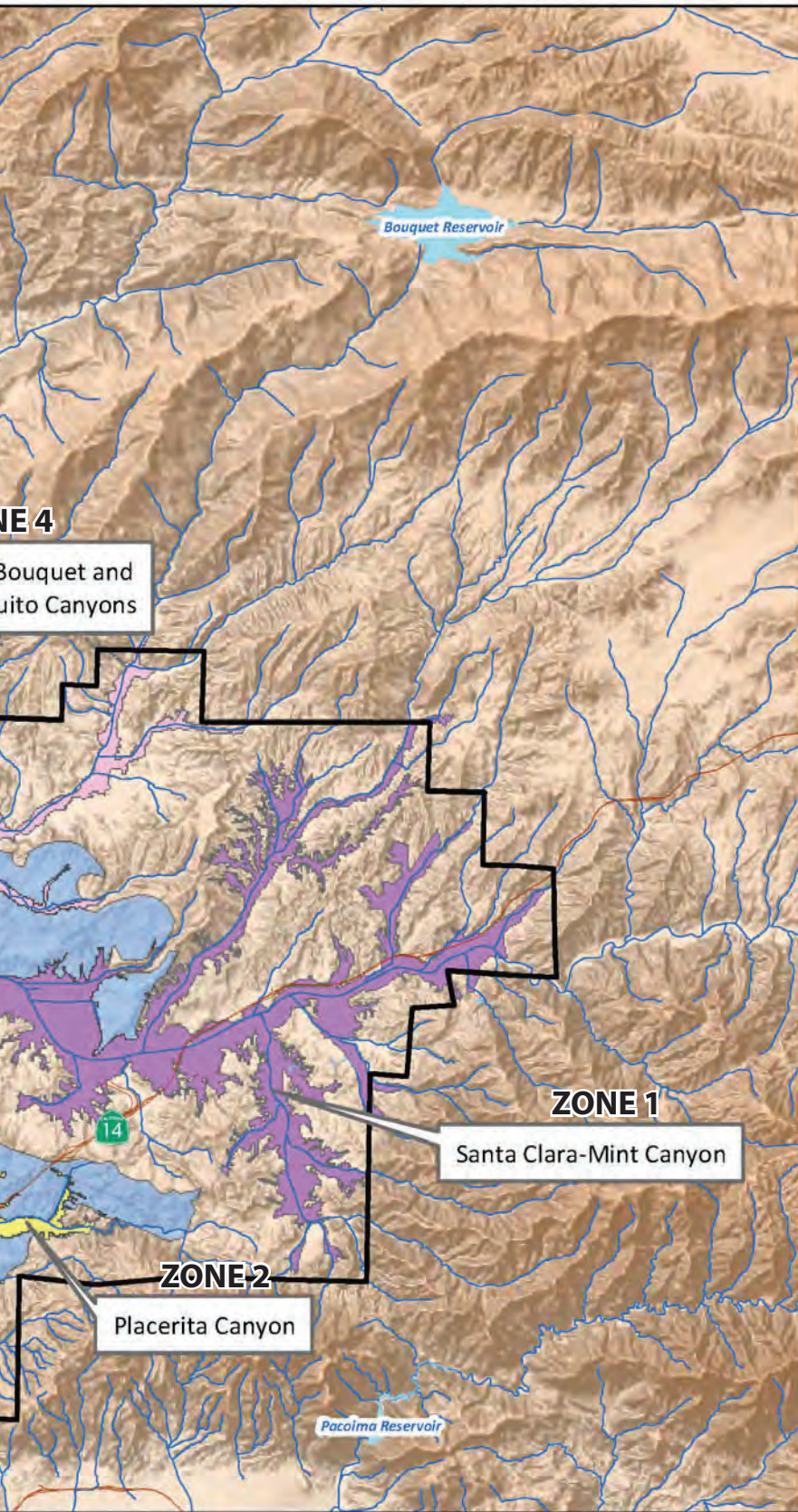


FIGURE 3

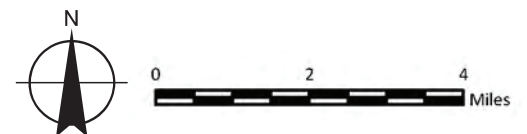
**SNMP Management Zones (Subunits) of the
East Subbasin Alluvial Aquifer and
Saugus Formation**
Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

LEGEND

 Castaic Lake Water Agency
Boundary

**LARWQCB Ground Water Subunit
(SNMP Management Zone)**

-  Castaic Valley
-  Santa Clara-Mint Canyon
-  Santa Clara-Bouquet and
San Francisquito Canyons
-  South Fork
-  Placerita Canyon
-  Saugus Formation
(Areal Extent)



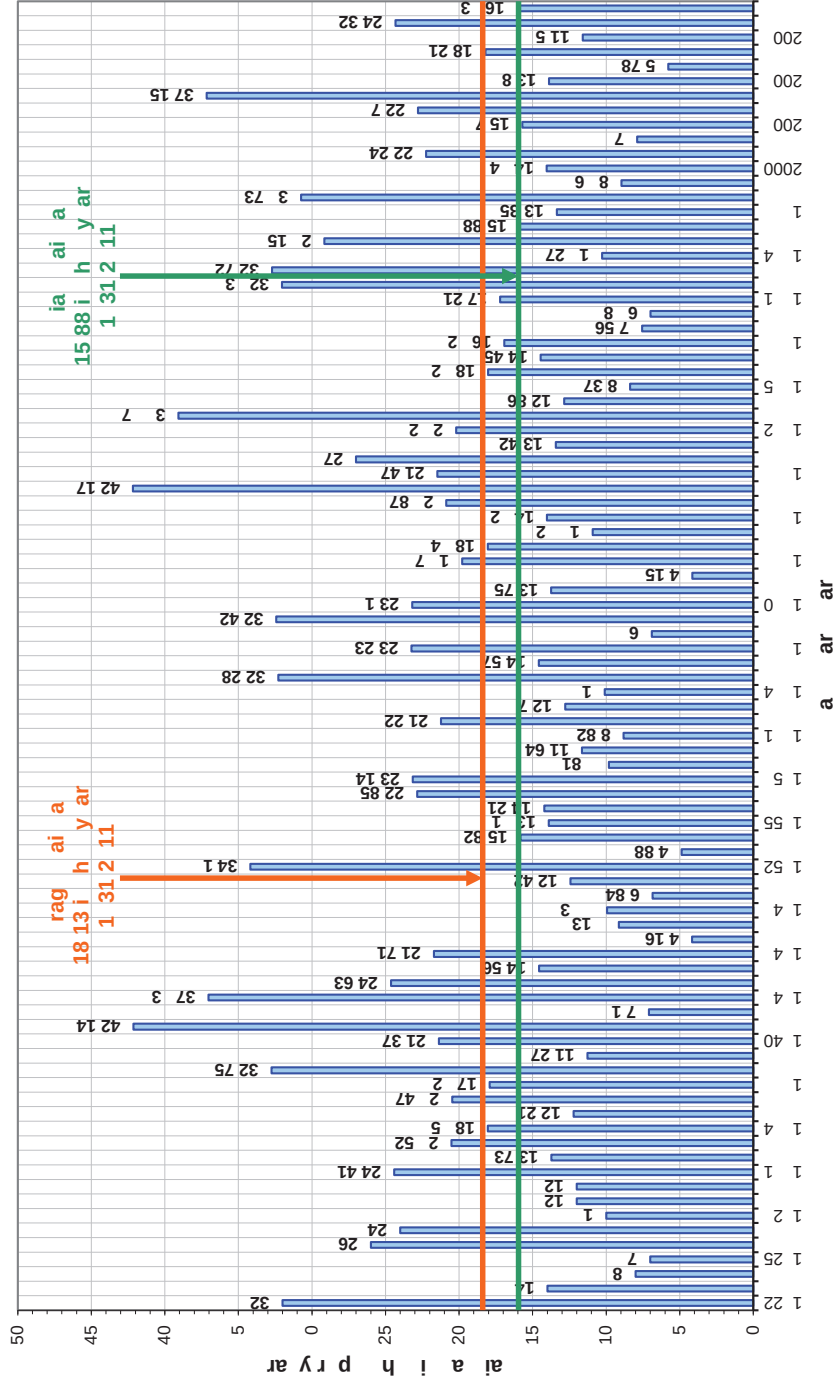
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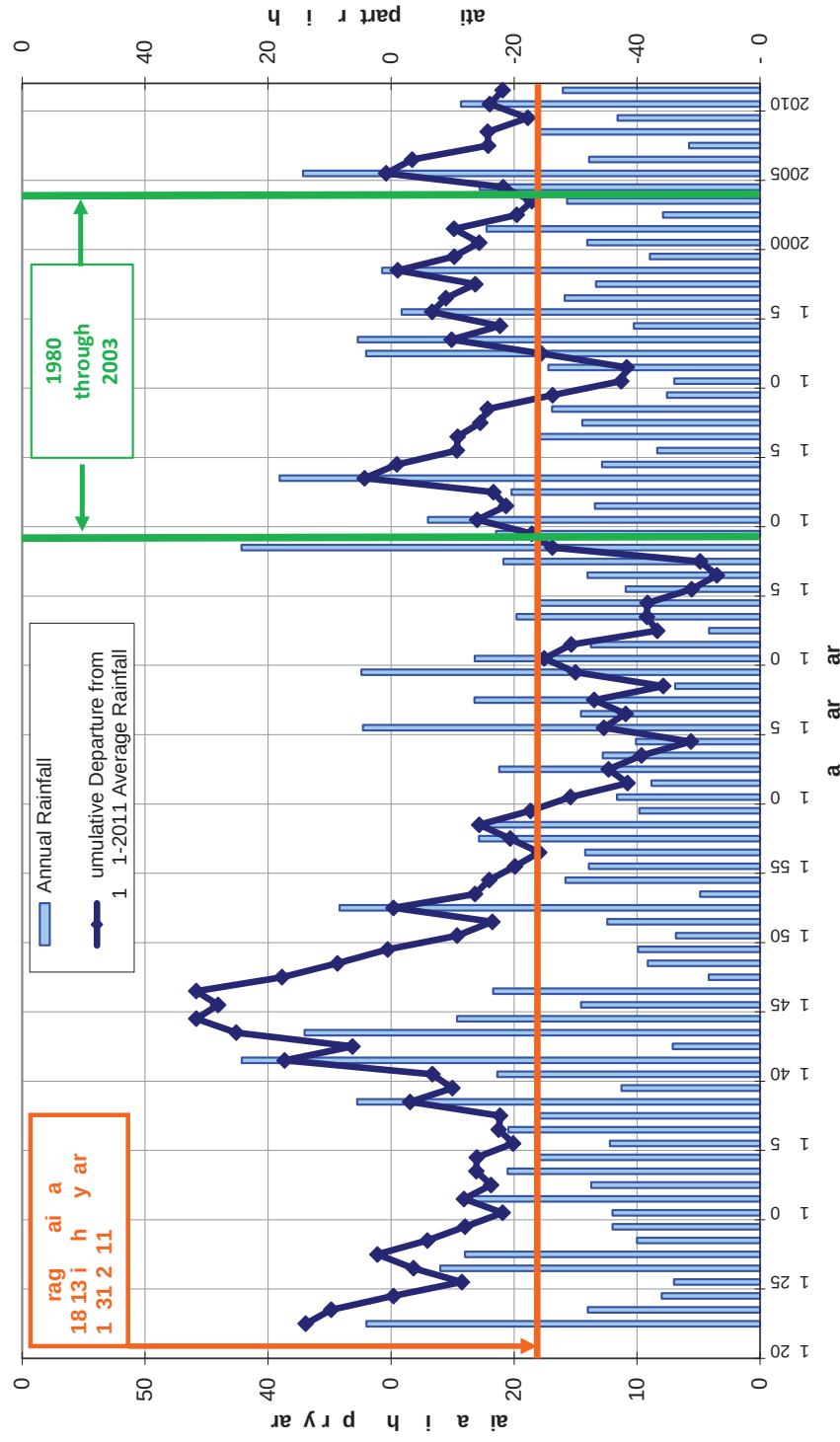
FIGURE

Annual Rainfall at the
 the Soledad Rain Gage
 Development of
 Groundwater Budget Terms for the
 Santa Clara River Valley
 East Subbasin
 Salt and Nutrient Management Plan
 (Santa Clara Valley, California)



FIGURE

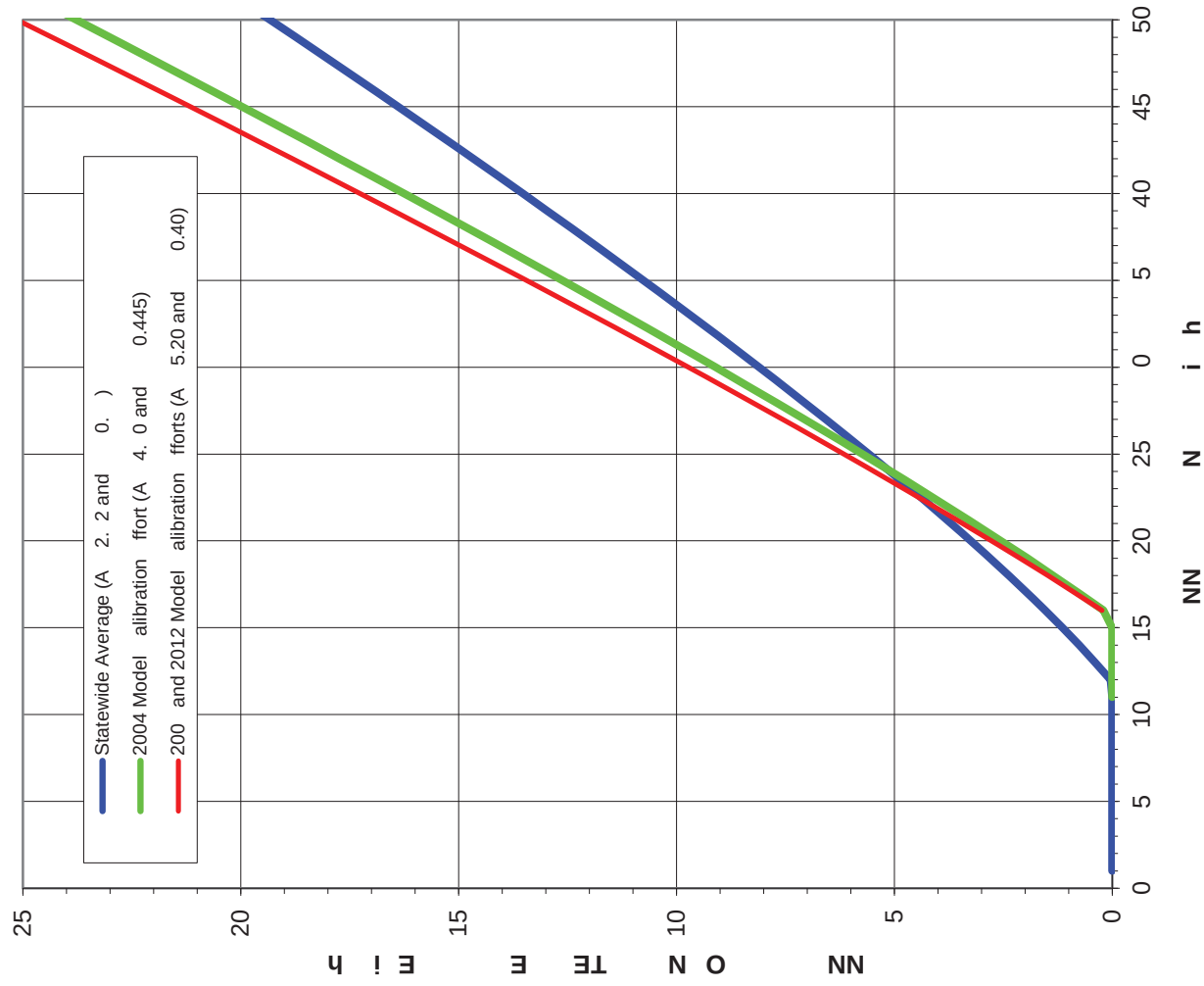
Annual Rainfall and Cumulative Departure from Average Rainfall
 Santa Clara River Valley
 East Subbasin
 Salt and Nutrient Management Plan
 (Santa Clara Valley, California)



FIGURE

Rainfall Recharge Relationship
for the Groundwater Budget Terms for the
Development of
Santa Clara River Valley
East Subbasin
Salt and Nutrient Management Plan
(Santa Clara Valley, California)

Tr 186 :
Annual Recharge
Annual Rainfall - A (Annual Rainfall)



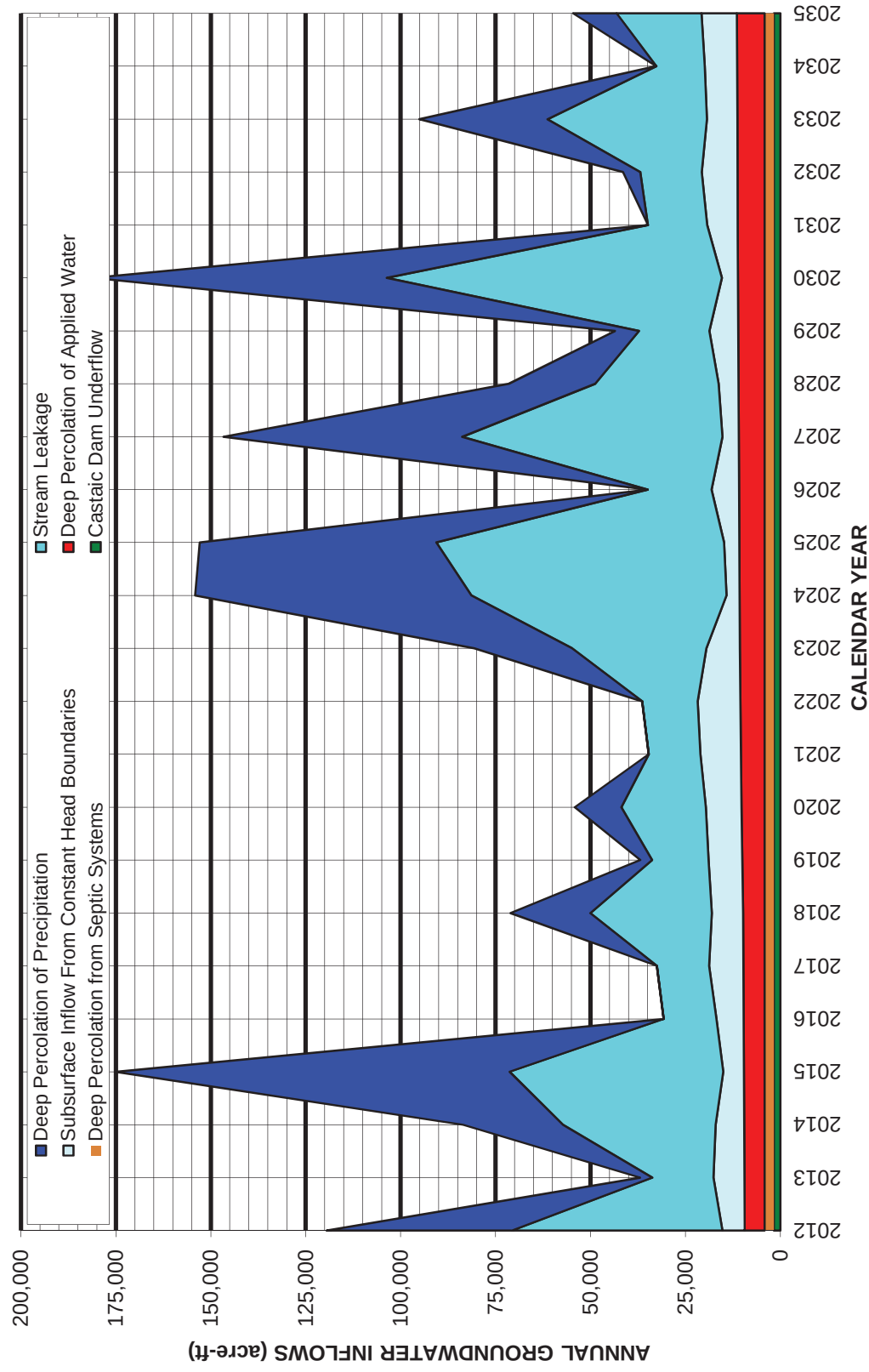


FIGURE 7
ANNUAL GROUNDWATER INFLOWS
(2012-2035)
(Alluvium+Saugus)
 DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
 SANTA CLARA RIVER VALLEY EAST SUBBASIN
 SALT AND NUTRIENT MANAGEMENT PLAN (SANTA CLARITA VALLEY, CALIFORNIA)



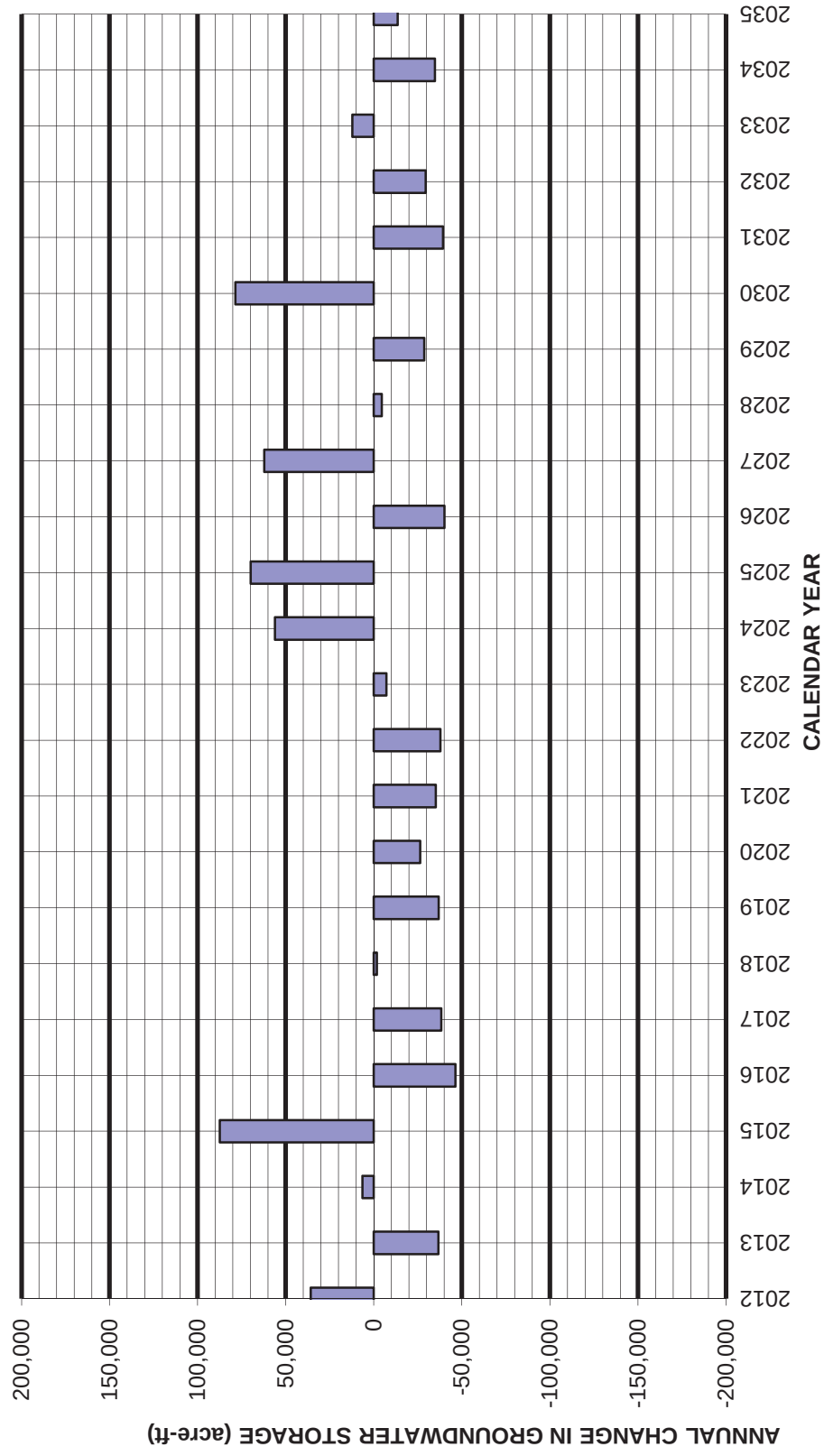


FIGURE 9
ANNUAL CHANGE IN
GROUNDWATER STORAGE
(2012-2035)
(Alluvium+Saugus)
 DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
 SANTA CLARA RIVER VALLEY EAST SUBBASIN
 SALT AND NUTRIENT MANAGEMENT PLAN
 (SANTA CLARITA VALLEY, CALIFORNIA)



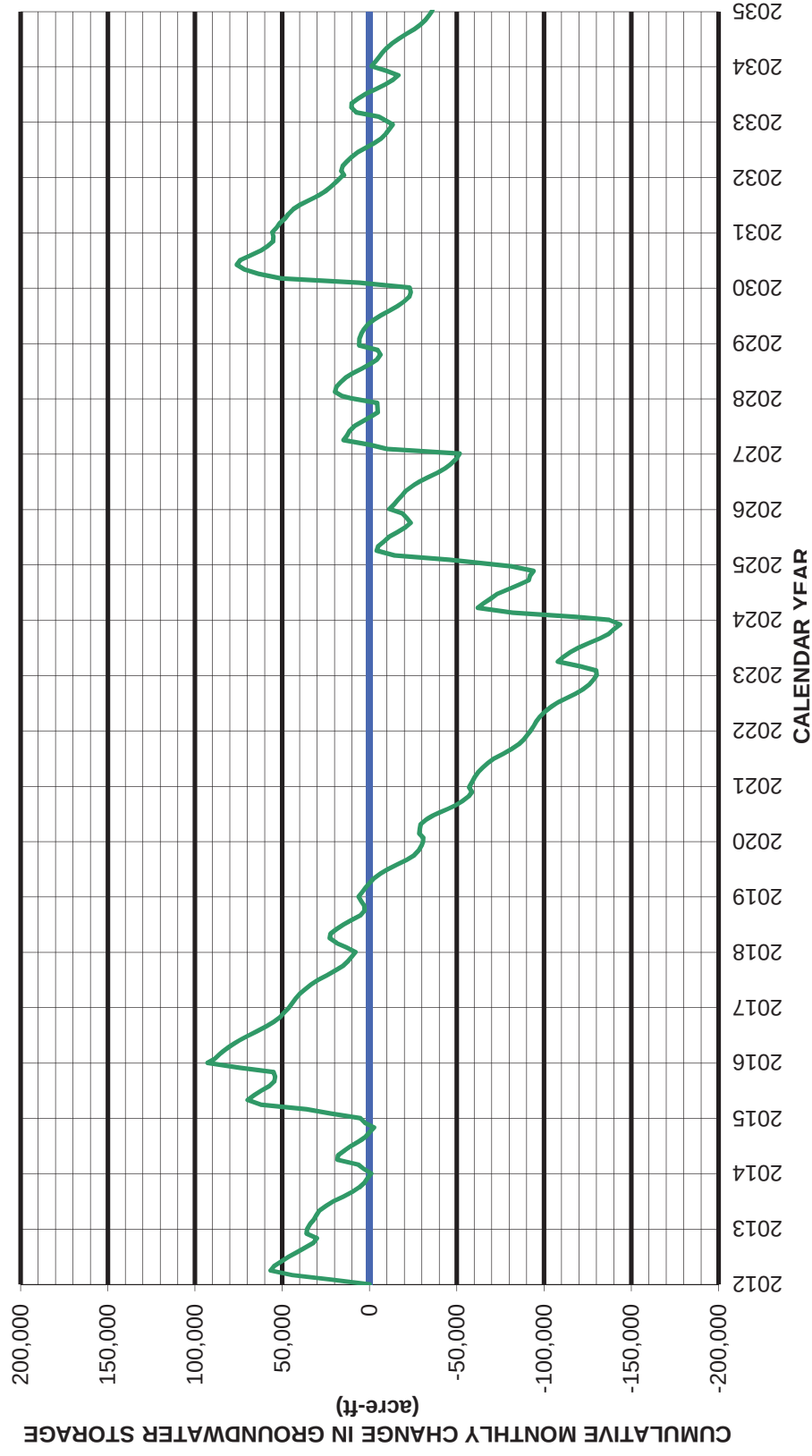


FIGURE 10
CUMULATIVE CHANGE IN
GROUNDWATER STORAGE
(2012-2035)
(Alluvium+Saugus)
 DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
 SANTA CLARA RIVER VALLEY EAST SUBBASIN
 SALT AND NUTRIENT MANAGEMENT PLAN
 (SANTA CLARITA VALLEY, CALIFORNIA)

APPENDIX A
UPDATED DESCRIPTION OF THE
SANTA CLARITA VALLEY GROUNDWATER FLOW MODEL

Updated Description of the Santa Clarita Valley Groundwater Flow Model

Prepared by GSI Water Solutions, Inc.
December 2014

A.1 Introduction

The Santa Clarita Valley Groundwater Flow Model is a three-dimensional, numerical model of groundwater flow that covers the entire area underlain by the Saugus Formation, plus the portions of the Alluvial Aquifer that lie beyond the limits of the Saugus Formation. A Surface Water Routing Model (SWRM) was also developed specifically for this basin as a pre- and post-processor for the groundwater model.

The approach to developing the groundwater model included the following steps:

1. Compiling information on the geology and hydrogeology of the valley and developing a conceptual understanding of the groundwater flow system
2. Creating a variety of data sets to conduct steady-state and transient calibrations
3. Constructing the model using the MicroFEM® finite-element groundwater flow code (Hemker and de Boer, 2003 and 2014), and also using the available database and geographic information system (GIS) information for the Santa Clarita Valley
4. Calibrating the model
5. Performing sensitivity tests on the model

This appendix provides an overview of the groundwater model's construction and calibration. The initial construction and calibration of the model and the SWRM are described in detail in the model development report (CH2M HILL, 2004a). Subsequent checks of, and minor updates to, the model's calibration were performed in early 2005 (CH2M HILL, 2005), in 2008 (LSCE and GSI, 2009), and again in 2012 (GSI and LSCE, 2013) as hydrologic and water use data became available for years subsequent to 1999.

A.2 Model Construction

A.2.1 Software

The groundwater model was constructed using the three-dimensional, finite-element groundwater modeling software MicroFEM® (Hemker and de Boer, 2003 and 2014). MicroFEM® operates in a Windows™ environment and can be used to solve groundwater flow problems for unconfined, semi-confined, or confined aquifer systems. This software simulates steady-state or

transient flow conditions in up to a 20-layer aquifer system; the finite-element mesh may contain as many as 50,000 nodes in each model layer. The software contains several different methods for simulating groundwater/surface water interactions. MicroFEM® is based on software developed in the Netherlands during the 1980s for use in evaluating the effects of groundwater pumping in areas with complicated meandering rivers. Further details regarding this software's design, capabilities, and functionality can be found on the Internet at www.microfem.com and in two reviews of the software by Diodato (1997, 2000).

A.2.2 Model Grid

The original version of the groundwater flow model was based on a finite-element mesh consisting of 7 layers, with 17,103 nodes and 32,496 elements in each layer (CH2M HILL, 2004a). The nodes are spaced 500 feet apart in the majority of the modeled area. However, a finer node spacing (150 feet) was used along the Santa Clara River and its tributaries to allow a more exact simulation of surface water/groundwater exchanges. Additionally, specific nodes were placed within this regional grid at the locations of production and monitoring wells. After the process of constructing and calibrating that model had been completed, a second version of the model was created, which uses a much finer-resolution node spacing in the vicinity of the South Fork of the Santa Clara River, to simulate conditions in greater detail near the Whittaker Bermite property (CH2M HILL, 2004b). This version of the model contains 37,823 nodes and 73,936 elements per layer. The model grid is based on the California State Plane Zone 5, North American Datum 1983 (NAD83) horizontal coordinate system.

A.2.3 Layering

The upper model layer simulates the Alluvial Aquifer, or the upper portion of the Saugus Formation wherever the Alluvial Aquifer is not present. The underlying layers simulate the underlying freshwater Saugus Formation and the Sunshine Ranch Member. The northern and southern edges of the model domain are defined by the geologic contacts mapped by Richard C. Slade and Associates, LLC (2002), formerly known as Richard C. Slade, Consulting Groundwater Geologist (both hereafter referred to as RCS), for the Alluvial Aquifer and the Saugus Formation. A total of 7 layers were used in the original model. As part of the effort to update the model's calibration through the year 2011, the third model layer (which represents a depth interval of 500 to 1,000 feet below the water table) was subdivided into two 250-foot thick layers, in order to provide better resolution of the different depths to which various Saugus Formation production wells are open.

The saturated thickness of the Alluvial Aquifer was defined from the average base elevation of the aquifer and the water level elevations measured during the fall of 1985 and the spring of 2000, as described by RCS (1986 and 2002). Along the Santa Clara River, the typical saturated thickness of the Alluvial Aquifer is as much as 130 feet in the western (downgradient) portion of the basin and between 80 and 90 feet in the eastern (upgradient) portion of the basin, though it can be notably less in this area during droughts. Saturated thicknesses can be less than 60 feet in some tributary canyons, particularly along the South Fork Santa Clara River, where all

production wells are constructed in the Saugus Formation, rather than the alluvium (RCS, 2002).

The Saugus Formation is generally a bowl-shaped structure that thins at its margins and has its greatest thickness (about 5,500 feet) in the center of the basin. The upper, freshwater-bearing portion of the Saugus Formation was simulated using 500-foot-thick model layers to depths as great as 2,500 feet in the center of the basin (RCS, 1988 and 2002). The deepest active model layer at any given location represented the Sunshine Ranch Member of the Saugus Formation, which is of marine origin and, therefore, is more saline and thought to have lower water-bearing potential than the overlying Saugus Formation deposits that are terrestrial in origin.

A.2.4 Boundary Conditions

The following boundary conditions are used in the model:

1. **Specified flux for precipitation within the model grid.** Deep percolation of precipitation is simulated using the precipitation top-system package contained in MicroFEM®.
2. **Specified flux for irrigation.** The precipitation top-system package contained in MicroFEM® is used to simulate deep percolation of (a) agricultural irrigation water, (b) outdoor water use in urban areas, and (c) recharge from septic systems currently served by public water supplies.
3. **Specified flux and head-dependent flux along ephemeral streams.** With respect to groundwater discharges to streams, the Santa Clara River is modeled as an ephemeral, predominantly losing stream at and upstream of the mouth of San Francisquito Canyon, and as a perennial, predominantly gaining stream downstream of San Francisquito Canyon. The tributaries to the Santa Clara River are modeled as ephemeral streams, using the precipitation top-system package to specify stream leakage to groundwater. For these tributaries and the ephemeral reach of the Santa Clara River, groundwater recharge rates are estimated from precipitation records, streamflow records, watershed maps, topographic maps, and aerial photography using the SWRM, which was developed specifically to calculate time-varying recharge at each stream node from these data. Aerial photos and historical observations indicate that under high water table conditions, groundwater can locally discharge into Castaic Creek and the ephemeral reach of the Santa Clara River wherever Alluvial groundwater levels rise above the riverbed elevation. Consequently, the drain package in MicroFEM® is used in these streams to allow for drainage of any groundwater that is calculated by MicroFEM® to be above the riverbed elevation in any given river node at any given time step.
4. **Specified flux and head-dependent flux along perennial Santa Clara River.** The perennial reach of the Santa Clara River is modeled using the wadi top-system package contained in MicroFEM®. The wadi package allows groundwater to discharge to the river whenever groundwater elevations are higher than the specified river stage. When

groundwater levels are below the river stage, the river recharges the Alluvial Aquifer. The rate of recharge is proportional to the difference between the river stage elevation and the model-calculated groundwater elevation. However, after the groundwater elevation drops below the streambed sediments, the rate of leakage from the stream is constant (i.e., does not vary as the groundwater elevation fluctuates). For the Santa Clarita Valley groundwater flow model, each node along the perennial reach of the Santa Clara River is assigned a river stage that is 1 foot higher than the mapped bed elevation of the river. The riverbed conductance term in the model (which helps control the model-calculated groundwater/surface water exchange rates and varies over time according to variations in streamflow and wetted area) was adjusted during model calibration by calibrating to streamflow data collected at the County Line gage.

5. **Specified flux for pumping.** Pumping rates and locations for wells completed in the Alluvial Aquifer and the Saugus Formation were directly imported into the model from the Upper Santa Clara River Groundwater Basin database. For model calibration, pumping rates were assigned from water use records maintained by the water purveyors in the Santa Clarita Valley; estimates of monthly water demand for urban water use and agricultural water use; and well construction records, which were needed to determine which model layers at each individual well should be assigned pumping
6. **Specified flux at upgradient Alluvial Aquifer boundaries.** Where there is Alluvial groundwater flow into the study area from beneath Castaic Dam, the magnitude of the specified flux was adjusted during the model calibration process using groundwater elevations and gradients published by RCS (1986 and 2002).
7. **Specified groundwater elevation in the Alluvial Aquifer at the county line.** The groundwater elevation (805 feet) was obtained from water level contour maps for the Alluvial Aquifer prepared by RCS (1986, 2002). (See also CH2M HILL [2004a].)
8. **Specified groundwater elevation in the Alluvial Aquifer at the Lang gage.** The groundwater elevation (1,746 feet) was derived from topographic maps of the elevation of the Santa Clara River bed. As discussed in *Final Report: Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property* (CH2M HILL, 2004b), the boundary condition at this location was converted to a constant-head boundary shortly after completion of the initial model development report (CH2M HILL, 2004a). This change was made based on results from field reconnaissance that was performed in April and May of 2004, when the Santa Clara River was dry at the Lang gage. At that time, groundwater was locally discharging from the bed of the Santa Clara River in isolated locations where the riverbed intersects the water table, then seeping back into the riverbed nearby. Significant phreatophyte growth was also present along the riverbed in this same area (just downstream of the Lang gage). Additionally, water was present and actively flowing in the river east (upstream) of the Santa Clarita Valley (in the area between the Santa Clarita Valley and the upstream Acton Basin). Based on these observations, a specified groundwater elevation of 1,746 feet has been established in

the Alluvial Aquifer at the eastern boundary of the model to simulate subsurface flow beneath the channel of the Santa Clara River at the Lang gage. This specified elevation is held constant throughout all simulation periods.

9. **Head-dependent flux for evapotranspiration (ET).** ET from the water table by riparian vegetation is simulated using the evaporation top-system package contained in MicroFEM®. This package requires specification of the maximum rooting depth for the riparian vegetation, the maximum potential ET rate, and the ground surface elevation.
10. **No-flow boundaries.** In general, the outermost line of nodes that form the model boundary and the bottom of the model are no-flow boundaries. The exceptions are the western model boundary (specified head) and the specified-flux nodes representing underflow into the Alluvial Aquifer from beneath Castaic Dam. Also, all nodes on the model boundary are assigned specified fluxes due to precipitation and, in some cases, ephemeral streamflow.

A.2.5 Aquifer Parameters

The selection of the aquifer parameter values (horizontal and vertical hydraulic conductivity, storage coefficients, streambed conductance, and ET parameters) is described in detail in Sections 4 and 5 of the model development report (CH2M HILL, 2004a). Initial estimates of, and ranges of values for, these parameters were defined during initial model development and adjusted on an as-needed basis, and within certain limits, during model calibration. Additionally, the calibration process adjusted the coefficients for an empirical power-function equation (Turner, 1986) that was used in the SWRM to define the relationship between precipitation, stormwater flow, and the amount of stormwater flow available for potential infiltration to groundwater. Adjustments to some of the parameters have been made during recent calibration update efforts, as described by CH2M HILL (2005), LSCE and GSI (2009), GSI and LSCE (2013), and Section A.3.1 of this document.

A.3 Model Calibration

A.3.1 Calibration Process

Calibration of the groundwater flow model involved matching both steady-state and transient conditions in the Alluvial Aquifer and the Saugus Formation. The steady-state calibration was performed for calendar years 1980 through 1985, and the initial transient calibration effort was performed for calendar years 1980 through 1999, as described by CH2M HILL (2004a). Subsequent checks of, and minor updates to, the model's calibration were performed in early 2005 (CH2M HILL, 2005), in 2008 (LSCE and GSI, 2009), and again in 2012 as hydrologic and water use data became available for years subsequent to 1999 (GSI and LSCE, 2013).

The goals of the calibration process have been generally to match groundwater flow directions, groundwater gradients, and groundwater elevations that were measured throughout the period of historical record at wells across the valley. An additional calibration goal has been to match

the patterns of total flow in the Santa Clara River and estimated groundwater discharge rates to the river. The Alluvial Aquifer and the Saugus Formation have each been subdivided into zones to facilitate parameter selection and model calibration. Model variables were adjusted during the early years of calibration in a manner that seeks to honor independent estimates of parameter values while resulting in the best possible calibration. No significant changes to most aquifer parameters have occurred since the update described by LSCE and GSI (2009); however, some parameter values have been changed locally as follows:

- Hydraulic conductivity values in portions of the Alluvial Aquifer were raised as new data and improved reference point elevations became available at certain wells. The horizontal hydraulic conductivity was raised as follows: from 375 to 550 feet per day (ft/day) between Round Mountain and the mouth of Soledad Canyon (the Bouquet Canyon Road crossing of the Santa Clara River); from 550 to 825 ft/day in the western half of Soledad Canyon (at and west of the mouth of Mint Canyon); from 400 to 600 ft/day at the mouth of Sand Canyon; from 350 to 525 ft/day at production wells just east of Sand Canyon; and from 150 to 270 ft/day at and below the Lang stream gage (at the far east end of the valley). These changes improved the model's simulation of conditions throughout these areas during low-rainfall periods.
- A modest reduction was made in the vertical hydraulic conductivity of a portion of the Saugus Formation as a result of data collected in 2010 and 2011 at VWC's production well V205 following the resumption of pumping at two long-dormant production wells (SCWD's Saugus 1 and Saugus 2 production wells).
- The month-by-month riverbed leakage coefficients in the ephemeral reaches of the Santa Clara River and its tributaries were developed through the year 2011 as part of the calibration update process that extended the model's calibration time period into the years 2008 through 2011 (GSI and LSCE, 2013).

A.3.2 Calibration Quality

The calibrated version of the model meets most of the qualitative and quantitative goals that were established for the calibration process. For the steady-state model, statistical goals for the head residuals, which are equal to the modeled minus measured groundwater elevations, were easily met for the Alluvial Aquifer and adequately met for the Saugus Formation as discussed by CH2M HILL (2004a). For the transient model, trends in groundwater elevations were generally well matched, and groundwater discharges to the river were simulated well for both the steady-state and transient models. However, during the middle and late 1990s, the model tended to simulate too much decline in Alluvial Aquifer groundwater elevations in the eastern-most portion of the valley. This is the area where local droughts have the greatest effect on the water purveyors' ability to pump groundwater. Although this deviation was conservative (because predictive simulations of various groundwater pumping strategies did not overestimate the degree to which groundwater can be pumped from the Alluvial Aquifer in this area), the most recent changes to the model improve its ability to simulate conditions during periods of below-normal rainfall.

A.4 Model Sensitivity

Sensitivity analyses were performed during the model's initial calibration (CH2M HILL, 2004a) to evaluate whether further changes in the values of key model parameters would improve the model's calibration quality. Variables that were tested were the hydraulic properties (horizontal and vertical hydraulic conductivities and storage coefficients) for the Alluvial Aquifer and the Saugus Formation, the riverbed leakage terms for the Santa Clara River and Castaic Creek, and the ET parameters. The sensitivity analysis indicated that the model is sensitive to the choices of horizontal hydraulic conductivity in both aquifers and the vertical hydraulic conductivity values in the Saugus Formation. The model is also sensitive to the surface water parameters, specifically the choice of empirical coefficients used by the Turner (1986) equation to estimate stormwater flows from rainfall data and the riverbed leakage terms in both the eastern (groundwater recharge) and western (groundwater discharge) portions of the basin. The model is relatively insensitive to the choice of ET parameters.

A.5 Model Applicability

The process of developing the conceptual model of the local groundwater basin, developing a detailed numerical model, and calibrating the model to the past 32 years of groundwater elevation and streamflow data (during calendar years 1980 through 2011), has resulted in a groundwater flow model that is suitable for its intended applications, which are evaluating groundwater management strategies, groundwater sustainability, artificial recharge options, and restoration of contaminated water supplies. The primary design and calibration attributes that make the model appropriate for its intended uses are as follows:

1. Its ability to simulate historical trends in groundwater elevations and river flows during a nearly 3-decade period that reflects increased urbanization, increased State Water Project water imports (from outside the valley), and associated changes in land use and water use
2. Its ability to simulate trends in smaller geographic areas of interest within the valley (for example, near the Whittaker Bermite property)
3. Its use of an integrated model of the watershed to define the amount of rainfall and stormwater that is potentially available to recharge the groundwater system

A.6 References

CH2M HILL. 2004a. *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Santa Clarita Water Division of CLWA, Newhall County Water District, and Valencia Water Company). April 2004.

CH2M HILL, 2004b. *Final Report: Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property*. Presented in Support of the 97-005 Permit Application. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water Company). December 2004.

CH2M HILL, 2005. *Calibration Update of the Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, California*. Technical Memorandum prepared for The Santa Clarita Valley Water Purveyors. August 2005.

Diodato, D.M. 2000. *Software Spotlight*. Ground Water. Volume 38, No. 5, September-October.

Diodato, D.M. 1997. *Software Spotlight*. Ground Water. Volume 35, No. 5, September-October.

GSI and LSCE. 2013. *Calibration Update of the Purveyors' Regional Groundwater Flow Model Through 2011, Santa Clarita Valley, California*. Draft Technical Memorandum to Keith Abercrombie/Valencia Water Company and Jim Leserman/Castaic Lake Water Agency prepared by GSI Water Solutions (GSI) and Luhdorff and Scalmanini Consulting Engineers (LSCE). December 16, 2013.

Hemker, C.J., and R.G. de Boer. 2003. MicroFEM® groundwater modeling software, Version 3.60.03.

Hemker, C.J., and R.G. de Boer. 2014. *MicroFEM, Version 4.10.66*. November 2014.

LSCE and GSI. 2009. *Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin*. Prepared for the Santa Clarita Valley Municipal Water Purveyors by Luhdorff and Scalmanini Consulting Engineers (LSCE) and GSI Water Solutions (GSI). August 2009.

RCS. 2002. *2001 Update Report: Hydrogeologic Conditions in the Alluvial and Saugus Formation Aquifer Systems*. Prepared for Santa Clarita Valley Water Purveyors by Richard C. Slade and Associates, LLC. July 2002.

RCS. 1988. *Hydrogeologic Assessment of the Saugus Formation in the Santa Clara Valley of Los Angeles County, California*. Prepared for Castaic Lake Water Agency, Los Angeles County Waterworks District No. 36 – Val Verde, Newhall County Water District, Santa Clarita Water Company, and Valencia Water Company by Richard C. Slade, Consulting Groundwater Geologist. February 1988.

RCS. 1986. *Hydrogeologic Investigation: Perennial Yield and Artificial Recharge Potential of the Alluvial Sediments in the Santa Clarita River Valley of Los Angeles County, California*. Prepared for Upper Santa Clara Water Committee: Los Angeles County Waterworks District No. 36 – Val Verde, Newhall County Water District, Santa Clarita Water Company, Valencia Water Company, and Castaic Lake Water Agency by Richard C. Slade, Consulting Groundwater Geologist. December 1986.

Turner, K.M. 1986. *Water Loss from Forest and Range Lands in California*. In *Proceedings of the Chaparral Ecosystems Research Meetings and Field Conference, Santa Barbara, California, May 16-17, 1986*, J. Devries (Editor). Water Resources Center, Report 62, University of California, Davis, California, pp. 63-66.

APPENDIX B
SWP WATER AVAILABILITY AND RELATIONSHIP TO
LOCAL GROUNDWATER PUMPING OPERATIONS

SWP Water Availability and Relationship to Local Groundwater Pumping Operations

Prepared by GSI Water Solutions, Inc.
December 2014

The availability of water supplies from the State Water Project (SWP) affects the amount of groundwater that the purveyors pump from the Saugus Formation in any given year. Following are discussions of SWP water supply availability (Section B.1) and its relationship to the schedule and rates of groundwater pumping operations for local groundwater production wells (Section B.2). Section B.3 contains a list of references cited in this appendix.

B.1 SWP Water Supply Availability

Castaic Lake Water Agency (CLWA) holds a contract with the California Department of Water Resources (DWR) that specifies the contractual amount of water it is to receive; this amount is known as the “Table A” amount and is 92,500 acre-feet per year (afy). CLWA also has access to “flexible storage” in Castaic Lake, amounting to 4,684 afy of water that it can use for its own water supplies. The term of the CLWA contract with DWR is through 2038 and is renewable after that year. DWR routes SWP water to Castaic Lake, from which CLWA pumps it as needed to its Rio Vista Water Treatment Facility for treatment to drinking water standards and subsequent delivery to its retail customers.

In 2012, DWR issued a delivery reliability report (DWR, 2012) that maintains current restrictions on SWP operations arising from Biological Opinions that were issued by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in 2008 and 2009. In December 2010, a federal judge overruled most of the 2008 Biological Opinion and invalidated several of the criteria that reduced the amount of water supply available to all SWP contractors, such as CLWA. Although this matter is currently under appeal and may result in some relief from current SWP pumping restrictions at a later time, the delivery reliability report not only maintains the current restrictions, but also considers the impacts on SWP delivery reliability of (1) climate change, (2) sea level rise, and (3) flooding or earthquakes that could damage the conveyance systems and structures in the California Bay Delta. With these factors, the reliability report projects that long-term reliability will remain at 60 percent of Table A amounts for years of normal hydrology within the SWP system. This amount equates to 55,500 afy of SWP water supply for CLWA during normal years, which is 37,000 afy below the Table A amount of 92,500 afy. Although CLWA’s portfolio of water supplies nonetheless will continue to meet water supply needs through the Urban Water Management Plan (UWMP) planning horizon and beyond under this scenario for SWP availability (as discussed by KJC and others [2011] and LSCE [2013]), the uncertainty in the amount of SWP water available in any given year underscores the importance of local groundwater supplies so that the water purveyors can meet their production targets from local water supply wells during years of reduced SWP water availability.

Table B-1 shows the year-by-year variations in the amount of SWP water deliveries. This information is compiled for two different reliability reports published by DWR – a report that examined conditions in 2007 (DWR, 2008) and a report that examined conditions in 2011 (DWR, 2012). The purveyors’ most recent analysis of the Groundwater Operating Plan (LSCE and GSI, 2009) used the Table A amounts for 2007 conditions as the basis for formulating the year-by-year variations in groundwater pumping from the Saugus Formation. Under the 2007 conditions, the 90-year period of 1922 through 2011 is characterized by:

- 15 years when deliveries are 35 percent or less of maximum Table A amounts, including 6 years when the deliveries do not exceed 25 percent of the Table A amounts
- One drought lasting 6 years (1929 through 1934) and a 5-year period (1988 through 1992) containing 4 drought years

The Table A amounts that DWR has estimated more recently for 2011 conditions (DWR, 2012) show some differences in the amounts of SWP allocations in certain years. In particular, during the first year of reduced allocations (1924, 1929, 1949, 1955, 1960, 1988, 1990, and 2001) the allocation amounts are higher according to the 2011 Reliability Study (i.e., the 2011 condition of the SWP, as described by DWR, [2012]) than the 2009 Reliability Study (i.e., the 2007 condition of the SWP, as described by DWR [2008]). In contrast, after a significant curtailment has ended, the 2011 conditions sometimes (although not always) show lower allocations than the 2007 conditions in the first year of more normal allocations (such as in the years 1935, 1956, 1978, and 1993).

Despite these differences, the original cycle of “dry years” (i.e., curtailments in the SWP system and associated increased pumping from the Saugus Formation) that was evaluated by the purveyors based on 2007 conditions remains a reasonable scenario for groundwater modeling purposes. Accordingly, the 90-year time period of 1922 through 2011 has been used in the recent groundwater management studies, including those by LSCE and GSI (2009) and GSI and LSCE (2014). For this 90-year period, the relative number of normal versus curtailment years in the SWP system (as shown in Table B-1) is as follows:

- Normal years: 71 years (79 percent of the 90-year time period)
- Curtailment years: 19 years (21 percent of the 90-year time period)
 - Single-year curtailments: six occurrences (6.5 percent of the 90-year time period)
 - Two-year-long curtailments: one occurrence (2.2 percent of the 90-year time period)
 - Longer curtailments: two occurrences (11 years, 12.2 percent of the 90-year time period)

B.2 Local Groundwater Pumping Operations

The Groundwater Operating Plan defines the ranges of annual groundwater pumping rates that are planned for the Saugus Formation and the Alluvial Aquifer under variable hydrologic conditions. This plan is based on the water supply needs of the purveyors, the locations of their service areas and

individual wells, and the understanding that has been developed over the years (from wellfield operations, hydrogeologic studies, and groundwater modeling analyses) of the responses of the aquifer to varying cycles of natural recharge and groundwater pumping.

The Groundwater Operating Plan is described in a report by LSCE and GSI (2009), which contains a detailed analysis of the plan's sustainability, and in the 2010 UWMP (KJC and others, 2011). Those documents define the following ranges of basin-wide annual groundwater pumping volumes that are planned for the Saugus Formation and the Alluvial Aquifer:

1. Pumping from the Saugus Formation in a given year is tied directly to the availability of other water supplies – specifically, water that is imported from the SWP system and from other outside sources (transfers from water agencies outside the valley, and groundwater banking programs in other parts of the state). For the Saugus Formation, the operational plan consists of pumping between 7,500 and 15,000 afy during average-year and wet-year conditions in the SWP system. Planned pumping from the Saugus Formation ranges between 15,000 and 25,000 afy during the first year of a curtailment in SWP water allocations, and increases to between 21,000 and 25,000 afy if SWP allocations are reduced for 2 consecutive years, and between 21,000 and 35,000 afy if SWP allocations are reduced for 3 or more consecutive years. Table B-2 shows the sequence of SWP water allocations and associated pumping from the Saugus Formation, based on this operating plan and the 90-year model-simulation period that reflects historical hydrology in the SWP system from 1922 through 2011.
2. Pumping from the Alluvial Aquifer in a given year is governed by local hydrologic conditions in the Santa Clarita Valley. Specifically, year-by-year variations in Alluvial Aquifer pumping are simulated in the model according to variability in local rainfall and the commensurate recharge that occurs from rainfall infiltration, stormwater infiltration, and Santa Clara River streamflows that (1) are generated within the local watershed and (2) flow into the groundwater basin from the upstream Acton Basin. Under the Groundwater Operating Plan, pumping ranges between 30,000 and 40,000 afy during normal and above-normal rainfall years, but is reduced to between 30,000 and 35,000 afy during locally dry years because of operational constraints for certain Alluvial Aquifer wells in the eastern-most portion of the valley. Table B-3 shows the sequence of historical rainfall cycles and associated pumping from the Alluvial Aquifer, based on this operating plan and the 90-year model-simulation period that reflects historical rainfall in the valley from 1922 through 2011.

Because local droughts and SWP curtailments do not necessarily coincide with each other, it was decided during prior studies (CH2M HILL, 2004; CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) that the model would need to be run over several decades to capture the year-to-year differences between local hydrology and SWP hydrology and water availability, as well as the less frequent times when both systems experience similar hydrologic conditions. Table B-4 shows the combined sequence of pumping conditions for the Saugus Formation and the Alluvial Aquifer for the simulation period of 1922 through 2011 under the Groundwater Operating Plan.

The sustainability of the Groundwater Operating Plan has been analyzed in two prior reports (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) and further discussed and evaluated annually (LSCE, 2013). Those studies defined sustainability in terms of the renewability (recharge) of groundwater as reflected by the following indicators that are evaluated over a multi-decadal period comprised of wet, normal, and dry hydrologic conditions:

- A lack of chronic, or sustained, depletion of groundwater storage, as indicated by projected long-term trends in groundwater levels on a multi-decadal time scale
- Maintenance of surface water flows within the western portion of the basin and surface water outflow to downstream basins¹

The two sustainability studies (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) reached the following conclusions:

- The groundwater basin historically has been, and continues to be, in good operating condition and not in overdraft, as indicated by historical data.
- Based on historical climate conditions in the Santa Clarita Valley and in the northern California watersheds that provide water to the SWP, the Groundwater Operating Plan for the Santa Clarita Valley is sustainable over varying hydrologic conditions because it is feasible to intermittently exceed a long-term average yield for one or more years without creating long-term adverse impacts to the groundwater system and the Santa Clara River.
- Model simulations replicate the purveyors' historical difficulty of sustaining pumping at the eastern end of the Alluvial Aquifer during years of below-normal rainfall. In this localized area within the Santa Clarita Valley, this condition is particularly evident if several years or a few decades of predominantly below-normal rainfall years were to occur in the future, such as occurred during much of the 5 decades from the mid-1920s through the mid-1970s.
- Some climate-change models suggest that certain potential long-term drying trends could decrease local groundwater recharge to the point that lower and declining groundwater levels might render the plan difficult to achieve at certain times, primarily in the Alluvial Aquifer. However, other climate models suggest that rainfall trends could be generally similar to historical averages and fluctuations, and possibly could produce even wetter conditions than observed in the past. Consequently, while conclusions about possible future rainfall and climate conditions cannot be made with a high degree of certainty, the analysis of a broad range of climate change possibilities indicates that the Groundwater Operating Plan is likely to remain

¹ These flows are partially maintained by groundwater discharges to the Santa Clara River within the basin. Although the development and use of groundwater in a sustainable manner necessitate the inducement of recharge from surface water, sustainability does not rely on inducing groundwater recharge by eliminating surface water flows. Rather, sustainability retains surface water outflows and actually increases those flows with the importation of supplemental water (when contrasted to pre-SWP conditions).

sustainable, albeit with the same physical constraints to full pumping in the eastern part of the basin as have been historically experienced.

- The Groundwater Operating Plan can be used for long-term water supply planning purposes. In particular, although increased pumping from the Saugus Formation during periods of reduced SWP water availability can be expected to cause short-term declines in groundwater levels, it is not projected to cause permanent declines in groundwater discharges to the Santa Clara River or to streamflows in the river. After a period of increased groundwater pumping from the Saugus Formation comes to an end, Saugus Formation groundwater levels can be expected to recover to conditions observed during years of normal SWP water availability.

The well-specific pumping rates for Saugus Formation production wells under the Groundwater Operating Plan are listed in Table B-5. The table provides this information for two wells owned by the Newhall County Water District (NCWD), two wells owned by CLWA, six existing wells owned by Valencia Water Company (VWC), a well in Hasley Canyon (near the Palmer golf course) that is owned and operated by the Los Angeles County Waterworks District 36 (LACWWD36), and three future wells whose locations and designs are known only approximately at this time. The pumping rates and schedules for each specific Saugus Formation production well are listed for each type of year (normal, SWP curtailment year 1, SWP curtailment year 2, and SWP curtailment year 3) using information on the capacity, recent and planned use, and location of each well². Under this pumping program, the two CLWA production wells (Saugus 1 and Saugus 2) each operate at a sustained rate of 1,100 gallons per minute for the purposes of providing containment of perchlorate emanating from the Whittaker Bermite property. This operation of the Saugus 1 and Saugus 2 wells commenced in May 2010, under a permit issued by the California Department of Public Health and in accordance with the Interim Remedial Action Plan that was approved by the California Department of Toxic Substances Control. The design of this containment program was developed using the purveyors' groundwater flow model (CH2M HILL, 2004). Groundwater production rates and schedules for Wells V201 and V205 have been developed from modeling simulations (GSI and LSCE, 2014), and pumping is expected to resume at these wells in 2014 or 2015 upon construction and final permitting of perchlorate treatment at Well V201.

Using the Groundwater Operating Plan and the associated purveyor-by-purveyor total groundwater supply needs as an underlying constraint, the current study (and model simulations) of perchlorate containment options in the Saugus Formation examined how the distribution of Saugus Formation pumping should occur between individual wells, primarily with respect to the balance of pumping that should occur from the three VWC production wells that are closest to the Whittaker Bermite property (Wells V160, V201, and V205). Accordingly, a series of model runs was conducted that simulated the year-to-year and multi-decadal cycles of SWP water availability and commensurate annual groundwater production volumes from the Saugus Formation.

² Table B-5 only lists Saugus Formation wells that are anticipated to be operating in the future. Existing wells that are not listed in this table (such as NCWD Wells NC7, NC10, and NC11) currently are not in service and, therefore, are not expected to provide significant quantities of water in the future.

B.3 References

- CH2M HILL. 2004. *Final Report: Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property*. Presented in Support of the 97-005 Permit Application. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water Company). December 2004.
- CH2M HILL and LSCE. 2005. *Analysis of Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin, Los Angeles County California*. Prepared for The Upper Basin Water Purveyors (Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water Company) by CH2M HILL and Luhdorff and Scalmanini Consulting Engineers (LSCE). August 2005.
- DWR. 2008. *The State Water Project Delivery Reliability Report 2007*. California Department of Water Resources (DWR). August 2008.
- DWR. 2012. *Technical Addendum to the State Water Project Delivery Reliability Report 2011*. California Department of Water Resources (DWR). June 2012.
- GSI and LSCE. 2014. *Draft Report: Perchlorate Containment Plan for Well V201 and Saugus Formation Groundwater in the Santa Clarita Valley (Task 3 of the Well V201 Restoration Program)*. Prepared for Valencia Water Company. Prepared by GSI Water Solutions (GSI) and Luhdorff and Scalmanini Consulting Engineers (LSCE). March 2014.
- KJC, N. Clemm, LSCE, and Stacy Miller Public Affairs. 2011. *2010 Urban Water Management Plan*. Prepared for Castaic Lake Water Agency (CLWA), CLWA Santa Clarita Water Division, Newhall County Water District, Valencia Water Company, and Los Angeles County Waterworks District No. 36 by Kennedy/Jenks Consultants (KJC), Nancy Clemm, Luhdorff & Scalmanini Consulting Engineers (LSCE), and Stacy Miller Public Affairs. June 2011.
- LSCE. 2013. *2012 Santa Clarita Valley Water Report*. Prepared for Castaic Lake Water Agency (CLWA), CLWA Santa Clarita Water Division, Los Angeles County Waterworks District 36, Newhall County Water District, and Valencia Water Company by Luhdorff and Scalmanini Consulting Engineers (LSCE). June 2013.
- LSCE and GSI. 2009. *Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin*. Prepared for the Santa Clarita Valley Municipal Water Purveyors by Luhdorff and Scalmanini Consulting Engineers (LSCE) and GSI Water Solutions (GSI). August 2009.

Table B-1
DWR-Estimated SWP System-Wide Water Allocations Under 2007 and 2011 Conditions
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

Year	SWP System-Wide Water Allocations from the California Bay-Delta			Saugus Formation Pumping
	Historical SWP Hydrology	Percent of Max. Table A Deliveries		Year Type
		2007 Conditions	2011 Conditions	
1922	Above Normal	89%	60%	Normal
1923	Below Normal	76%	70%	Normal
1924	Critical	10%	35%	Dry Year 1
1925	Dry	40%	46%	Normal
1926	Dry	53%	53%	Normal
1927	Wet	89%	64%	Normal
1928	Above Normal	50%	70%	Normal
1929	Critical	18%	31%	Dry Year 1
1930	Dry	49%	36%	Dry Year 2
1931	Critical	27%	35%	Dry Year 3
1932	Dry	32%	40%	Dry Year 4
1933	Critical	48%	42%	Dry Year 5
1934	Critical	32%	24%	Dry Year 6
1935	Below Normal	81%	59%	Normal
1936	Below Normal	76%	67%	Normal
1937	Below Normal	78%	75%	Normal
1938	Wet	82%	81%	Normal
1939	Dry	79%	74%	Normal
1940	Above Normal	77%	62%	Normal
1941	Wet	61%	64%	Normal
1942	Wet	77%	79%	Normal
1943	Wet	76%	79%	Normal
1944	Dry	71%	63%	Normal
1945	Below Normal	75%	64%	Normal
1946	Below Normal	77%	70%	Normal
1947	Dry	56%	66%	Normal
1948	Below Normal	63%	60%	Normal
1949	Dry	31%	59%	Dry Year 1
1950	Below Normal	60%	54%	Normal
1951	Above Normal	85%	66%	Normal
1952	Wet	63%	72%	Normal
1953	Wet	80%	74%	Normal
1954	Above Normal	77%	66%	Normal
1955	Dry	28%	46%	Dry Year 1
1956	Wet	87%	72%	Normal
1957	Above Normal	62%	61%	Normal
1958	Wet	73%	74%	Normal
1959	Below Normal	84%	66%	Normal
1960	Dry	35%	54%	Dry Year 1
1961	Dry	57%	59%	Normal
1962	Below Normal	72%	60%	Normal
1963	Wet	82%	68%	Normal
1964	Dry	53%	61%	Normal
1965	Wet	69%	66%	Normal
1966	Below Normal	79%	70%	Normal
1967	Wet	72%	68%	Normal
1968	Below Normal	80%	71%	Normal
1969	Wet	64%	71%	Normal
1970	Wet	79%	78%	Normal
1971	Wet	80%	67%	Normal
1972	Below Normal	41%	60%	Normal
1973	Above Normal	75%	62%	Normal
1974	Wet	77%	77%	Normal
1975	Wet	78%	72%	Normal
1976	Critical	63%	67%	Normal
1977	Critical	6%	9%	Dry Year 3
1978	Above Normal	87%	64%	Normal
1979	Below Normal	76%	75%	Normal
1980	Above Normal	66%	72%	Normal
1981	Dry	76%	63%	Normal
1982	Wet	71%	73%	Normal
1983	Wet	60%	70%	Normal
1984	Wet	78%	76%	Normal
1985	Dry	77%	71%	Normal
1986	Wet	56%	72%	Normal
1987	Dry	68%	49%	Normal
1988	Critical	12%	19%	Dry Year 1
1989	Dry	76%	62%	Normal
1990	Critical	9%	25%	Dry Year 2
1991	Critical	18%	33%	Dry Year 3
1992	Critical	26%	24%	Dry Year 4
1993	Above Normal	90%	66%	Normal
1994	Critical	51%	59%	Normal
1995	Wet	72%	71%	Normal
1996	Wet	83%	79%	Normal
1997	Wet	75%	77%	Normal
1998	Wet	73%	78%	Normal
1999	Wet	83%	79%	Normal
2000	Above Normal	84%	67%	Normal
2001	Dry	28%	35%	Dry Year 1
2002	Dry	52%	62%	Normal
2003	Above Normal	71%	70%	Normal
2004	Below Normal / Dry	65%		Normal
2005	Wet / Above Normal	90%		Normal
2006	Wet / Wet	100%		Normal
2007	Dry / Critical	60%		Normal
2008	Critical	35%		Dry Year 1
2009	Dry	40%		Dry Year 2
2010	Below Normal	50%		Normal
2011	Wet	80%		Normal

Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

DWR = California Department of Water Resources SWP = California State Water Project

Table B-2
SWP Deliveries and Groundwater Operating Plan for the Saugus Formation
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

Year	Historical SWP Hydrology	SWP Water Allocations from the California Bay-Delta		Design of Updated Basin Analysis		
		Percent of Max. Table A Deliveries		Saugus Pumping: Year Type	Saugus Operating Plan Pumping Volume (afy)	
		2007 Conditions	2011 Conditions			
1922	Above Normal	89%	60%	Normal	11,000	Mild Single Dry Year
1923	Below Normal	76%	70%	Normal	11,000	
1924	Critical	10%	35%	Dry Year 1	15,000	
1925	Dry	40%	46%	Normal	11,000	
1926	Dry	53%	53%	Normal	11,000	
1927	Wet	89%	64%	Normal	11,000	
1928	Above Normal	50%	70%	Normal	11,000	
1929	Critical	18%	31%	Dry Year 1	15,000	6-Year Drought (1929-1934)
1930	Dry	49%	36%	Dry Year 2	11,000	
1931	Critical	27%	35%	Dry Year 3	25,000	
1932	Dry	32%	40%	Dry Year 4	35,000	
1933	Critical	48%	42%	Dry Year 5	35,000	
1934	Critical	32%	24%	Dry Year 6	35,000	
1935	Below Normal	81%	59%	Normal	11,000	
1936	Below Normal	76%	67%	Normal	11,000	
1937	Below Normal	78%	75%	Normal	11,000	
1938	Wet	82%	81%	Normal	11,000	
1939	Dry	79%	74%	Normal	11,000	
1940	Above Normal	77%	62%	Normal	11,000	
1941	Wet	61%	64%	Normal	11,000	
1942	Wet	77%	79%	Normal	11,000	
1943	Wet	76%	79%	Normal	11,000	
1944	Dry	71%	63%	Normal	11,000	
1945	Below Normal	75%	64%	Normal	11,000	
1946	Below Normal	77%	70%	Normal	11,000	
1947	Dry	56%	66%	Normal	11,000	
1948	Below Normal	63%	60%	Normal	11,000	
1949	Dry	31%	59%	Dry Year 1	15,000	Mild Single Dry Year
1950	Below Normal	60%	54%	Normal	11,000	
1951	Above Normal	85%	66%	Normal	11,000	
1952	Wet	63%	72%	Normal	11,000	
1953	Wet	80%	74%	Normal	11,000	
1954	Above Normal	77%	66%	Normal	11,000	
1955	Dry	28%	46%	Dry Year 1	15,000	Mild Single Dry Year
1956	Wet	87%	72%	Normal	11,000	
1957	Above Normal	62%	61%	Normal	11,000	
1958	Wet	73%	74%	Normal	11,000	
1959	Below Normal	84%	66%	Normal	11,000	
1960	Dry	35%	54%	Dry Year 1	15,000	Mild Single Dry Year
1961	Dry	57%	59%	Normal	11,000	
1962	Below Normal	72%	60%	Normal	11,000	
1963	Wet	82%	68%	Normal	11,000	
1964	Dry	53%	61%	Normal	11,000	
1965	Wet	69%	66%	Normal	11,000	
1966	Below Normal	79%	70%	Normal	11,000	
1967	Wet	72%	68%	Normal	11,000	
1968	Below Normal	80%	71%	Normal	11,000	
1969	Wet	64%	71%	Normal	11,000	
1970	Wet	79%	78%	Normal	11,000	
1971	Wet	80%	67%	Normal	11,000	
1972	Below Normal	41%	60%	Normal	11,000	
1973	Above Normal	75%	62%	Normal	11,000	
1974	Wet	77%	77%	Normal	11,000	
1975	Wet	78%	72%	Normal	11,000	
1976	Critical	63%	67%	Normal	11,000	
1977	Critical	6%	9%	Dry Year 3	35,000	
1978	Above Normal	87%	64%	Normal	11,000	
1979	Below Normal	76%	75%	Normal	11,000	
1980	Above Normal	66%	72%	Normal	11,000	
1981	Dry	76%	63%	Normal	11,000	
1982	Wet	71%	73%	Normal	11,000	
1983	Wet	60%	70%	Normal	11,000	
1984	Wet	78%	76%	Normal	11,000	
1985	Dry	77%	71%	Normal	11,000	
1986	Wet	56%	72%	Normal	11,000	
1987	Dry	68%	49%	Normal	11,000	
1988	Critical	12%	19%	Dry Year 1	15,000	6-Year Drought (1987-1992)
1989	Dry	76%	62%	Normal	11,000	
1990	Critical	9%	25%	Dry Year 2	25,000	
1991	Critical	18%	33%	Dry Year 3	35,000	
1992	Critical	26%	24%	Dry Year 4	35,000	
1993	Above Normal	90%	66%	Normal	11,000	
1994	Critical	51%	59%	Normal	11,000	
1995	Wet	72%	71%	Normal	11,000	
1996	Wet	83%	79%	Normal	11,000	
1997	Wet	75%	77%	Normal	11,000	
1998	Wet	73%	78%	Normal	11,000	
1999	Wet	83%	79%	Normal	11,000	
2000	Above Normal	84%	67%	Normal	11,000	
2001	Dry	28%	35%	Dry Year 1	15,000	Mild Single Dry Year
2002	Dry	52%	62%	Normal	11,000	
2003	Above Normal	71%	70%	Normal	11,000	
2004	Below Normal / Dry		65%	Normal	11,000	
2005	Wet / Above Normal		90%	Normal	11,000	
2006	Wet / Wet		100%	Normal	11,000	
2007	Dry / Critical		60%	Normal	11,000	
2008	Critical	35%		Dry Year 1	15,000	
2009	Dry	40%		Dry Year 2	25,000	
2010	Below Normal		50%	Normal	11,000	
2011	Wet		80%	Normal	11,000	

Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

DWR = California Department of Water Resources SWP = California State Water Project



Table B-3
Local Hydrology and the Groundwater Operating Plan for the Alluvial Aquifer
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

Year	Local Rainfall (inches) ^a	Year Type	Alluvial Aquifer Pumping under the Groundwater Operating Plan (afy)
1922	~ 32	Normal	30,000-40,000
1923	~ 14	Normal	30,000-40,000
1924	~ 8	Dry Year 1	30,000-35,000
1925	~ 7	Dry Year 2	30,000-35,000
1926	~ 26	Dry Year 3	30,000-35,000
1927	~ 24	Normal	30,000-40,000
1928	~ 10	Normal	30,000-40,000
1929	~ 12	Dry Year 1	30,000-35,000
1930	~ 12	Dry Year 2	30,000-35,000
1931	24.41	Dry Year 3	30,000-35,000
1932	13.73	Normal	30,000-40,000
1933	20.52	Dry Year 1	30,000-35,000
1934	18.05	Dry Year 2	30,000-35,000
1935	12.21	Dry Year 3	30,000-35,000
1936	20.47	Dry Year 4	30,000-35,000
1937	17.92	Dry Year 5	30,000-35,000
1938	32.75	Dry Year 6	30,000-35,000
1939	11.27	Normal	30,000-40,000
1940	21.37	Dry Year 1	30,000-35,000
1941	42.14	Dry Year 2	30,000-35,000
1942	7.10	Normal	30,000-40,000
1943	37.03	Dry Year 1	30,000-35,000
1944	24.63	Normal	30,000-40,000
1945	14.56	Normal	30,000-40,000
1946	21.71	Normal	30,000-40,000
1947	4.16	Normal	30,000-40,000
1948	9.13	Dry Year 1	30,000-35,000
1949	9.93	Dry Year 2	30,000-35,000
1950	6.84	Dry Year 3	30,000-35,000
1951	12.42	Dry Year 4	30,000-35,000
1952	34.19	Dry Year 5	30,000-35,000
1953	4.88	Normal	30,000-40,000
1954	15.82	Dry Year 1	30,000-35,000
1955	13.91	Dry Year 2	30,000-35,000
1956	14.21	Dry Year 3	30,000-35,000
1957	22.85	Dry Year 4	30,000-35,000
1958	23.14	Dry Year 5	30,000-35,000
1959	9.81	Normal	30,000-40,000
1960	11.64	Dry Year 1	30,000-35,000
1961	8.82	Dry Year 2	30,000-35,000
1962	21.22	Dry Year 3	30,000-35,000
1963	12.79	Dry Year 4	30,000-35,000
1964	10.09	Dry Year 5	30,000-35,000
1965	32.28	Dry Year 6	30,000-35,000
1966	14.57	Normal	30,000-40,000
1967	23.23	Dry Year 1	30,000-35,000
1968	6.90	Dry Year 2	30,000-35,000
1969	32.42	Dry Year 3	30,000-35,000
1970	23.19	Normal	30,000-40,000
1971	13.75	Normal	30,000-40,000
1972	4.15	Dry Year 1	30,000-35,000
1973	19.79	Dry Year 2	30,000-35,000
1974	18.04	Dry Year 3	30,000-35,000
1975	10.92	Dry Year 4	30,000-35,000
1976	14.02	Dry Year 5	30,000-35,000
1977	20.87	Dry Year 6	30,000-35,000
1978	42.17	Dry Year 7	30,000-35,000
1979	21.47	Normal	30,000-40,000
1980	27.00	Normal	30,000-40,000
1981	13.42	Normal	30,000-40,000
1982	20.20	Dry Year 1	30,000-35,000
1983	39.07	Normal	30,000-40,000
1984	12.86	Normal	30,000-40,000
1985	8.37	Dry Year 1	30,000-35,000
1986	18.02	Dry Year 2	30,000-35,000
1987	14.45	Normal	30,000-40,000
1988	16.92	Dry Year 1	30,000-35,000
1989	7.56	Dry Year 2	30,000-35,000
1990	6.98	Dry Year 3	30,000-35,000
1991	17.21	Dry Year 4	30,000-35,000
1992	32.03	Dry Year 5	30,000-35,000
1993	32.72	Normal	30,000-40,000
1994	10.27	Normal	30,000-40,000
1995	29.15	Dry Year 1	30,000-35,000
1996	15.88	Normal	30,000-40,000
1997	13.35	Normal	30,000-40,000
1998	30.73	Normal	30,000-40,000
1999	8.96	Normal	30,000-40,000
2000	14.04	Normal	30,000-40,000
2001	22.24	Dry Year 1	30,000-35,000
2002	7.90	Dry Year 2	30,000-35,000
2003	15.70	Dry Year 3	30,000-35,000
2004	22.79	Dry Year 4	30,000-35,000
2005	37.15	Normal	30,000-40,000
2006	13.89	Normal	30,000-40,000
2007	5.78	Dry Year 1	30,000-35,000
2008	18.21	Normal	30,000-40,000
2009	11.59	Dry Year 1	30,000-35,000
2010	24.32	Normal	30,000-40,000
2011	16.03	Normal	30,000-40,000

^aFrom records at Newhall-Soledad rain gage (Station No. FC32CE).
Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.
afy = acre-feet per year

*Alluvial and Saugus Formation Pumping Patterns for the Simulation of 1922-2011 Historical Hydrology
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)*

^a From records at Newhall-Soledad rain gage (Station No. FC32CE). Pumping year type lags local rainfall by 1 year. Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.

^b Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

SWP = California State Water Project

Table B-5

Annual Groundwater Production Volumes (Acre-Feet) for Individual Saugus Formation Water Supply Wells under the Groundwater Operating Plan
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Owner	Well Name	Year Type for State Water Project Allocation			
		Normal Years	Curtailment Year 1	Curtailment Year 2	Curtailment Year 3+
NCWD	NC12	1,765	2,494	2,494	2,494
	NC13	1,765	2,494	2,494	2,494
Total Pumping (NCWD Wells)		3,530	4,988	4,988	4,988
CLWA	Saugus 1	1,772	1,772	1,772	1,772
	Saugus 2	1,772	1,772	1,772	1,772
Total Pumping (CLWA Wells)		3,544	3,544	3,544	3,544
LACWWD36	LACWWD36-19	500	500	500	500
Total Pumping (LACWWD36)		500	500	500	500
VWC	V159	50	50	50	50
	V160 (Municipal)	0	0	0	0
	V160 (Val. Ctry Club)	500	500	500	500
	V201	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777
	V205	366	2,184	4,355	4,355
	V206 and V207*	547	3,582	3,757	6,905
Total Pumping (VWC Wells)		4,690 to 5,240	9,543 to 10,093	11,889 to 12,439	15,037 to 15,587
CLWA	Future Wells	0	0	3,756	10,358
Total Pumping (Future Wells)		0	0	3,756	10,358
Total Pumping (All Saugus Water Supply Wells)		12,264 to 12,814	18,575 to 19,125	24,677 to 25,227	34,427 to 34,977

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).

Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company

CLWA = Castaic Lake Water Agency

LACWWD36 = Los Angeles County Waterworks District #36

NCWD = Newhall County Water District

VWC = Valencia Water Company

* Wells V206, V207, and the three future CLWA wells together will comprise the Magic Mountain wellfield.

Accordingly, the distribution of pumping between these various wells may differ from the values shown in this table.

APPENDIX C
PHYSICAL SETTING AND HYDROGEOLOGY OF THE SANTA CLARITA VALLEY

Physical Setting and Hydrogeology of the Santa Clarita Valley

Prepared by GSI Water Solutions, Inc.
December 2014

Following are discussions of the physical setting of the local groundwater basin (Section C.1), its climate (Section C.2), and its geology (Section C.3); a summary of groundwater occurrence and the mechanisms by which groundwater recharge and discharge occur (Section C.4); and a list of references cited in this attachment (Section C.5). This attachment is the same as Appendix C in a recent report prepared by GSI and LSCE (2014).

C.1 Basin Setting

The Santa Clara River Valley East Groundwater Subbasin lies within the relatively flat-lying Santa Clarita Valley and portions of the surrounding hills and mountains. This groundwater basin extends from approximately the Los Angeles-Ventura County line (county line) on the west to the community of Lang on the east, and from the southern end of Castaic Lake on the north to the intersection of the Golden State Freeway (Interstate 5 [I-5]) and the Antelope Valley Freeway (State Highway 14) on the south. The mountains that surround this groundwater basin and the Santa Clarita Valley itself include the Santa Susana and San Gabriel Mountains to the south and the Sierra Pelona and Leibre-Sawmill Mountains to the north. Elevations range from about 800 feet on the valley floor to about 6,500 feet in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of about 3,200 feet at the topographic divide separating the Upper Santa Clara River Hydrologic Area from the Mojave Desert.

Before the 1960s, the predominant land use in the Santa Clarita Valley was agricultural, with much of the valley undeveloped. Urbanization began gradually in the 1960s, with a rapid increase beginning in the late 1970s and early 1980s and continuing to the present. Accompanying the rapid population increase has been a gradual change in valley land use patterns, from largely agricultural to urban and suburban developments. Nevertheless, a considerable portion of the hills and low mountains bordering the main river valley remain in a natural, undeveloped condition.

C.2 Climate

The Santa Clarita Valley has a semi-arid Mediterranean-type climate, characterized by long, dry summers and relatively short, wet winters. Temperatures in the Santa Clarita Valley range from a maximum of approximately 100 to 110 degrees Fahrenheit (°F) during the summer to a minimum of 20°F to 30°F in the winter. Mean monthly temperatures range between approximately 77°F in the summer and 48°F in the winter.

Rainfall data have been recorded since 1883 at the Newhall-Soledad gage (Station No. 32C), located near San Fernando Road in the community of Newhall. On a calendar year basis, average and median rainfall during the past 8 decades (from 1931 through 2011) at this gage are 18.1 and 15.9 inches per year, respectively. Annual rainfall is highly variable from year to year, ranging from about 4 inches (in calendar years 1947 and 1972) to about 42 inches (in calendar years 1941 and 1978).

Approximately 80 percent of the annual precipitation in the Santa Clarita Valley falls between November and March. Most of the precipitation comes from winter storms that last only a few days and are separated by relatively long periods of dry weather.

Rainfall varies across the basin according to elevation differences and the locations of surrounding mountain ranges. A second rain gage has operated farther south, at the Newhall County Water District office, since 1979. This gage has shown on average about 17 percent higher rainfall than the Newhall-Soledad gage, in part because of its closer proximity to the San Gabriel Mountains (which form the southern margin of the valley). As presented in the model development report (CH2M HILL, 2004a), the spatial variability in rainfall (expressed as contour lines of equal precipitation; i.e., rainfall isohyets) shows that average rainfall is notably higher (exceeding 25 inches/year on average) in the highest elevations of the watershed – areas that contribute surface water runoff that moves into, and then partially or wholly recharges, the groundwater basin.¹

C.3 Geology

Figure C-1 shows a geologic map of the Santa Clarita Valley. The local groundwater basin is underlain and laterally bounded by non-water-bearing bedrock units that are Miocene, Oligocene, and pre-Tertiary in geologic age. The Saugus Formation, which is of Pliocene and Pleistocene age, overlies these rocks within much of the local groundwater basin, except where the Saugus Formation is absent at the far western and eastern ends of the basin and in the upper reaches of some of the canyons. In these areas, the bedrock units are overlain by a blanket of unconsolidated alluvium of Quaternary geologic age, which comprises the Alluvial Aquifer.

In some areas where the alluvium is absent, the Saugus Formation is overlain by scattered outcrops of Quaternary-age terrace deposits, including on the Whittaker Bermite property. Here and elsewhere, the terrace deposits do not contain significant water resources because they typically are situated at elevations above the regional water table.

The Saugus Formation contains lenticular and interfingered beds of poorly consolidated to well-consolidated sandstone, conglomerate, and siltstone that are at least 7,500 feet thick in the deepest part of the basin. These terrestrial sediments were deposited in stream channels, floodplains, and alluvial fans by the ancestral drainage system in the valley. The coarser-grained materials in the Saugus Formation were deposited in the main channels of the ancestral drainage system, and the locations of these channels changed throughout the

¹ See Figure 2-5 in the model development report for isohyetal contours that display the average annual rainfall during the period from 1900 through 1960. These contours were developed by the U.S. Geological Survey (USGS), California Department of Water Resources, and the California Division of Mines and were downloaded in 2003 from a state Web site that is no longer in service.

approximately 3 million-year period of deposition of the Saugus Formation. Prior interpretations of geophysical electric log data indicate that the coarse-grained channel deposits (the primary water-bearing strata) are thicker and more numerous in some locations than in others. Although the Saugus Formation displays a considerable amount of lateral variability in lithology and grain size, some thicker stratigraphic packages can be traced through portions of the basin, as has been mapped by RCS (1988 and 2002) and CH2M HILL (2005b).

The deepest and oldest portion of the Saugus Formation, the Sunshine Ranch Member, was deposited in a marine environment and consists of fine-grained, low-permeability siltstone and sandstone. The Sunshine Ranch Member has a maximum thickness of approximately 3,500 feet in the central part of the basin. It is present at or close to ground surface at the margins of the Santa Clarita Valley. Geophysical (electric) logging indicates that the groundwater in much of the Sunshine Ranch Member may be somewhat brackish in quality and is not useful for municipal water supply purposes.

Faulting and folding of the rocks in the region have caused the sedimentary rocks, including the Saugus Formation, to form a bowl-shaped structure on a regional, basin-wide scale. The Saugus Formation dips generally toward the center of the “bowl,” mimicking the dip of the underlying bedrock units that underlie the Saugus Formation. However, certain features create structural imperfections in this bowl. Most notable are (1) Round Mountain, which is a localized knob of Saugus Formation sediments along the northern bank of the Santa Clara River just east of I-5; (2) the southeast-northwest-trending San Gabriel Fault; and (3) the east-west trending Holser Fault. The San Gabriel Fault is a northeast-dipping reverse fault with vertical displacement of the Saugus Formation of as much as 2,600 feet (RCS, 1988). The Saugus Formation is thickest south of the fault, and this is the area where all Saugus water supply wells are located. North of the San Gabriel Fault, the Saugus Formation is composed primarily of the older, fine-grained Sunshine Ranch member and has not been targeted for groundwater supply development. The Holser Fault is a spur off of the San Gabriel Fault. The Holser Fault shows vertical displacement of the Saugus Formation on the order of 100 to 200 feet. Another spur fault (the Whitney Canyon Fault) extends south from the San Gabriel Fault in the southeastern corner of the valley (southeast of the Whittaker Berrite property).

C.4 Groundwater Occurrence, Recharge, and Discharge

C.4.1 Groundwater Occurrence in the Alluvium

Groundwater is present in the alluvial valley occupied by the Santa Clara River and also in each tributary. Development of agricultural and municipal groundwater supplies from the alluvium (in the Alluvial Aquifer) has occurred primarily along the Santa Clara River and Castaic Creek, and also in the lower reaches of Bouquet Canyon and San Francisquito Canyon. Smaller amounts of water supply – primarily by individual domestic wells – have been developed elsewhere in the alluvium. The alluvial valley occupied by the South Fork Santa Clara River, which lies immediately west of the Whittaker Berrite property, contains only a thin saturated zone and hence has not been the target of groundwater supply development.

Available groundwater elevation data and aquifer test data indicate that the Alluvial Aquifer is unconfined (i.e., is under water table conditions). Transmissivity values are estimated to range from 4,700 square feet

per day (ft²/day), or 35,000 gallons per day (gpd) per foot (gpd/ft) to more than 100,000 ft²/day, or 750,000 gpd/ft (CH2M HILL, 2004a). The specific yield of the Alluvial Aquifer is estimated to range from about 0.09 to 0.16 (RCS, 1986 and 2002; CH2M HILL, 2004a). Based on interpretations of aquifer tests, specific capacity tests, and groundwater model calibration results, the hydraulic conductivity of the Alluvial Aquifer is estimated to range from 350 to 550 feet per day (ft/day) in the alluvial valley occupied by the Santa Clara River, and 100 to 550 ft/day in the alluvium that occupies the various tributary valleys.

C.4.2 Groundwater Occurrence in the Saugus Formation

Saugus Formation groundwater is present under unconfined conditions in the shallowest water-bearing zones where the Alluvial Aquifer is absent, and under semi-confined and confined conditions elsewhere. Available aquifer test data from Saugus Formation wells located near the center of the valley (where the Saugus is thickest) indicate that groundwater in the Saugus Formation is strongly confined (under pressure) in this area. Where the Saugus Formation crops out away from the center of the valley, the uppermost saturated zones are partially unconfined because the permeable beds are folded upward near the margin of the aquifer. In the highlands, the Saugus Formation beds are exposed at the ground surface, and in the valley, the top of the Saugus Formation is in contact with the Alluvial Aquifer wherever the alluvium is present.

The 1988 and 2002 hydrogeologic studies by RCS concluded that the Saugus Formation is discretely layered, with groundwater production occurring from discrete sand and gravel zones that exist throughout much of the total thickness of the formation. RCS also concluded that (1) it is hydrogeologically feasible to develop additional groundwater supplies from the Saugus Formation as long as wells are properly sited and constructed, and (2) the groundwater-yielding capability of the Saugus Formation likely is limited north and east of the San Gabriel fault compared with areas lying south of the fault (where all Saugus groundwater development has occurred to date). These findings later were supported by the U.S. Army Corps of Engineers (USACE) conceptual hydrogeologic evaluation (CH2M HILL, 2005a), which included three important findings related to groundwater occurrence on and near the Whittaker Bermite property:

1. Further indications (from water level data) that the San Gabriel Fault is a barrier to groundwater flow
2. An indication (from aquifer testing) that the Holser Fault likely is not a barrier to groundwater flow
3. The identification of eight distinct hydrostratigraphic units within the Saugus Formation, based on the lithological characteristics of the Saugus Formation at and in the immediate vicinity of the Whittaker Bermite property.

The definition of hydrostratigraphic units near the Whittaker Bermite property reflects the presence of alternating sequences of coarse and fine-grained beds within the Saugus Formation. The coarse-grained units are relatively thick and are identified as the SI, SIII, SV, SVII, and SVIII units, while the fine-grained beds are relatively thin in comparison and are designated as the SII, SIV, and SVI units. A schematic depiction of these units is illustrated in Figure C-2. More recently, the SIII unit has been further subdivided on the Whittaker Bermite property into the coarse-grained SIIIA and SIIIC subunits, and the intervening fine-grained SIIIB subunit.

As shown in a hydrostratigraphic cross section prepared by the USACE (Figure C-3), the eight major hydrostratigraphic units have been traced lithologically from the Whittaker Bermite property westward to the Saugus 1/Saugus 2 wells and to Wells V201 and V205. These wells are all open to the SIII, SV, and SVII coarse-grained units, which are the primary water-producing zones. Although these hydrostratigraphic units are traceable across the area shown in Figure C-3, inspections of geophysical logs and spinner flow profile surveys indicate that the distinctions in the hydraulic properties of the fine-grained versus the coarse-grained units may not be as strong west of the Whittaker Bermite property as is the case on that property. Specifically, LSCE (2013) found that the lithological definitions of the SIIIA, SIIIB, and SIIIC subunits are not as distinctly pronounced near these production wells as they are on the Whittaker Bermite property, but that some distinction between the SIII unit and the underlying SV unit could be made based on spinner testing results at Well V201 and former Well V157.

Transmissivity values in the Saugus Formation are estimated to range from about 400 to 25,000 ft²/day (3,000 to 180,000 gpd/ft), but are typically between 5,500 and 11,000 ft²/day (40,000 and 80,000 gpd/ft). Storativity values are on the order of 10⁻³ to 10⁻⁴. These aquifer parameter values have been estimated from well performance tests and from an aquifer storage and recovery (ASR) pump test and study conducted in the Saugus Formation (RCS, 2001 and 2002). Analyses of the ASR test data, including numerical model calibration runs, indicated that the bulk hydraulic conductivity of the Saugus Formation at Wells VWC-201 and VWC-205 is approximately 6.5 ft/day (CH2M HILL, 2004a). In the numerical model, the hydraulic conductivity of the Saugus Formation in the primary target area for groundwater development (the area south of the San Gabriel Fault) is represented as gradually decreasing with depth, from values of 5 to 10 ft/day in the upper hydrostratigraphic units to values of 0.1 to 5 ft/day in deeper hydrostratigraphic units.

C.4.3 Groundwater Recharge and Discharge

A detailed discussion of groundwater recharge and discharge for both the Alluvial Aquifer and the Saugus Formation is presented by CH2M HILL (2004a and 2004b). Figure C-4 is a schematic cross-sectional representation of the groundwater flow patterns in the Santa Clarita Valley, including the predominant recharge and discharge mechanisms for the two aquifer systems.

Groundwater elevation data indicate that the direction of groundwater flow in the Saugus Formation is toward the center of the valley from the highlands. The data indicate that Saugus Formation groundwater flows toward the western end of the Santa Clara Valley where it discharges naturally into the Alluvial Aquifer.

- The Saugus Formation is recharged by two principal sources: (1) infiltration of precipitation in the exposed portions of the Saugus Formation in the highlands surrounding the valley, and (2) seepage from the Alluvial Aquifer along the Santa Clara River and its tributaries, particularly in the central portion of the Santa Clarita Valley (including along the South Fork Santa Clara River).
- Discharge from the Saugus Formation occurs in part as groundwater pumping from wells that are completed to depths of as much as 2,000 feet. Discharge from the Saugus Formation also occurs at the west end of the valley, west of I-5, where water level data and geochemical data indicate that Saugus Formation groundwater naturally discharges to the Alluvial Aquifer. The Saugus Formation is not present at Blue Cut, which is approximately 3 miles downstream of the Saugus/Pico Formation

contact and about 1 mile downstream of the county line; consequently, the Saugus Formation does not discharge directly to the Santa Clara River.

C.5 References

CH2M HILL. 2004a. *Regional Groundwater Flow Model for the Santa Clarita Valley: Model Development and Calibration*. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Santa Clarita Water Division of CLWA, Newhall County Water District, and Valencia Water Company). April 2004.

CH2M HILL. 2004b. *Final Report: Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property*. Presented in Support of the 97-005 Permit Application. Prepared for the Upper Basin Water Purveyors (Castaic Lake Water Agency, Newhall County Water District, Santa Clarita Water Division of CLWA, and Valencia Water Company). December 2004.

CH2M HILL. 2005a. *Eastern Santa Clara Subbasin Groundwater Study, Santa Clarita, California: Conceptual Hydrogeology Technical Memorandum*. Prepared for United States Army Corps of Engineers, Los Angeles District, Southern Pacific Division. January 19, 2005.

CH2M HILL. 2005b. *Calibration Update of the Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, California*. Technical Memorandum prepared for The Santa Clarita Valley Water Purveyors. August 2005.

GSI and LSCE. 2014. Appendix C: Physical Setting and Hydrogeology of the Santa Clarita Valley. Contained in Draft Perchlorate Containment Plan for Well V201 and Saugus Formation Groundwater (Santa Clarita Valley, California). Report prepared for Valencia Water Company. Prepared by GSI Water Solutions, Inc. (GSI) and Luhdorff and Scalmanini Consulting Engineers (LSCE). March 2014.

LSCE. 2013. *Task 1 Historical Data Analysis, Restoration of Valencia Water Company Well V201, Santa Clarita Valley California*. Draft Technical Memorandum prepared for Keith Abercrombie, Valencia Water Company. Prepared by Luhdorff and Scalmanini Consulting Engineers (LSCE). December 2013.

RCS. 1986. *Hydrogeologic Investigation: Perennial Yield and Artificial Recharge Potential of the Alluvial Sediments in the Santa Clarita Valley of Los Angeles County, California*. December 1986. Richard C. Slade and Associates, LLC (RCS).

RCS. 1988. *Hydrogeologic Assessment of the Saugus Formation in the Santa Clarita Valley of Los Angeles County, California*. February 1988. Richard C. Slade and Associates, LLC (RCS).

RCS. 2001. *Assessment of the Hydrogeologic Feasibility of Aquifer Storage and Recovery, Saugus Formation, Santa Clarita Valley, California*. Richard C. Slade and Associates, LLC (RCS). February 2001.

RCS. 2002. *2001 Update Report: Hydrogeologic Conditions in the Alluvial and Saugus Formation Aquifer Systems*. Prepared for Santa Clarita Valley Water Purveyors. July 2002. Richard C. Slade and Associates, LLC (RCS).

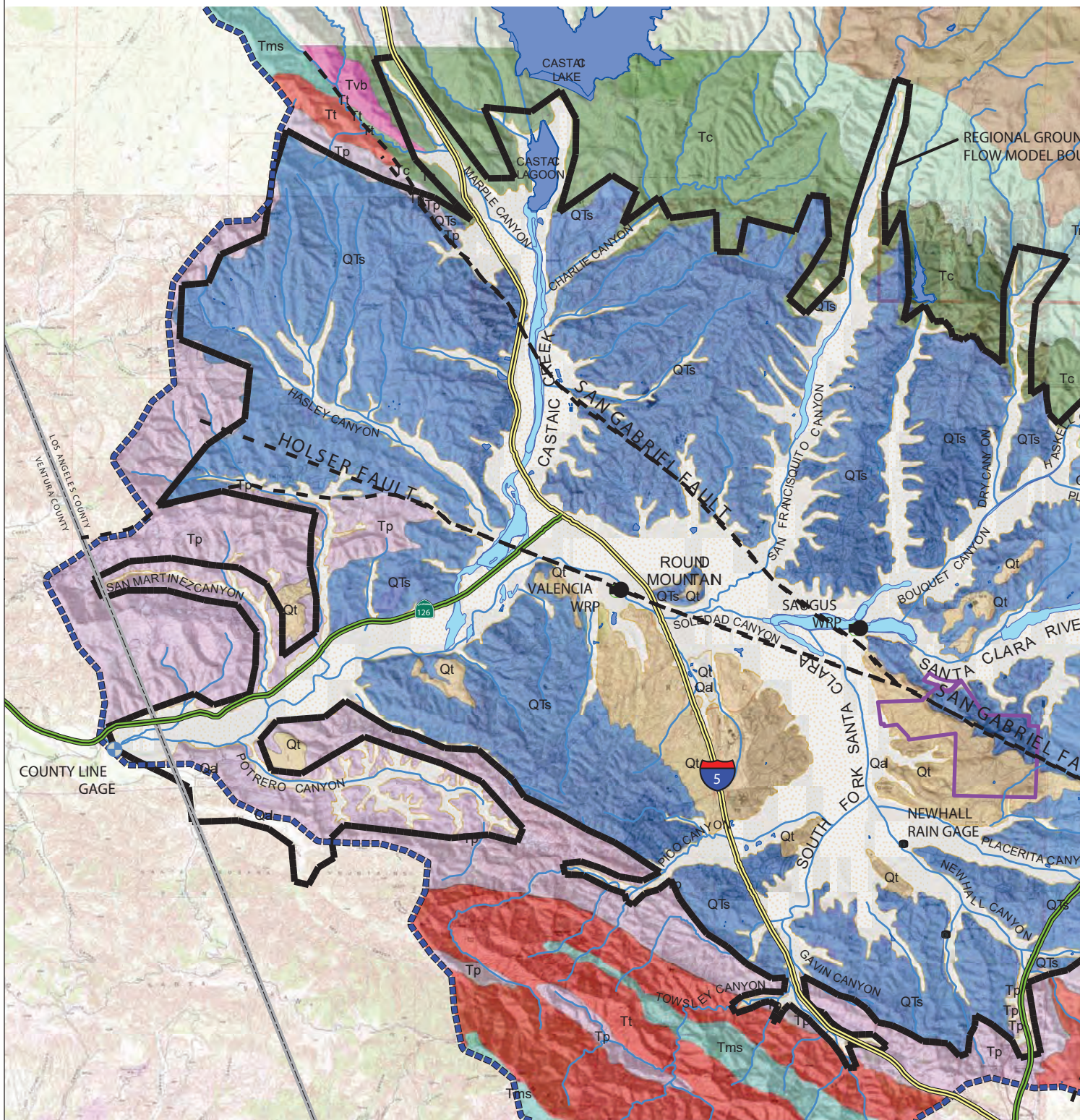
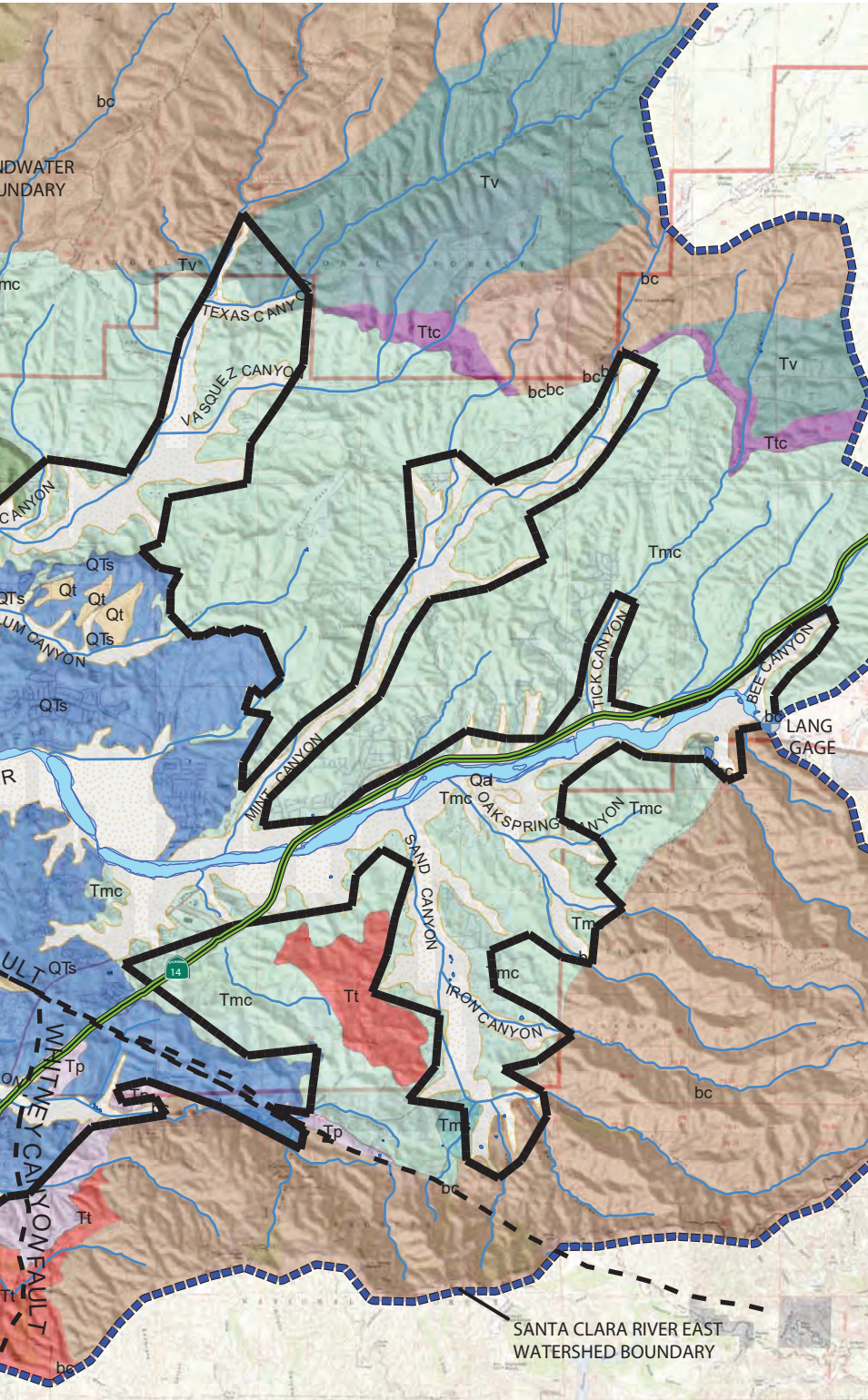


FIGURE C-1

Basin Geologic Map
Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)



LEGEND

GEOLOGY

- UNDIFFERENTIATED ALLUVIUM (Qal)
- TERRACE DEPOSITS (Qt)
- SAUGUS FORMATION (QTs)
- PICO FORMATION (Tp)
- TOWLES FORMATION (Tt)
- MINT CANYON FORMATION (Tms)
- CASTAIG FORMATION (Td)
- VIOLIN BRECCIA (Tvb)
- MINT CANYON FORMATION (Tmc)
- TICK CANYON FORMATION (Ttc)
- VASQUEZ FORMATION (Tv)
- UNDIFFERENTIATED BASEMENT COMPLEX (bc)

HYDROGRAPHY

- LAKE
- STREAM
- STREAM GAGE

MAJOR ROAD

- INTERSTATE
- STATE HIGHWAY
- WHITTAKER-BERMITER PROPERTY BOUNDARY





Explanation

- Quaternary Alluvium (Q_{AL})
- Quaternary Terrace Deposits (Q_T)

Saugus Formation

- Predominantly Fine-Grained
- Predominantly Coarse-Grained
- Undifferentiated Saugus Formation

SIII Saugus Formation Hydrostratigraphic Unit #3

Production Well Screen Interval

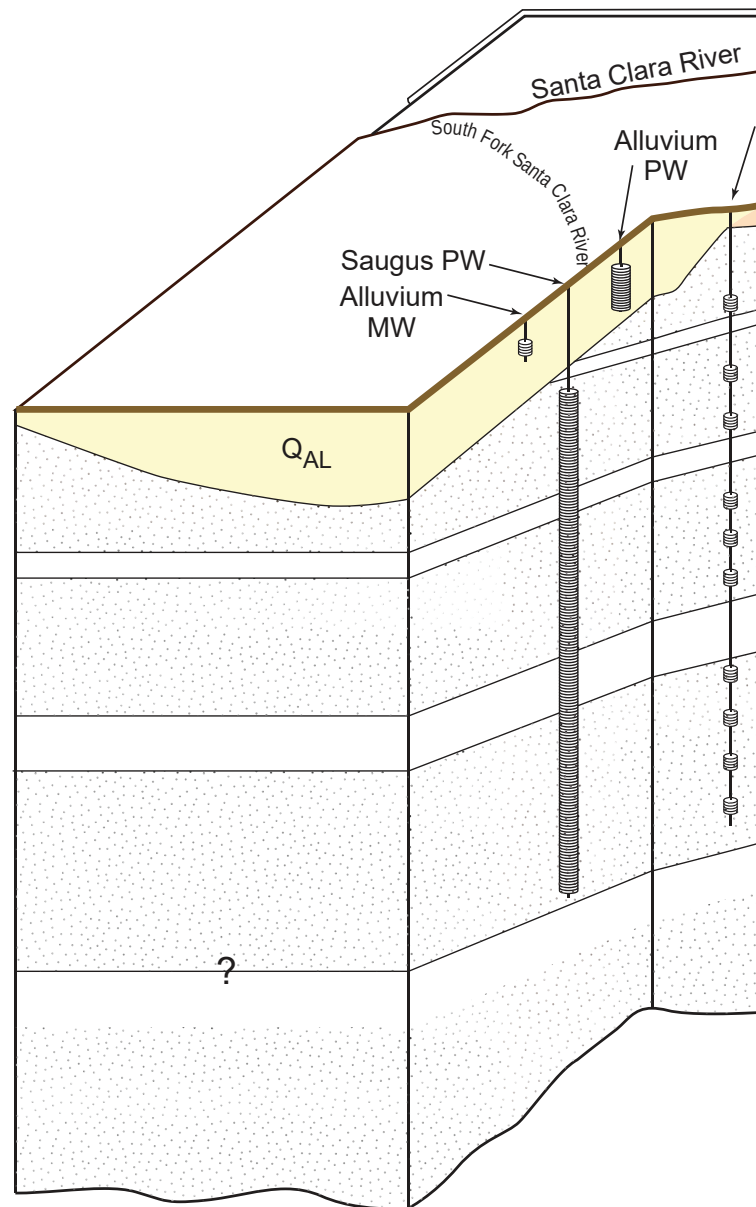
Monitoring Well Screen Interval

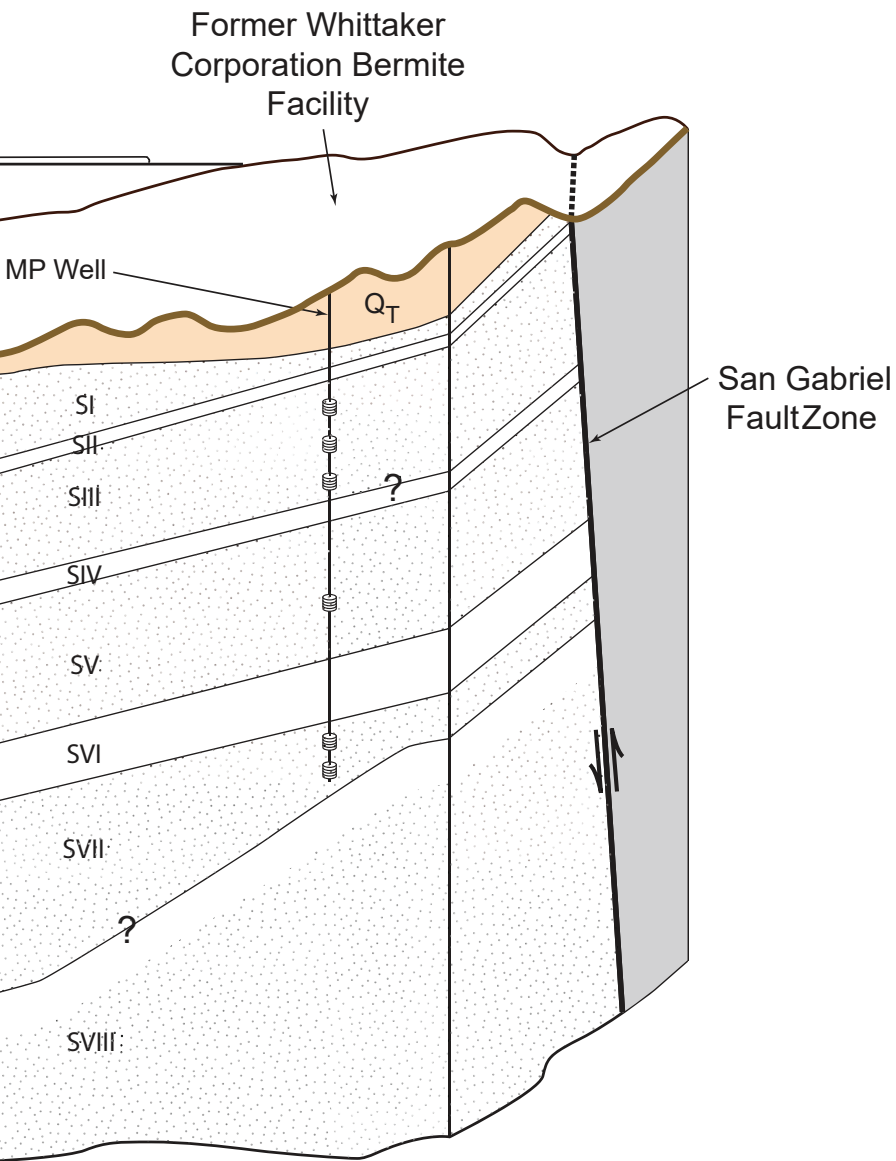
Fault

PW = Production Well

MW = Monitoring Well

MP = Multiport

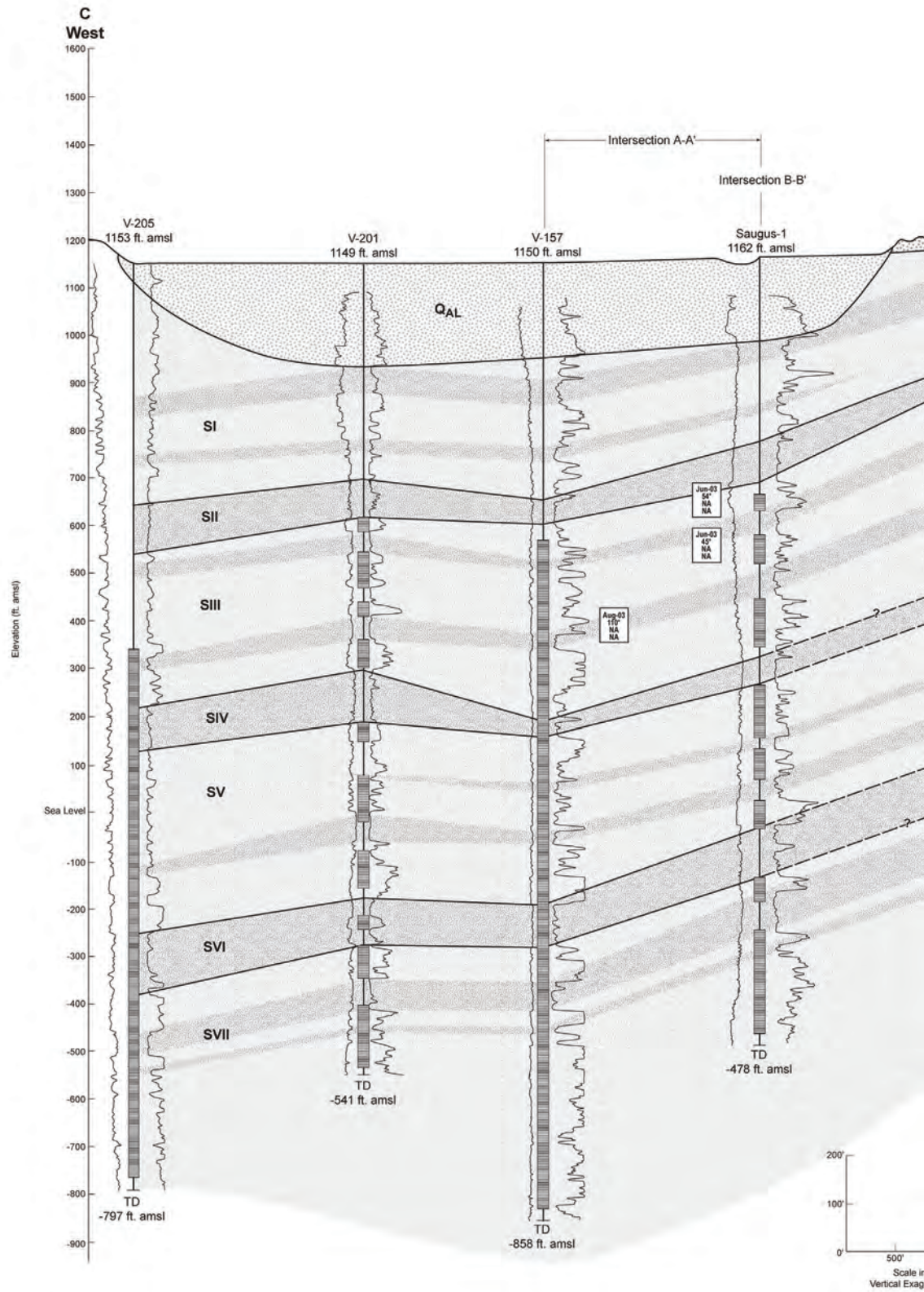




Source: CH2M HILL, 2005a

FIGURE C-2
 Cross-Sections Showing Layering
 in the Original Model
 Development of
 Groundwater Budget Terms for the
 Santa Clara River Valley East Subbasin
 Salt and Nutrient Management Plan
 (Santa Clarita Valley, California)

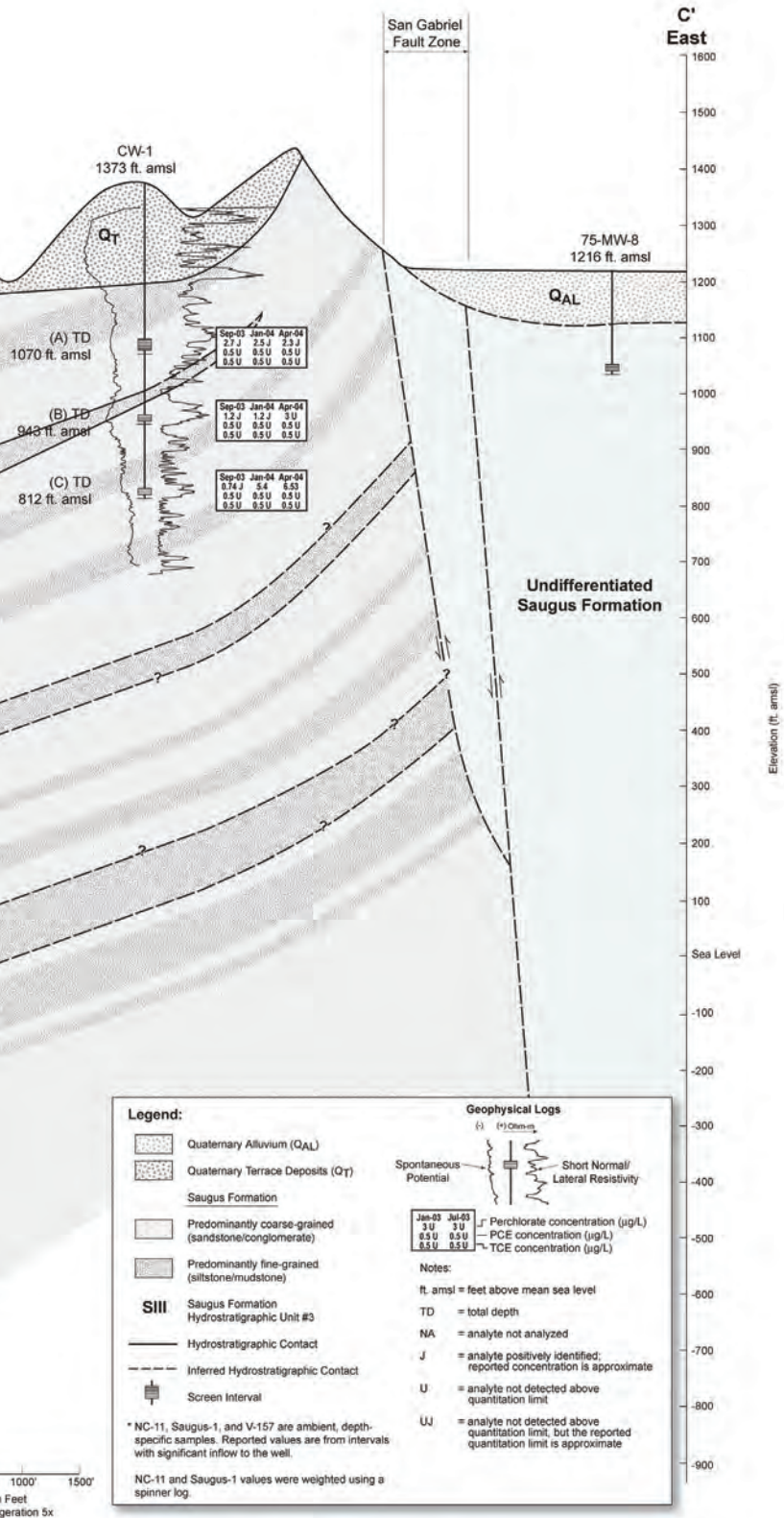


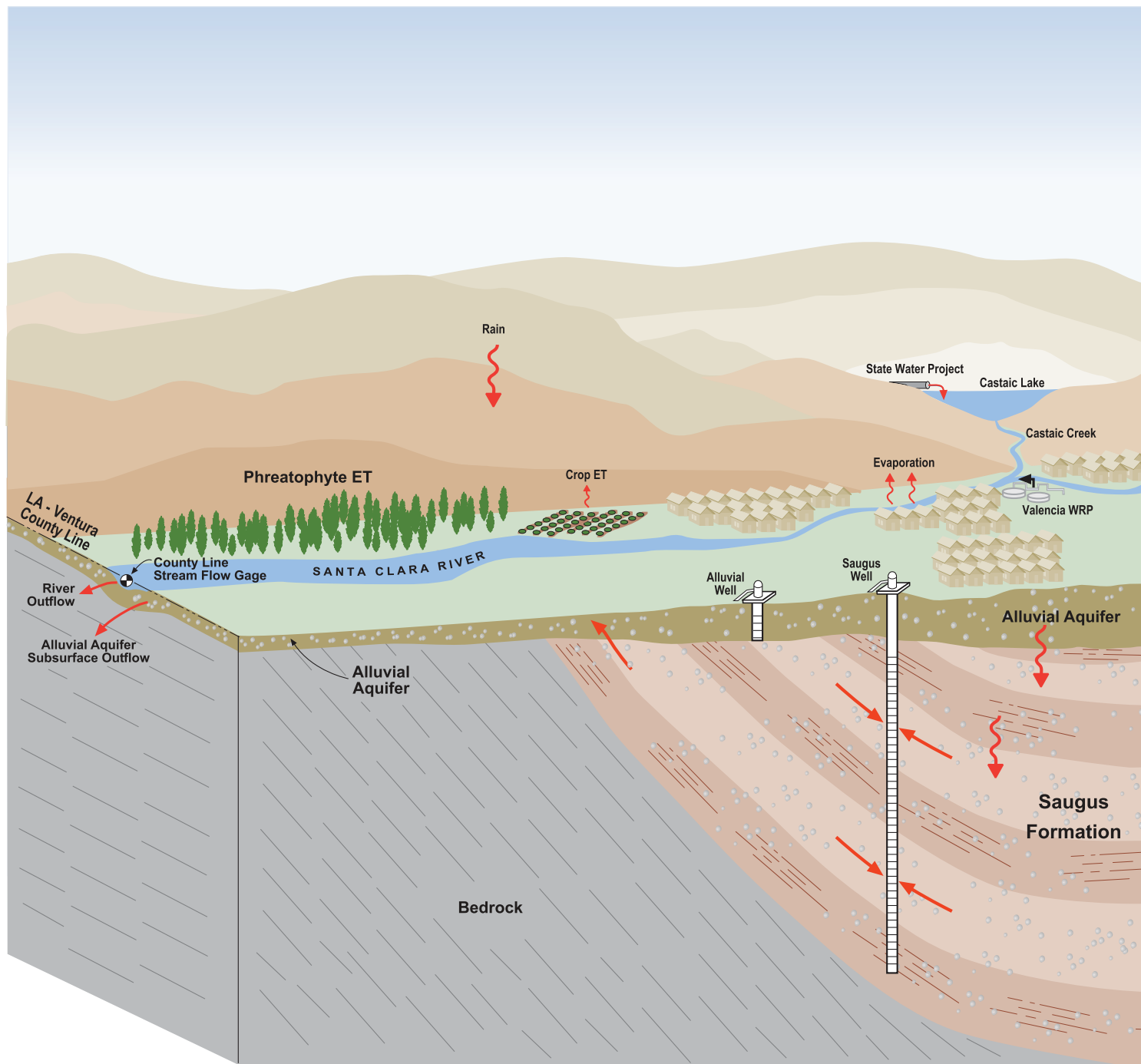


Source: CH2M HILL, 2005a

FIGURE C-3
Cross-Sections C-C'

Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)





Sources: CH2M HILL, 2004a and 2004b

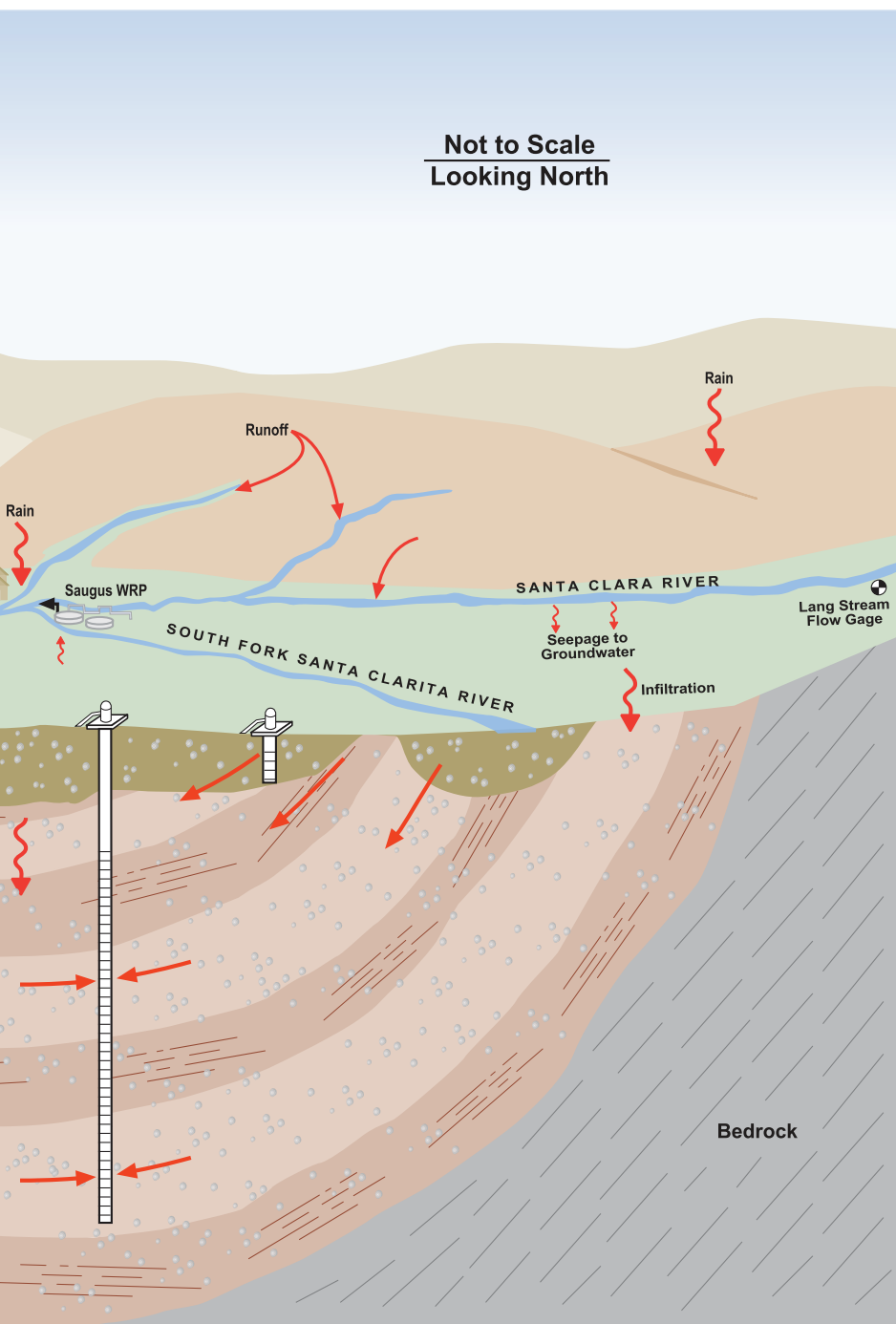


FIGURE C-4

Santa Clarita Valley Hydrogeology
Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)



APPENDIX D
MODEL-SIMULATED ANNUAL GROUNDWATER BUDGETS
(2012-2035)

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Year	Inflow								Outflow					Change		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
2012	19649	1173	2492	55545	1705	5801	3493	89859	38653	18722	8981	6573	72928	16938	-8	16938
2013	1278	1170	2506	16142	1700	8159	13388	44343	38598	14904	6379	6438	66319	-21975	-1	-5037
2014	10614	1170	2520	40225	1700	7506	8342	72077	39998	13081	6998	6487	66563	5515	-1	478
2015	41894	1170	2534	56251	1700	5430	7548	116527	38598	20983	9189	6694	75464	41055	8	41533
2016	0	1173	2548	13968	1705	7134	15070	41598	38653	16775	7992	6475	69895	-28293	-4	13240
2017	0	1170	2562	13713	1700	9071	15725	43941	39998	12151	4797	6432	63378	-19430	-6	-6190
2018	8475	1170	2582	32068	1700	8198	11187	65380	39998	11626	5367	6480	63471	1907	2	-4284
2019	1234	1170	2612	14895	1700	8937	11066	41614	38598	10464	5025	6430	60517	-18907	4	-23191
2020	4924	1173	2654	22281	1705	9425	6932	49094	40055	8266	4685	6464	59470	-10376	-1	-33567
2021	0	1170	2714	13620	1700	10620	9579	39403	39998	6121	3394	6416	55928	-16522	-3	-50089
2022	0	1170	2766	14644	1700	11205	6933	38418	39998	4919	2625	6407	53949	-15533	2	-65622
2023	10357	1170	2794	35449	1700	8814	-2484	57801	39998	4789	4008	6466	55262	2533	5	-63089
2024	29346	1173	2817	67175	1705	3470	-11757	93929	40055	8185	6946	6617	61804	32128	-3	-30961
2025	25096	1170	2837	75859	1700	4011	-4923	105750	38598	17290	9213	6601	71702	34047	1	3086
2026	0	1170	2856	16830	1700	7273	6696	36526	38598	10395	6604	6433	62031	-25509	4	-22423
2027	25363	1170	2876	68550	1700	4322	704	104684	39998	16287	9075	6592	71952	32745	-13	10322
2028	9188	1173	2897	32504	1705	5241	8362	61069	38653	14694	8407	6510	68264	-7194	0	3128
2029	2520	1170	2917	18620	1700	7593	11985	46505	38598	13177	6695	6452	64922	-18415	-2	-15287
2030	31195	1170	2936	88307	1700	4236	-612	128933	38598	32048	11661	6638	88945	39994	-6	24707
2031	0	1170	2955	15599	1700	8045	13774	43243	38598	15677	6610	6445	67331	-24086	-3	621
2032	1857	1173	2972	16224	1705	9387	14111	47428	38653	13377	5002	6462	63494	-16065	-1	-15444
2033	13614	1170	2989	42029	1700	7988	6424	75914	39998	12453	5770	6514	64736	11174	4	-4270
2034	0	1170	3004	12735	1700	8501	13627	40737	39998	9321	4650	6430	60399	-19654	-8	-23924
2035	4613	1170	3018	22391	1700	9288	12438	54618	39998	9285	4270	6451	60003	-5385	0	-29309

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW				
2012	5474	472	810	16328	5801	3719	32604	11816	1315	1230	14829	29189	3418	-3	3418
2013	356	471	816	3042	8159	6184	19027	11800	840	902	14012	27554	-8527	0	-5109
2014	2957	471	822	8554	7506	3945	24255	5550	874	839	14762	22025	2230	0	-2879
2015	11670	471	828	29810	5430	1298	49507	11800	2132	1367	14876	30175	19331	2	16452
2016	0	472	835	4044	7134	5668	18152	11816	1587	1385	15133	29921	-11768	-1	4684
2017	0	471	841	2224	9071	5119	17726	5550	943	922	15667	23083	-5355	-1	-671
2018	2361	471	847	5887	8198	4603	22367	5550	821	812	15809	22992	-626	1	-1297
2019	344	471	853	1408	8937	6415	18427	11800	416	535	14351	27101	-8676	1	-9973
2020	1372	472	860	2705	9425	4943	19776	5557	385	436	15098	21477	-1701	0	-11674
2021	0	471	866	499	10620	5175	17630	5550	140	322	15548	21560	-3929	-1	-15602
2022	0	471	872	1025	11205	4896	18470	5550	129	288	15646	21612	-3144	1	-18746
2023	2885	471	878	7610	8814	4060	24719	5550	454	363	15878	22246	2471	2	-16275
2024	8175	472	885	25273	3470	1763	40039	5557	2650	1321	16430	25958	14081	-1	-2194
2025	6991	471	891	34121	4011	1758	48243	11800	8131	2145	16565	38641	9602	0	7408
2026	0	471	897	3239	7273	6343	18223	11800	1314	1124	15076	29314	-11092	1	-3684
2027	7065	471	903	22582	4322	3049	38392	5550	3596	1832	15461	26439	11957	-3	8273
2028	2559	472	910	7473	5241	6306	22962	11816	2022	1541	14581	29960	-6998	0	1275
2029	702	471	916	3488	7593	6268	19438	11800	852	946	13788	27387	-7948	-1	-6673
2030	8690	471	922	52813	4236	-1910	65222	11800	13866	3195	16691	45552	19673	-3	13000
2031	0	471	928	1252	8045	6643	17339	11800	982	1213	15167	29162	-11822	-1	1178
2032	517	472	935	1571	9387	6359	19241	11816	379	764	14269	27229	-7988	0	-6810
2033	3792	471	941	11126	7988	3721	28039	5550	694	830	14985	22059	5979	1	-831
2034	0	471	947	499	8501	5615	16033	5550	481	648	15452	22131	-6096	-2	-6927
2035	1285	471	953	4060	9288	4612	20670	5550	413	540	15522	22025	-1355	0	-8281

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	667	270	88	1438	0	-534	1929	0	0	941	292	1233	695	0	695
2013	43	269	88	18	0	-198	221	0	0	620	323	943	-722	0	-27
2014	360	269	89	1029	0	-305	1442	0	0	764	309	1074	368	0	342
2015	1421	269	89	916	0	-303	2394	0	0	915	321	1236	1158	0	1499
2016	0	270	90	0	0	-234	126	0	0	765	341	1106	-980	0	520
2017	0	269	90	0	0	-131	229	0	0	373	351	724	-495	0	25
2018	288	269	90	796	0	-201	1243	0	0	544	359	903	340	0	364
2019	42	269	91	13	0	-275	140	0	0	494	350	844	-704	0	-340
2020	167	270	91	412	0	-300	640	0	0	477	365	842	-202	0	-542
2021	0	269	92	0	0	-240	121	0	0	288	399	687	-566	0	-1108
2022	0	269	92	0	0	-257	105	0	0	189	407	596	-491	0	-1599
2023	351	269	93	908	0	-502	1119	0	0	484	399	883	236	0	-1363
2024	996	270	93	1326	0	-752	1933	0	0	848	415	1264	670	0	-694
2025	851	269	93	1585	0	-529	2270	0	0	1042	409	1450	820	0	126
2026	0	269	94	0	0	-249	114	0	0	779	382	1161	-1046	0	-920
2027	860	269	94	1614	0	-467	2371	0	0	945	317	1262	1109	0	189
2028	312	270	95	874	0	-367	1183	0	0	881	306	1187	-4	0	185
2029	86	269	95	152	0	-198	404	0	0	717	295	1011	-608	0	-423
2030	1058	269	96	1476	0	-595	2304	0	0	1019	266	1284	1020	0	597
2031	0	269	96	0	0	-125	240	0	0	594	305	899	-659	0	-61
2032	63	270	97	80	0	-121	389	0	0	373	312	685	-296	0	-357
2033	462	269	97	1032	0	-377	1484	0	0	586	314	900	584	0	227
2034	0	269	97	0	0	-283	84	0	0	456	344	800	-716	0	-489
2035	157	269	98	378	0	-183	719	0	0	419	347	765	-47	0	-536

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011
Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
2012	4214	181	772	6085	0	292		13173	0	0	3696	5579	9275	3899	-1	3899
2013	274	181	773	737	0	323		4401	0	0	2366	5283	7649	-3248	0	651
2014	2277	181	773	4962	0	309	80	8582	0	0	3004	4371	7375	1207	0	1858
2015	8986	181	774	3952	0	321	1954	16167	0	0	3654	5444	9098	7068	1	8925
2016	0	181	774	0	0	341	2078	3374	0	0	2869	5612	8481	-5106	-1	3819
2017	0	181	775	0	0	351	936	2243	0	0	1336	4660	5996	-3752	-1	67
2018	1818	181	775	3992	0	359	976	8100	0	0	1990	4603	6593	1507	0	1574
2019	265	181	776	718	0	350	1570	3859	0	0	2032	5266	7298	-3439	0	-1866
2020	1056	181	777	2381	0	365	-894	3866	0	0	1988	4526	6514	-2648	0	-4514
2021	0	181	777	0	0	399	462	1819	0	0	1158	4606	5764	-3945	-1	-8458
2022	0	181	778	0	0	407	358	1723	0	0	641	4695	5336	-3613	0	-12071
2023	2221	181	778	4160	0	399	-900	6838	0	0	1778	4860	6639	199	1	-11872
2024	6294	181	779	5602	0	415	-1606	11665	0	0	3291	5093	8383	3282	0	-8590
2025	5383	181	779	6749	0	409	3258	16758	0	0	3925	6385	10310	6448	1	-2142
2026	0	181	780	0	0	382	2985	4328	0	0	2752	6115	8867	-4539	0	-6682
2027	5440	181	780	6946	0	317	1030	14695	0	0	3643	5043	8686	6011	-2	-671
2028	1971	181	781	3950	0	306	3036	10225	0	0	3258	5909	9168	1057	0	386
2029	541	181	782	1290	0	295	2421	5508	0	0	2680	5351	8031	-2523	0	-2137
2030	6691	181	782	6310	0	266	2578	16807	0	0	4022	6386	10408	6399	0	4262
2031	0	181	783	0	0	305	2777	4045	0	0	2131	5727	7858	-3812	0	450
2032	398	181	783	988	0	312	2573	5236	0	0	1578	5357	6935	-1700	0	-1249
2033	2920	181	784	4407	0	314	-379	8227	0	0	2214	4529	6743	1484	0	235
2034	0	181	784	0	0	344	983	2292	0	0	1679	4641	6319	-4026	-1	-3791
2035	990	181	785	2240	0	347	1245	5787	0	0	1470	4544	6015	-228	0	-4019

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Subsurface Inflow From Management Zone 5	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
2012	4893	148	666	15775	0	14829	5579	-7383	34505	13388	6543	1102	7025	28058	6451	-4	6451
2013	318	147	667	4723	0	14012	5283	-4005	21145	13370	5290	763	7327	26750	-5605	0	846
2014	2643	147	668	13428	0	14762	4371	-3295	32724	19000	4129	642	8008	31778	946	-1	1792
2015	10432	147	669	11737	0	14876	5444	-5012	38294	13370	6633	1215	7370	28588	9702	4	11494
2016	0	148	671	4122	0	15133	5612	-3408	22278	13388	6166	1189	7743	28486	-6206	-2	5289
2017	0	147	672	5207	0	15667	4660	-1059	25295	19000	3885	533	8261	31679	-6380	-4	-1092
2018	2110	147	673	10904	0	15809	4603	-2957	31289	19000	3363	368	8124	30855	433	1	-659
2019	307	147	674	5595	0	14351	5266	-5784	20556	13370	3153	354	7742	24619	-4065	3	-4724
2020	1226	148	677	7245	0	15098	4526	-4396	24523	19025	1993	233	8101	29352	-4829	0	-9552
2021	0	147	682	5965	0	15548	4606	-4195	22753	19000	1039	145	7777	27962	-5207	-2	-14759
2022	0	147	686	6146	0	15646	4695	-5651	21669	19000	446	103	7575	27125	-5457	1	-20216
2023	2579	147	689	11478	0	15878	4860	-9590	26042	19000	116	59	7195	26371	-331	3	-20547
2024	7308	148	691	16289	0	16430	5093	-12606	33352	19025	89	57	6910	26081	7272	-2	-13275
2025	6249	147	693	19700	0	16565	6385	-14738	35001	13370	1542	341	6661	21915	13085	1	-190
2026	0	147	694	5716	0	15076	6115	-9923	17825	13370	2478	340	7167	23355	-5532	2	-5722
2027	6316	147	696	22702	0	15461	5043	-9627	40738	19000	3486	848	7540	30874	9872	-8	4150
2028	2288	148	697	10291	0	14581	5909	-8785	25130	13388	3997	959	7278	25622	-492	0	3658
2029	628	147	699	5421	0	13788	5351	-5568	20465	13370	4157	668	7520	25714	-5248	-1	-1590
2030	7768	147	700	14999	0	16691	6386	-8831	37861	13370	6759	1511	7590	29230	8634	-3	7044
2031	0	147	701	4434	0	15167	5727	-4354	21822	13370	5605	949	7347	27271	-5448	-1	1596
2032	462	148	702	5008	0	14269	5357	-4154	21792	13388	4630	601	7722	26341	-4549	0	-2953
2033	3390	147	704	13610	0	14985	4529	-4294	33071	19000	3599	451	8143	31193	1875	2	-1078
2034	0	147	705	5693	0	15452	4641	-2879	23760	19000	2424	274	8055	29753	-5988	-5	-7066
2035	1149	147	706	7233	0	15522	4544	-2585	26717	19000	2279	233	7800	29312	-2595	0	-9661

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Change in GW Storage	Error			
2012	4402	102	157	15920	1705	0	7025	6063	35374	13450	10864	2012	6573	32898	2476	0	2476
2013	286	102	163	7623	1700	0	7327	9292	26493	13428	8774	1727	6438	30367	-3874	0	-1397
2014	2378	102	168	12252	1700	0	8008	7916	32524	15448	8078	1748	6487	31761	763	0	-634
2015	9386	102	174	9835	1700	0	7370	9611	38178	13428	12219	2038	6694	34379	3799	0	3165
2016	0	102	179	5803	1705	0	7743	10964	26496	13450	9022	1783	6475	30731	-4235	0	-1070
2017	0	102	185	6281	1700	0	8261	10859	27388	15448	7323	1633	6432	30836	-3448	0	-4518
2018	1899	102	196	10488	1700	0	8124	8766	31275	15448	7442	1652	6480	31023	252	0	-4265
2019	277	102	217	7161	1700	0	7742	9140	26340	13428	6896	1609	6430	28364	-2023	0	-6289
2020	1103	102	250	9538	1705	0	8101	7578	28377	15472	5888	1550	6464	29374	-997	0	-7286
2021	0	102	297	7156	1700	0	7777	8375	25409	15448	4941	1480	6416	28285	-2877	0	-10163
2022	0	102	339	7472	1700	0	7575	7586	24775	15448	4345	1404	6407	27604	-2830	0	-12993
2023	2320	102	356	11294	1700	0	7195	4447	27415	15448	4218	1324	6466	27457	-42	0	-13035
2024	6575	102	370	18685	1705	0	6910	1442	35789	15472	5446	1429	6617	28965	6823	0	-6211
2025	5623	102	381	13704	1700	0	6661	5328	33499	13428	7616	1760	6601	29406	4093	0	-2118
2026	0	102	391	7875	1700	0	7167	7539	24775	13428	6603	1609	6433	28074	-3299	0	-5417
2027	5682	102	402	14705	1700	0	7540	6719	36851	15448	9206	1808	6592	33053	3797	0	-1620
2028	2058	102	414	9915	1705	0	7278	8171	29644	13450	8675	1767	6510	30401	-757	0	-2377
2029	565	102	426	8270	1700	0	7520	9061	27643	13428	8168	1684	6452	29732	-2089	0	-4466
2030	6989	102	437	12708	1700	0	7590	8147	37674	13428	11423	1914	6638	33404	4270	0	-196
2031	0	102	447	9913	1700	0	7347	8832	28341	13428	9091	1723	6445	30687	-2346	0	-2541
2032	416	102	456	8577	1705	0	7722	9453	28430	13450	8368	1685	6462	29964	-1534	0	-4075
2033	3050	102	464	11853	1700	0	8143	7751	33064	15448	8159	1690	6514	31812	1253	0	-2822
2034	0	102	470	6543	1700	0	8055	10189	27060	15448	6416	1594	6430	29889	-2829	0	-5651
2035	1034	102	476	8479	1700	0	7800	9348	28939	15448	6593	1608	6451	30100	-1161	0	-6812

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	29070	1254	2787	10	0	0	1086	34205	12841	0	2499	0	15340	18861	4	18861
2013	1890	1250	2834	0	0	0	-6354	-379	12814	0	1571	0	14385	-14764	0	4098
2014	15703	1250	2882	0	0	0	-4437	15398	12814	0	1717	0	14531	867	1	4964
2015	61979	1250	2929	7	0	0	-3393	62772	12814	0	3511	0	16325	46436	11	51400
2016	0	1254	2977	0	0	0	-7262	-3031	12841	0	2239	0	15080	-18110	0	33290
2017	0	1250	3027	0	0	0	-8929	-4652	12814	0	1545	0	14359	-19008	-3	14282
2018	12538	1250	3112	0	0	0	-6178	10723	12814	0	1681	0	14495	-3773	1	10509
2019	1826	1250	3260	0	0	0	-3862	2475	19123	0	1378	0	20501	-17999	-27	-7490
2020	7285	1254	3432	0	0	0	-1332	10638	25281	0	1338	0	26619	-15954	-26	-23444
2021	0	1250	3559	0	0	0	-3251	1558	19123	0	1152	0	20274	-18720	3	-42164
2022	0	1250	3648	0	0	0	-1048	3851	25228	0	997	0	26225	-22349	-26	-64512
2023	15322	1250	3715	0	0	0	6178	26465	34977	0	1191	0	36168	-9684	-19	-74197
2024	43415	1254	3772	10	0	0	12611	61061	35059	0	2088	0	37148	23912	1	-50284
2025	37127	1250	3825	10	0	0	9375	51588	12814	0	2893	0	15707	35843	38	-14441
2026	0	1250	3877	0	0	0	865	5992	19123	0	1635	0	20757	-14743	-22	-29185
2027	37522	1250	3927	8	0	0	2277	44984	12814	0	2728	0	15542	29429	13	244
2028	13592	1254	3979	0	0	0	-1380	17445	12841	0	2060	0	14901	2540	4	2784
2029	3729	1250	4030	0	0	0	-4818	4191	12814	0	1729	0	14543	-10352	1	-7568
2030	46150	1250	4081	10	0	0	3208	54699	12814	0	3238	0	16051	38635	13	31066
2031	0	1250	4129	0	0	0	-6063	-683	12814	0	1853	0	14666	-15349	0	15717
2032	2747	1254	4178	0	0	0	-7280	899	12841	0	1551	0	14392	-13493	0	2224
2033	20140	1250	4226	3	0	0	-3716	21904	19123	0	1905	0	21027	900	-23	3124
2034	0	1250	4274	0	0	0	-6418	-894	12814	0	1427	0	14241	-15143	8	-12019
2035	6825	1250	4321	0	0	0	-6455	5941	12814	0	1377	0	14190	-8249	1	-20268

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035
Entire Aquifer System (Alluvium and Saugus Combined)
Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	48719	2427	5279	55555	1705	5801	4578	124063	51494	18722	11479	6573	88268	35800	-5	35800
2013	3168	2421	5340	16142	1700	8159	7033	43962	51412	14904	7950	6438	80703	-36739	-2	-939
2014	26317	2421	5402	40225	1700	7506	3904	87475	52812	13081	8714	6487	81094	6381	-1	5442
2015	103872	2421	5464	56258	1700	5430	4154	179298	51412	20983	12701	6694	91789	87491	18	92933
2016	0	2427	5525	13968	1705	7134	7808	38566	51494	16775	10230	6475	84975	-46403	-6	46530
2017	0	2421	5589	13713	1700	9071	6795	39288	52812	12151	6342	6432	77737	-38438	-11	8092
2018	21014	2421	5694	32068	1700	8198	5009	76103	52812	11626	7049	6480	77966	-1866	2	6226
2019	3060	2421	5872	14895	1700	8937	7204	44088	57721	10464	6402	6430	81018	-36906	-23	-30681
2020	12210	2427	6086	22281	1705	9425	5598	59731	65337	8266	6022	6464	86089	-26330	-28	-57011
2021	0	2421	6273	13620	1700	10620	6327	40960	59121	6121	4545	6416	76203	-35242	-1	-92253
2022	0	2421	6414	14644	1700	11205	5884	42268	65226	4919	3622	6407	80174	-37881	-25	-130134
2023	25679	2421	6508	35449	1700	8814	3693	84264	74976	4789	5199	6466	91430	-7151	-15	-137285
2024	72761	2427	6589	67184	1705	3470	852	154989	75114	8185	9035	6617	98951	56040	-3	-81245
2025	62223	2421	6663	75869	1700	4011	4451	157337	51412	17290	12106	6601	87409	69890	38	-11355
2026	0	2421	6733	16830	1700	7273	7560	42517	57721	10395	8239	6433	82788	-40252	-19	-51608
2027	62885	2421	6803	68557	1700	4322	2979	149667	52812	16287	11803	6592	87494	62174	-1	10566
2028	22780	2427	6876	32504	1705	5241	6981	78513	51494	14694	10467	6510	83165	-4655	3	5912
2029	6249	2421	6947	18620	1700	7593	7166	50695	51412	13177	8424	6452	79465	-28767	-2	-22855
2030	77345	2421	7017	88317	1700	4236	2595	183631	51412	32048	14899	6638	104996	78629	6	55773
2031	0	2421	7084	15599	1700	8045	7710	42559	51412	15677	8463	6445	81998	-39435	-4	16338
2032	4604	2427	7150	16224	1705	9387	6830	48327	51494	13377	6553	6462	77886	-29558	-2	-13220
2033	33754	2421	7215	42032	1700	7988	2707	97817	59121	12453	7675	6514	85763	12074	-20	-1146
2034	0	2421	7277	12735	1700	8501	7208	39842	52812	9321	6078	6430	74641	-34797	-1	-35943
2035	11439	2421	7339	22391	1700	9288	5982	60559	52812	9285	5646	6451	74193	-13634	0	-49577

APPENDIX E
MODEL-SIMULATED MONTHLY GROUNDWATER BUDGETS
(2012-2035)

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035



Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Subsurface Inflow From								Subsurface Outflow at					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Jan-2012	6371	99	94	11186	144	380	-1231	17044	1878	1927	742	578	5124	11919	1	11919
Feb-2012	8997	93	127	5650	135	282	-226	15059	1609	2236	826	559	5230	9828	0	21747
Mar-2012	2977	99	164	11519	144	341	-1375	13870	2131	2344	973	571	6019	7849	2	29596
Apr-2012	221	96	227	2920	140	388	399	4392	2772	1830	856	537	5995	-1596	-7	28000
May-2012	246	99	263	1010	144	512	1148	3422	3526	1638	817	551	6532	-3108	-1	24891
Jun-2012	0	96	283	1738	140	540	1069	3867	4100	1365	735	531	6732	-2864	0	22027
Jul-2012	0	99	352	1979	144	599	1194	4367	5118	1192	706	547	7563	-3195	0	18832
Aug-2012	0	99	322	1883	144	636	1232	4317	5189	1095	662	546	7493	-3176	0	15656
Sep-2012	0	96	255	981	140	632	1307	3411	4147	1079	602	528	6355	-2941	-3	12716
Oct-2012	0	99	187	3315	144	589	768	5103	3428	1199	634	545	5806	-704	0	12011
Nov-2012	0	96	125	11183	140	409	-1287	10665	2552	1306	711	529	5098	5568	0	17579
Dec-2012	836	99	94	2180	144	492	495	4342	2203	1511	716	551	4982	-641	0	16938
Jan-2013	362	99	94	1631	144	571	724	3626	1878	1582	695	550	4705	-1080	0	15859
Feb-2013	126	90	128	858	130	550	820	2703	1553	1414	597	496	4061	-1358	0	14500
Mar-2013	418	99	165	1532	144	610	946	3914	2131	1547	644	550	4871	-960	2	13541
Apr-2013	35	96	228	2575	140	627	608	4308	2772	1394	593	530	5289	-981	-1	12560
May-2013	0	99	265	1032	144	674	1212	3427	3526	1334	574	547	5981	-2553	0	10007
Jun-2013	0	96	285	909	140	675	1378	3481	4100	1163	518	529	6310	-2828	0	7179
Jul-2013	0	99	354	997	144	718	1578	3890	5118	1050	498	545	7211	-3321	0	3858
Aug-2013	0	99	324	1030	144	739	1592	3929	5189	964	470	544	7167	-3238	0	620
Sep-2013	0	96	256	1379	140	725	1297	3893	4147	963	443	526	6079	-2183	-2	-1564
Oct-2013	44	99	188	1344	144	765	1211	3795	3428	1074	451	544	5498	-1703	0	-3266
Nov-2013	275	96	125	1423	140	732	1048	3839	2552	1147	442	529	4669	-830	0	-4097
Dec-2013	17	99	94	1433	144	775	975	3538	2203	1272	456	546	4478	-940	0	-5037
Jan-2014	1424	99	95	5150	144	648	119	7680	1953	1394	573	553	4473	3206	0	-1831
Feb-2014	517	90	128	5408	130	559	-259	6575	1603	1251	555	498	3907	2668	0	837
Mar-2014	4063	99	166	6921	144	516	-245	11664	2202	1585	720	567	5074	6586	3	7423
Apr-2014	466	96	229	3508	140	546	431	5417	2861	1311	682	535	5388	30	-2	7454
May-2014	56	99	266	1280	144	638	1186	3670	3645	1182	660	548	6034	-2364	-1	5090
Jun-2014	0	96	286	1641	140	663	1213	4039	4245	965	587	529	6326	-2286	0	2804
Jul-2014	0	99	356	1904	144	710	1341	4554	5298	833	554	546	7231	-2676	0	128
Aug-2014	0	99	326	2444	144	685	1292	4991	5380	744	518	544	7188	-2196	0	-2068
Sep-2014	436	96	258	2021	140	648	1216	4816	4300	740	491	528	6060	-1242	-2	-3309
Oct-2014	107	99	189	2073	144	677	1127	4416	3561	853	501	545	5461	-1045	0	-4354
Nov-2014	2284	96	126	3763	140	601	545	7555	2654	1034	551	539	4778	2776	0	-1578
Dec-2014	1262	99	95	4112	144	613	374	6700	2295	1189	605	554	4643	2056	0	478
Jan-2015	7515	99	95	2702	144	536	672	11765	1878	1683	694	584	4839	6925	1	7403
Feb-2015	5938	90	129	3238	130	459	484	10468	1553	1678	669	528	4429	6038	1	13441
Mar-2015	11329	99	167	4415	144	285	682	17122	2131	2514	902	609	6156	10965	1	24406
Apr-2015	3996	96	231	3355	140	350	870	9037	2772	2093	848	561	6274	2756	8	27162

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	173	99	268	1712	144	512	1337	4245	3526	1683	795	556	6560	-2314	-1	24849
Jun-2015	0	96	288	2082	140	545	1295	4446	4100	1493	714	533	6841	-2395	0	22454
Jul-2015	0	99	358	2180	144	597	1460	4838	5118	1378	684	549	7730	-2891	0	19563
Aug-2015	1014	99	328	1797	144	603	1589	5575	5189	1342	659	552	7742	-2167	0	17397
Sep-2015	1604	96	259	1470	140	543	1500	5611	4147	1240	628	538	6553	-941	-1	16456
Oct-2015	1508	99	190	2729	144	525	1179	6375	3428	1421	673	556	6078	296	0	16752
Nov-2015	4369	96	127	16100	140	204	-1583	19452	2552	2000	868	553	5973	13479	0	30232
Dec-2015	4447	99	95	14472	144	272	-1938	17592	2203	2458	1053	575	6290	11302	1	41533
Jan-2016	0	99	96	656	144	454	786	2237	1878	1900	918	555	5251	-3015	0	38518
Feb-2016	0	93	130	1247	135	464	827	2895	1609	1717	812	516	4655	-1760	0	36759
Mar-2016	0	99	168	1130	144	532	1075	3148	2131	1751	817	550	5249	-2101	-1	34658
Apr-2016	0	96	232	984	140	541	1230	3224	2772	1563	741	532	5609	-2384	-1	32274
May-2016	0	99	269	960	144	584	1430	3487	3526	1474	713	549	6261	-2774	0	29500
Jun-2016	0	96	289	1000	140	585	1517	3627	4100	1302	645	530	6578	-2950	0	26549
Jul-2016	0	99	360	1146	144	624	1691	4064	5118	1182	621	547	7468	-3404	0	23145
Aug-2016	0	99	329	1369	144	643	1640	4225	5189	1094	586	546	7415	-3189	0	19956
Sep-2016	0	96	261	1093	140	640	1475	3704	4147	1052	543	528	6269	-2562	-2	17393
Oct-2016	0	99	191	1171	144	680	1365	3650	3428	1154	545	546	5673	-2023	0	15371
Nov-2016	0	96	128	1784	140	674	980	3802	2552	1218	520	529	4819	-1018	0	14353
Dec-2016	0	99	96	1428	144	713	1055	3536	2203	1367	531	547	4648	-1113	0	13240
Jan-2017	0	99	96	1307	144	726	1026	3400	1953	1410	520	548	4431	-1031	0	12209
Feb-2017	0	90	130	1205	130	665	886	3106	1603	1271	456	495	3826	-720	0	11489
Mar-2017	0	99	168	1114	144	745	1117	3389	2202	1361	486	548	4596	-1205	-3	10285
Apr-2017	0	96	233	1077	140	727	1216	3488	2861	1201	446	530	5039	-1549	-1	8735
May-2017	0	99	271	1030	144	757	1402	3703	3645	1086	433	547	5710	-2006	-1	6729
Jun-2017	0	96	291	984	140	749	1500	3759	4245	913	391	529	6077	-2318	0	4411
Jul-2017	0	99	362	1070	144	781	1705	4161	5298	795	373	546	7013	-2851	0	1560
Aug-2017	0	99	331	1098	144	788	1729	4190	5380	712	350	545	6987	-2797	0	-1237
Sep-2017	0	96	262	1075	140	763	1501	3837	4300	692	326	527	5845	-2006	-2	-3242
Oct-2017	0	99	192	1252	144	793	1378	3858	3561	807	338	544	5250	-1393	0	-4635
Nov-2017	0	96	128	1221	140	773	1170	3528	2654	884	331	528	4397	-869	0	-5504
Dec-2017	0	99	96	1279	144	805	1096	3521	2295	1019	347	546	4207	-687	0	-6190
Jan-2018	2146	99	97	3681	144	696	511	7376	1953	1212	453	557	4175	3200	1	-2990
Feb-2018	2444	90	131	2570	130	600	530	6496	1603	1198	439	507	3748	2748	0	-242
Mar-2018	1981	99	170	3125	144	635	665	6820	2202	1332	529	559	4621	2194	5	1952
Apr-2018	323	96	235	2818	140	676	656	4944	2861	1152	483	534	5030	-85	-1	1867
May-2018	0	99	273	1137	144	732	1297	3683	3645	1053	461	548	5707	-2024	-1	-156
Jun-2018	0	96	293	1003	140	728	1455	3716	4245	874	409	529	6057	-2341	0	-2497
Jul-2018	18	99	364	1174	144	762	1658	4221	5298	756	388	546	6989	-2767	0	-5264
Aug-2018	0	99	334	1138	144	771	1697	4184	5380	675	360	545	6960	-2776	0	-8041

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	654	96	264	1069	140	747	1485	4456	4300	679	340	530	5849	-1391	-2	-9431
Oct-2018	250	99	194	4384	144	680	696	6448	3561	787	448	546	5342	1106	0	-8326
Nov-2018	570	96	129	4609	140	601	396	6541	2654	888	497	531	4570	1970	0	-6356
Dec-2018	88	99	97	5358	144	568	141	6496	2295	1020	561	547	4424	2072	0	-4284
Jan-2019	155	99	98	1321	144	641	783	3242	1878	1113	552	548	4091	-850	0	-5133
Feb-2019	45	90	133	1128	130	600	699	2825	1553	1016	483	495	3548	-728	5	-5862
Mar-2019	124	99	172	1061	144	695	837	3133	2131	1104	508	548	4291	-1159	0	-7020
Apr-2019	10	96	238	1531	140	683	835	3533	2772	1028	468	529	4798	-1266	0	-8286
May-2019	0	99	276	1069	144	741	1040	3370	3526	931	450	547	5454	-2084	0	-10369
Jun-2019	0	96	297	1012	140	745	1139	3429	4100	808	407	528	5844	-2415	0	-12784
Jul-2019	7	99	369	1090	144	788	1256	3752	5118	709	390	545	6762	-3009	0	-15793
Aug-2019	1	99	338	1113	144	805	1230	3731	5189	642	365	544	6740	-3009	0	-18802
Sep-2019	0	96	267	1083	140	795	1000	3381	4147	623	338	526	5634	-2253	-1	-21055
Oct-2019	256	99	196	1088	144	833	932	3549	3428	720	344	545	5037	-1489	0	-22544
Nov-2019	283	96	131	1529	140	800	706	3684	2552	814	339	529	4233	-549	0	-23093
Dec-2019	353	99	98	1870	144	811	611	3987	2203	954	379	548	4084	-98	0	-23191
Jan-2020	803	99	100	1894	144	776	531	4348	1953	1030	403	550	3936	412	0	-22779
Feb-2020	833	93	135	3944	135	690	14	5843	1660	982	455	516	3613	2228	2	-20551
Mar-2020	285	99	175	3332	144	738	144	4917	2202	995	489	549	4235	682	0	-19869
Apr-2020	978	96	242	1654	140	726	547	4381	2861	896	455	534	4746	-364	0	-20233
May-2020	22	99	280	2017	144	793	626	3982	3645	794	431	547	5417	-1435	0	-21668
Jun-2020	0	96	301	1121	140	783	891	3332	4245	661	385	528	5819	-2486	0	-24154
Jul-2020	0	99	375	1143	144	833	989	3584	5298	511	364	545	6718	-3134	0	-27289
Aug-2020	0	99	343	1175	144	849	970	3580	5380	417	339	544	6681	-3100	0	-30389
Sep-2020	25	96	271	1646	140	798	697	3672	4300	382	322	526	5530	-1857	-1	-32246
Oct-2020	0	99	199	1867	144	818	536	3663	3561	430	342	543	4876	-1213	0	-33459
Nov-2020	226	96	133	1409	140	799	483	3286	2654	499	336	528	4017	-731	0	-34190
Dec-2020	1754	99	100	1081	144	823	505	4506	2295	668	365	554	3882	623	0	-33567
Jan-2021	0	99	102	1075	144	854	519	2794	1953	718	358	547	3576	-782	0	-34349
Feb-2021	0	90	138	1030	130	781	451	2620	1603	666	316	494	3079	-460	0	-34809
Mar-2021	0	99	178	1084	144	874	588	2969	2202	723	339	547	3810	-842	0	-35650
Apr-2021	0	96	247	1051	140	855	709	3097	2861	624	311	529	4324	-1224	-2	-36875
May-2021	0	99	287	1109	144	898	874	3412	3645	567	303	546	5061	-1648	-1	-38523
Jun-2021	0	96	308	1100	140	882	998	3524	4245	473	276	527	5522	-1997	0	-40520
Jul-2021	0	99	383	1173	144	917	1147	3864	5298	377	264	544	6483	-2619	0	-43139
Aug-2021	0	99	351	1197	144	924	1152	3867	5380	312	248	543	6484	-2616	0	-45755
Sep-2021	0	96	278	1261	140	886	932	3593	4300	310	236	525	5372	-1778	-1	-47533
Oct-2021	0	99	204	1274	144	918	855	3495	3561	377	246	543	4727	-1233	0	-48766
Nov-2021	0	96	136	1146	140	895	704	3117	2654	440	241	526	3862	-745	0	-49511
Dec-2021	0	99	102	1120	144	935	649	3050	2295	533	254	545	3627	-578	0	-50089

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2022	0	99	104	1270	144	937	482	3037	1953	609	260	546	3367	-330	0	-50419
Feb-2022	0	90	141	1223	130	846	330	2760	1603	572	234	493	2902	-145	4	-50565
Mar-2022	0	99	182	1284	144	937	423	3070	2202	623	255	546	3625	-556	0	-51120
Apr-2022	0	96	252	1101	140	908	551	3047	2861	535	237	528	4161	-1114	0	-52234
May-2022	0	99	292	1176	144	940	691	3343	3645	480	234	545	4904	-1561	0	-53795
Jun-2022	0	96	314	1129	140	920	809	3407	4245	379	214	527	5365	-1957	0	-55752
Jul-2022	0	99	390	1209	144	958	885	3687	5298	286	205	543	6334	-2646	0	-58399
Aug-2022	0	99	358	1250	144	962	863	3678	5380	238	194	542	6355	-2677	0	-61076
Sep-2022	0	96	283	1219	140	936	645	3318	4300	227	184	524	5236	-1917	-1	-62993
Oct-2022	0	99	208	1268	144	962	504	3185	3561	264	195	542	4562	-1377	0	-64370
Nov-2022	0	96	138	1206	140	933	408	2922	2654	311	197	526	3688	-767	0	-65137
Dec-2022	0	99	104	1309	144	965	342	2965	2295	394	216	544	3449	-485	0	-65622
Jan-2023	467	99	105	3211	144	877	-277	4627	1953	459	280	547	3239	1385	2	-64237
Feb-2023	2407	90	142	8279	130	591	-1669	9971	1603	548	347	504	3002	6964	4	-57273
Mar-2023	4768	99	184	6541	144	545	-1271	11011	2202	753	468	570	3994	7016	2	-50257
Apr-2023	0	96	254	1881	140	664	-195	2840	2861	525	414	533	4333	-1492	0	-51749
May-2023	0	99	295	1513	144	721	178	2951	3645	437	393	547	5022	-2071	0	-53820
Jun-2023	0	96	317	1313	140	738	359	2963	4245	354	345	528	5471	-2507	0	-56327
Jul-2023	0	99	394	1462	144	776	476	3352	5298	278	316	544	6436	-3084	0	-59411
Aug-2023	0	99	361	1292	144	818	515	3230	5380	239	281	543	6443	-3213	0	-62624
Sep-2023	0	96	286	1300	140	800	324	2947	4300	235	250	525	5311	-2363	-1	-64987
Oct-2023	210	99	210	2310	144	780	-32	3723	3561	263	274	543	4642	-918	-1	-65905
Nov-2023	0	96	140	1270	140	815	-56	2405	2654	283	256	526	3719	-1315	0	-67219
Dec-2023	2504	99	105	5076	144	688	-837	7781	2295	414	384	556	3650	4131	0	-63089
Jan-2024	2453	99	106	20519	144	109	-4570	18861	1953	745	557	560	3815	15046	0	-48043
Feb-2024	12444	93	143	14170	135	-187	-3134	23664	1660	1653	750	572	4635	19028	0	-29015
Mar-2024	7277	99	185	9463	144	-27	-2143	14998	2202	1421	830	593	5046	9952	1	-19063
Apr-2024	112	96	256	2433	140	206	-570	2674	2861	840	686	539	4926	-2250	-2	-21314
May-2024	254	99	297	1900	144	314	-107	2902	3645	623	617	552	5436	-2534	-1	-23848
Jun-2024	0	96	320	3146	140	297	-199	3800	4245	490	564	531	5829	-2029	0	-25876
Jul-2024	224	99	398	1284	144	426	305	2881	5298	349	532	548	6726	-3845	0	-29722
Aug-2024	0	99	364	1281	144	493	382	2764	5380	291	484	545	6701	-3936	0	-33658
Sep-2024	0	96	288	1350	140	517	211	2601	4300	301	440	527	5568	-2965	-2	-36623
Oct-2024	1159	99	211	2960	144	470	-274	4770	3561	366	465	550	4942	-172	0	-36796
Nov-2024	0	96	141	3634	140	473	-658	3827	2654	384	455	528	4022	-196	0	-36991
Dec-2024	5422	99	106	5036	144	379	-999	10188	2295	722	567	572	4157	6031	0	-30961
Jan-2025	11901	99	107	12483	144	180	-1855	23059	1878	2175	812	608	5473	17585	0	-13375
Feb-2025	8159	90	144	18886	130	122	-3306	24225	1553	3751	937	544	6785	17440	0	4064
Mar-2025	2970	99	187	10253	144	160	-1363	12450	2131	3428	1052	573	7184	5265	0	9330
Apr-2025	0	96	258	4257	140	229	-328	4652	2772	1339	892	537	5540	-888	0	8441

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Month-Year	Inflow								Outflow					Change		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2025	0	99	300	1431	144	368	505	2846	3526	965	798	551	5839	-2993	0	5449
Jun-2025	452	96	322	1301	140	399	788	3499	4100	822	708	534	6164	-2665	-1	2783
Jul-2025	0	99	401	1333	144	462	1032	3471	5118	689	674	548	7030	-3559	0	-775
Aug-2025	0	99	367	1487	144	506	1024	3627	5189	573	629	547	6937	-3310	-1	-4085
Sep-2025	0	96	290	1923	140	520	714	3683	4147	637	581	528	5893	-2210	0	-6295
Oct-2025	396	99	213	5974	144	425	-152	7100	3428	793	656	548	5425	1675	0	-4620
Nov-2025	522	96	142	5632	140	382	-369	6545	2552	902	680	532	4665	1879	0	-2741
Dec-2025	696	99	107	10901	144	259	-1613	10593	2203	1216	795	551	4766	5827	0	3086
Jan-2026	0	99	108	1540	144	429	58	2377	1878	1186	743	549	4355	-1978	0	1108
Feb-2026	0	90	145	1346	130	436	207	2355	1553	1044	642	495	3734	-1383	4	-275
Mar-2026	0	99	188	1454	144	529	363	2778	2131	1115	673	548	4467	-1690	1	-1966
Apr-2026	0	96	260	2307	140	546	259	3608	2772	1092	617	530	5012	-1404	0	-3369
May-2026	0	99	302	1274	144	594	670	3083	3526	989	598	547	5660	-2577	0	-5946
Jun-2026	0	96	324	1106	140	599	850	3116	4100	810	545	529	5985	-2868	0	-8815
Jul-2026	0	99	403	1125	144	644	987	3403	5118	677	522	546	6863	-3460	0	-12274
Aug-2026	0	99	369	1137	144	671	981	3403	5189	598	488	545	6820	-3416	0	-15690
Sep-2026	0	96	292	1132	140	667	773	3101	4147	591	449	527	5714	-2612	-1	-18302
Oct-2026	0	99	214	1214	144	709	700	3081	3428	681	452	544	5106	-2025	0	-20328
Nov-2026	0	96	143	1232	140	704	552	2867	2552	748	433	528	4260	-1393	0	-21721
Dec-2026	0	99	108	1961	144	745	296	3353	2203	863	443	546	4055	-702	0	-22423
Jan-2027	15366	99	108	9239	144	234	-924	24267	1953	1995	765	620	5332	18934	0	-3489
Feb-2027	1349	90	146	12871	130	159	-1825	12922	1603	2208	796	513	5119	7802	0	4314
Mar-2027	5802	99	189	6638	144	200	-369	12704	2202	2252	956	581	5991	6713	0	11026
Apr-2027	503	96	262	2123	140	322	634	4080	2861	1677	850	539	5928	-1848	-1	9179
May-2027	182	99	304	3621	144	341	570	5262	3645	1249	824	552	6269	-1002	-6	8177
Jun-2027	531	96	327	1738	140	431	1044	4307	4245	1129	737	534	6644	-2337	-1	5840
Jul-2027	0	99	406	1962	144	501	1239	4352	5298	948	700	548	7495	-3142	0	2698
Aug-2027	0	99	372	2061	144	547	1243	4466	5380	830	648	547	7405	-2938	0	-240
Sep-2027	0	96	294	1053	140	566	1281	3430	4300	734	586	528	6148	-2712	-7	-2952
Oct-2027	0	99	216	5225	144	486	368	6539	3561	829	659	546	5595	943	0	-2009
Nov-2027	0	96	144	4539	140	456	199	5575	2654	894	668	529	4746	829	0	-1180
Dec-2027	1629	99	108	17479	144	79	-2757	16782	2295	1542	887	555	5279	11502	1	10322
Jan-2028	1154	99	109	7425	144	139	-810	8261	1878	1537	923	555	4893	3367	1	13689
Feb-2028	2614	93	148	1959	135	210	324	5483	1609	1666	836	526	4637	846	0	14535
Mar-2028	808	99	190	1611	144	336	673	3863	2131	1591	847	555	5123	-1263	2	13273
Apr-2028	51	96	264	1927	140	398	721	3596	2772	1386	758	532	5448	-1853	1	11420
May-2028	264	99	306	1662	144	461	973	3910	3526	1355	727	550	6157	-2247	0	9173
Jun-2028	0	96	329	1009	140	492	1234	3301	4100	1074	652	530	6357	-3055	0	6118
Jul-2028	0	99	409	1111	144	548	1440	3752	5118	920	624	547	7209	-3457	0	2661
Aug-2028	0	99	375	1072	144	593	1473	3756	5189	838	583	546	7156	-3400	0	-739

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Sep-2028	0	96	296	1690	140	552	1180	3955	4147	839	543	527	6056	-2098	-3	-2837
Oct-2028	505	99	217	1196	144	623	1141	3927	3428	964	548	548	5488	-1561	0	-4399
Nov-2028	412	96	145	4932	140	514	237	6476	2552	1053	611	531	4747	1729	0	-2670
Dec-2028	3380	99	109	6909	144	375	-226	10791	2203	1471	755	563	4993	5798	0	3128
Jan-2029	938	99	110	1557	144	488	625	3962	1878	1460	731	555	4624	-663	0	2465
Feb-2029	32	90	149	2281	130	458	601	3741	1553	1253	648	497	3951	-210	0	2255
Mar-2029	0	99	192	2222	144	547	600	3805	2131	1431	688	549	4799	-995	1	1260
Apr-2029	0	96	265	1959	140	567	715	3742	2772	1238	625	530	5166	-1423	-1	-163
May-2029	0	99	308	1281	144	604	1120	3558	3526	1148	608	547	5829	-2271	-1	-2434
Jun-2029	0	96	331	982	140	633	1281	3463	4100	991	548	529	6169	-2706	0	-5140
Jul-2029	7	99	412	1055	144	684	1491	3891	5118	889	524	546	7077	-3185	0	-8325
Aug-2029	0	99	377	1124	144	703	1514	3961	5189	838	491	545	7063	-3102	0	-11427
Sep-2029	75	96	298	1116	140	699	1294	3716	4147	825	456	527	5955	-2235	-3	-13662
Oct-2029	0	99	219	1307	144	743	1160	3672	3428	922	459	545	5354	-1682	0	-15344
Nov-2029	524	96	146	1609	140	721	891	4128	2552	1009	447	530	4538	-410	0	-15754
Dec-2029	945	99	110	2127	144	746	693	4865	2203	1174	469	551	4398	467	0	-15287
Jan-2030	2682	99	111	30363	144	364	-5118	28645	1878	2840	760	561	6039	22605	1	7318
Feb-2030	16904	90	150	11284	130	68	-1211	27414	1553	4454	1030	575	7613	19801	0	27119
Mar-2030	3058	99	193	14898	144	205	-1585	17013	2131	5042	1267	578	9018	7995	0	35114
Apr-2030	1752	96	267	15590	140	223	-1228	16840	2772	6603	1359	547	11281	5560	-1	40674
May-2030	4226	99	310	1503	144	280	1074	7636	3526	3066	1209	573	8374	-736	-1	39938
Jun-2030	46	96	334	4951	140	276	666	6508	4100	1957	1080	536	7674	-1165	-1	38773
Jul-2030	0	99	414	1313	144	395	1401	3768	5118	1477	963	550	8108	-4340	0	34433
Aug-2030	0	99	380	1432	144	444	1434	3934	5189	1238	874	548	7850	-3915	0	30517
Sep-2030	161	96	300	1537	140	457	1182	3874	4147	1139	800	531	6616	-2738	-4	27780
Oct-2030	254	99	220	1351	144	512	1157	3738	3428	1260	793	549	6029	-2292	0	25487
Nov-2030	1045	96	147	1660	140	508	892	4488	2552	1375	754	535	5216	-728	0	24759
Dec-2030	1068	99	111	2425	144	505	724	5076	2203	1598	772	554	5128	-52	0	24707
Jan-2031	0	99	111	1460	144	580	800	3194	1878	1583	733	550	4743	-1549	0	23157
Feb-2031	0	90	150	1458	130	547	659	3035	1553	1430	631	496	4110	-1076	0	22082
Mar-2031	0	99	194	971	144	629	1015	3053	2131	1558	665	549	4903	-1851	1	20230
Apr-2031	0	96	269	2415	140	626	759	4305	2772	1551	617	531	5471	-1165	-1	19065
May-2031	0	99	312	2214	144	664	945	4379	3526	1513	607	548	6194	-1814	0	17251
Jun-2031	0	96	336	1101	140	657	1353	3683	4100	1305	548	530	6483	-2800	0	14451
Jul-2031	0	99	417	1017	144	693	1614	3985	5118	1159	528	547	7352	-3366	0	11085
Aug-2031	0	99	382	1028	144	708	1640	4001	5189	1052	495	546	7282	-3280	0	7805
Sep-2031	0	96	302	1013	140	700	1415	3667	4147	1008	458	528	6140	-2471	-3	5334
Oct-2031	0	99	222	1029	144	740	1321	3555	3428	1102	457	546	5532	-1977	0	3356
Nov-2031	0	96	148	935	140	731	1146	3196	2552	1142	432	529	4654	-1458	0	1898
Dec-2031	0	99	111	958	144	769	1107	3189	2203	1275	440	547	4466	-1277	0	621

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	130	99	112	1282	144	753	1023	3544	1878	1349	463	548	4238	-694	0	-73
Feb-2032	1010	93	151	2135	135	676	735	4935	1609	1322	472	517	3921	1014	0	941
Mar-2032	338	99	195	1924	144	737	818	4256	2131	1407	496	550	4585	-331	2	609
Apr-2032	225	96	270	996	140	724	1124	3576	2772	1242	461	532	5008	-1432	-1	-822
May-2032	0	99	314	1455	144	778	1210	4001	3526	1216	452	548	5742	-1741	0	-2563
Jun-2032	0	96	338	1401	140	774	1311	4060	4100	1095	416	529	6140	-2080	0	-4642
Jul-2032	0	99	420	1001	144	813	1599	4076	5118	946	400	546	7010	-2933	0	-7576
Aug-2032	33	99	384	1045	144	825	1616	4147	5189	862	379	545	6975	-2828	0	-10403
Sep-2032	0	96	304	1020	140	811	1387	3759	4147	837	353	527	5865	-2103	-3	-12507
Oct-2032	121	99	223	1043	144	848	1289	3768	3428	938	361	545	5273	-1505	0	-14012
Nov-2032	0	96	149	1396	140	805	1055	3640	2552	1014	365	528	4459	-819	0	-14831
Dec-2032	0	99	112	1526	144	843	943	3667	2203	1148	382	546	4280	-613	0	-15444
Jan-2033	2917	99	113	5141	144	666	190	9271	1953	1389	524	561	4426	4844	0	-10599
Feb-2033	5379	90	152	4009	130	522	50	10332	1603	1519	536	522	4180	6147	6	-4452
Mar-2033	1690	99	197	3200	144	617	472	6420	2202	1536	582	561	4881	1539	0	-2913
Apr-2033	1280	96	272	1272	140	657	997	4714	2861	1274	536	539	5209	-496	0	-3409
May-2033	0	99	316	1581	144	704	1130	3975	3645	1109	511	550	5814	-1840	0	-5248
Jun-2033	0	96	340	1015	140	732	1299	3621	4245	901	450	530	6125	-2504	0	-7752
Jul-2033	0	99	422	1077	144	777	1437	3956	5298	756	423	547	7024	-3067	0	-10819
Aug-2033	0	99	386	1108	144	793	1421	3952	5380	652	393	546	6971	-3018	0	-13838
Sep-2033	0	96	306	1142	140	776	1178	3637	4300	613	363	527	5804	-2166	-1	-16004
Oct-2033	110	99	224	1186	144	806	1106	3677	3561	713	370	546	5190	-1514	0	-17517
Nov-2033	1590	96	150	8148	140	560	-616	10067	2654	911	488	536	4589	5478	0	-12039
Dec-2033	650	99	113	13149	144	378	-2241	12292	2295	1082	594	551	4522	7770	0	-4270
Jan-2034	0	99	113	981	144	554	572	2464	1953	1072	550	548	4123	-1659	0	-5929
Feb-2034	0	90	153	954	130	541	690	2558	1603	960	474	495	3532	-975	0	-6903
Mar-2034	0	99	198	1006	144	641	898	2987	2202	1029	490	548	4268	-1281	0	-8184
Apr-2034	0	96	273	976	140	653	1025	3164	2861	892	435	530	4717	-1552	-2	-9736
May-2034	0	99	317	1031	144	709	1214	3514	3645	820	412	547	5423	-1907	-2	-11643
Jun-2034	0	96	341	1031	140	714	1338	3660	4245	706	368	529	5847	-2187	-1	-13830
Jul-2034	0	99	424	1111	144	758	1556	4093	5298	606	350	545	6800	-2707	0	-16537
Aug-2034	0	99	388	1135	144	776	1593	4137	5380	539	329	544	6793	-2655	0	-19192
Sep-2034	0	96	307	1201	140	755	1368	3868	4300	548	309	526	5684	-1812	-5	-21004
Oct-2034	0	99	225	1207	144	793	1265	3734	3561	639	315	544	5059	-1325	0	-22329
Nov-2034	0	96	150	1070	140	782	1080	3319	2654	701	304	527	4187	-868	0	-23197
Dec-2034	0	99	113	1031	144	825	1026	3239	2295	808	315	546	3965	-727	0	-23924
Jan-2035	0	99	114	1808	144	819	772	3757	1953	900	325	547	3724	32	0	-23891
Feb-2035	2106	90	154	3726	130	628	366	7201	1603	942	399	504	3448	3752	0	-20139
Mar-2035	555	99	198	1770	144	755	747	4268	2202	1007	424	551	4183	82	3	-20057
Apr-2035	548	96	275	2019	140	742	817	4636	2861	983	392	533	4769	-132	-1	-20189

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	397	99	319	1530	144	781	1101	4371	3645	917	377	549	5488	-1117	-1	-21306
Jun-2035	0	96	343	1335	140	782	1233	3929	4245	738	332	529	5844	-1915	0	-23221
Jul-2035	5	99	426	1108	144	821	1550	4153	5298	621	314	545	6779	-2625	0	-25846
Aug-2035	0	99	390	1136	144	832	1593	4195	5380	544	295	544	6763	-2568	0	-28413
Sep-2035	0	96	309	1101	140	816	1375	3837	4300	526	276	526	5629	-1789	-3	-30203
Oct-2035	257	99	227	2384	144	782	1136	5028	3561	612	355	545	5074	-46	0	-30248
Nov-2035	147	96	151	1205	140	792	1042	3573	2654	679	343	528	4205	-632	0	-30881
Dec-2035	599	99	114	3268	144	739	705	5670	2295	817	437	549	4097	1572	0	-29309

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Error			
Jan-2012	1775	40	30	3745	380	-158	5813	605	88	92	1176	1961	3852	0	3852
Feb-2012	2506	37	41	1551	282	146	4564	461	152	105	1102	1820	2744	0	6596
Mar-2012	829	40	53	5316	341	-608	5972	622	233	145	1358	2357	3614	0	10210
Apr-2012	62	39	74	873	388	265	1700	794	171	122	1256	2344	-641	-2	9570
May-2012	69	40	86	218	512	511	1435	1038	149	115	1285	2587	-1151	0	8418
Jun-2012	0	39	92	78	540	595	1345	1233	96	101	1244	2674	-1329	0	7089
Jul-2012	0	40	114	6	599	697	1457	1541	55	94	1289	2979	-1523	0	5567
Aug-2012	0	40	105	0	636	723	1504	1601	44	87	1284	3016	-1512	0	4055
Sep-2012	0	39	83	37	632	639	1430	1282	55	79	1222	2638	-1207	-1	2847
Oct-2012	0	40	61	662	589	518	1869	1087	69	88	1242	2485	-616	0	2232
Nov-2012	0	39	41	3139	409	44	3671	825	97	102	1171	2195	1476	0	3708
Dec-2012	233	40	30	700	492	347	1843	728	105	100	1200	2133	-290	0	3418
Jan-2013	101	40	31	635	571	341	1718	605	103	96	1191	1995	-277	0	3141
Feb-2013	35	36	42	113	550	397	1173	445	85	82	1068	1679	-506	0	2635
Mar-2013	117	40	54	455	610	399	1674	622	95	90	1186	1993	-319	1	2316
Apr-2013	10	39	74	253	627	461	1464	794	91	85	1155	2125	-661	0	1655
May-2013	0	40	86	109	674	566	1475	1038	85	83	1202	2408	-933	0	722
Jun-2013	0	39	93	18	675	614	1438	1233	52	72	1171	2527	-1089	0	-367
Jul-2013	0	40	115	18	718	705	1596	1541	44	69	1217	2871	-1274	0	-1641
Aug-2013	0	40	106	12	739	727	1623	1601	34	64	1215	2914	-1292	0	-2933
Sep-2013	0	39	83	351	725	571	1769	1282	55	64	1157	2559	-789	-1	-3722
Oct-2013	12	40	61	324	765	536	1739	1087	63	67	1177	2394	-655	0	-4377
Nov-2013	77	39	41	323	732	463	1675	825	65	65	1123	2078	-403	0	-4780
Dec-2013	5	40	31	430	775	404	1683	728	69	66	1150	2013	-330	0	-5109
Jan-2014	397	40	31	1119	648	239	2473	282	80	73	1163	1599	874	0	-4236
Feb-2014	144	36	42	2036	559	-124	2694	212	79	69	1050	1411	1283	0	-2952
Mar-2014	1132	40	54	2008	516	26	3775	295	125	89	1175	1683	2091	1	-862
Apr-2014	130	39	75	690	546	296	1776	378	114	85	1162	1738	38	0	-823
May-2014	15	40	87	255	638	429	1464	491	110	83	1233	1917	-453	0	-1276
Jun-2014	0	39	93	0	663	492	1287	582	52	70	1228	1931	-644	0	-1920
Jul-2014	0	40	116	0	710	553	1420	727	43	65	1310	2144	-724	0	-2645
Aug-2014	0	40	106	102	685	556	1490	752	37	60	1337	2185	-695	0	-3340
Sep-2014	122	39	84	162	648	500	1556	602	33	56	1285	1976	-420	-1	-3760
Oct-2014	30	40	62	249	677	472	1529	508	57	58	1310	1933	-404	0	-4164
Nov-2014	636	39	41	625	601	363	2304	385	68	63	1243	1759	545	0	-3619
Dec-2014	351	40	31	1309	613	144	2488	338	76	69	1265	1748	740	0	-2879
Jan-2015	2094	40	31	1922	536	80	4703	605	105	82	1223	2015	2688	0	-191
Feb-2015	1654	36	42	2520	459	-102	4609	445	118	82	1189	1834	2774	0	2583
Mar-2015	3156	40	54	1829	285	220	5584	622	236	114	1234	2206	3377	0	5960
Apr-2015	1113	39	75	2040	350	106	3723	794	201	109	1218	2322	1398	2	7358

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Error			
May-2015	48	40	87	958	512	397	2043	1038	163	106	1247	2554	-511	0	6848
Jun-2015	0	39	94	523	545	517	1718	1233	139	98	1210	2680	-962	0	5885
Jul-2015	0	40	117	639	597	588	1982	1541	134	97	1257	3029	-1047	0	4838
Aug-2015	283	40	107	512	603	650	2194	1601	135	96	1255	3087	-893	0	3945
Sep-2015	447	39	85	115	543	668	1897	1282	64	87	1196	2630	-733	-1	3213
Oct-2015	420	40	62	376	525	617	2039	1087	73	90	1217	2466	-427	0	2786
Nov-2015	1217	39	41	10224	204	-1177	10548	825	337	169	1143	2475	8074	0	10859
Dec-2015	1239	40	31	8153	272	-1266	8468	728	425	237	1485	2876	5592	0	16452
Jan-2016	0	40	31	0	454	286	811	605	117	154	1307	2184	-1373	0	15079
Feb-2016	0	37	43	596	464	231	1371	461	150	135	1194	1940	-569	0	14510
Mar-2016	0	40	55	405	532	359	1390	622	162	134	1276	2195	-804	0	13705
Apr-2016	0	39	76	240	541	448	1344	794	155	124	1242	2315	-971	0	12735
May-2016	0	40	88	143	584	549	1403	1038	142	120	1292	2592	-1188	0	11546
Jun-2016	0	39	95	166	585	591	1475	1233	132	110	1259	2734	-1259	0	10287
Jul-2016	0	40	118	228	624	672	1681	1541	132	109	1308	3090	-1408	0	8879
Aug-2016	0	40	108	411	643	644	1846	1601	129	106	1305	3141	-1296	0	7583
Sep-2016	0	39	85	154	640	634	1551	1282	115	99	1243	2740	-1188	-1	6395
Oct-2016	0	40	63	220	680	580	1583	1087	114	100	1265	2565	-982	0	5413
Nov-2016	0	39	42	904	674	294	1953	825	113	95	1206	2240	-287	0	5126
Dec-2016	0	40	31	578	713	380	1743	728	125	98	1234	2185	-442	0	4684
Jan-2017	0	40	32	483	726	314	1595	282	132	97	1249	1759	-164	0	4520
Feb-2017	0	36	43	461	665	257	1462	212	123	86	1129	1550	-88	0	4432
Mar-2017	0	40	55	274	745	366	1480	295	135	94	1265	1788	-309	0	4123
Apr-2017	0	39	77	215	727	392	1449	378	125	89	1246	1837	-388	0	3735
May-2017	0	40	89	77	757	457	1420	491	86	85	1317	1979	-559	0	3176
Jun-2017	0	39	96	0	749	481	1364	582	48	74	1305	2009	-645	0	2531
Jul-2017	0	40	119	0	781	542	1482	727	40	72	1386	2224	-743	0	1788
Aug-2017	0	40	109	0	788	560	1497	752	35	67	1409	2262	-765	0	1023
Sep-2017	0	39	86	12	763	510	1410	602	32	61	1351	2046	-636	-1	387
Oct-2017	0	40	63	179	793	470	1544	508	57	66	1375	2007	-463	0	-76
Nov-2017	0	39	42	221	773	403	1478	385	62	65	1306	1818	-339	0	-415
Dec-2017	0	40	32	301	805	368	1547	338	68	67	1329	1803	-256	0	-671
Jan-2018	598	40	32	869	696	243	2479	282	78	74	1309	1743	736	0	64
Feb-2018	681	36	43	1250	600	36	2646	212	83	71	1165	1530	1116	0	1180
Mar-2018	552	40	56	796	635	277	2356	295	106	85	1291	1777	578	1	1758
Apr-2018	90	39	77	307	676	386	1575	378	111	80	1263	1832	-256	0	1502
May-2018	0	40	89	107	732	475	1443	491	97	77	1328	1993	-550	0	952
Jun-2018	0	39	96	6	728	497	1366	582	49	66	1312	2010	-644	0	308
Jul-2018	5	40	120	16	762	553	1495	727	41	63	1390	2221	-725	0	-417
Aug-2018	0	40	110	15	771	569	1505	752	37	58	1411	2258	-752	0	-1169

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW				
Sep-2018	182	39	87	6	747	522	1583	602	32	54	1352	2039	-456	-1	-1626
Oct-2018	70	40	64	662	680	417	1932	508	51	57	1372	1988	-56	0	-1682
Nov-2018	159	39	42	804	601	340	1985	385	63	60	1298	1805	179	0	-1502
Dec-2018	25	40	32	1049	568	287	2001	338	75	65	1317	1795	206	0	-1297
Jan-2019	43	40	32	164	641	440	1360	605	74	61	1270	2009	-650	0	-1947
Feb-2019	13	36	43	166	600	381	1239	445	65	53	1119	1681	-444	1	-2391
Mar-2019	35	40	56	82	695	462	1370	622	66	53	1228	1969	-599	0	-2990
Apr-2019	3	39	78	89	683	486	1377	794	47	47	1186	2074	-696	0	-3686
May-2019	0	40	90	13	741	566	1451	1038	29	45	1227	2339	-888	0	-4574
Jun-2019	0	39	97	0	745	608	1488	1233	21	42	1190	2486	-998	0	-5572
Jul-2019	2	40	120	0	788	699	1649	1541	18	42	1235	2834	-1185	0	-6757
Aug-2019	0	40	110	0	805	721	1677	1601	14	40	1231	2886	-1209	0	-7966
Sep-2019	0	39	87	1	795	636	1559	1282	11	37	1172	2503	-944	0	-8910
Oct-2019	71	40	64	0	833	595	1603	1087	10	38	1192	2326	-723	0	-9633
Nov-2019	79	39	43	272	800	466	1698	825	27	38	1137	2027	-328	0	-9962
Dec-2019	98	40	32	620	811	355	1956	728	36	39	1163	1967	-11	0	-9973
Jan-2020	224	40	32	376	776	340	1788	282	44	40	1179	1546	242	0	-9731
Feb-2020	232	37	44	931	690	199	2133	219	47	41	1104	1411	721	1	-9009
Mar-2020	79	40	57	732	738	221	1867	295	54	43	1197	1589	278	0	-8731
Apr-2020	272	39	78	168	726	379	1662	378	55	42	1184	1659	3	0	-8728
May-2020	6	40	91	77	793	446	1454	491	54	40	1256	1842	-389	0	-9117
Jun-2020	0	39	98	68	783	471	1457	582	49	37	1251	1918	-461	0	-9578
Jul-2020	0	40	121	0	833	534	1529	727	23	35	1335	2120	-591	0	-10169
Aug-2020	0	40	111	0	849	552	1552	752	16	34	1363	2165	-613	0	-10782
Sep-2020	7	39	88	106	798	489	1526	602	12	31	1312	1957	-431	0	-11213
Oct-2020	0	40	65	148	818	464	1534	508	9	31	1340	1888	-354	0	-11567
Nov-2020	63	39	43	75	799	419	1438	385	8	30	1275	1698	-259	0	-11826
Dec-2020	489	40	32	25	823	429	1837	338	14	31	1301	1685	153	0	-11674
Jan-2021	0	40	33	50	854	399	1375	282	20	31	1283	1615	-240	0	-11914
Feb-2021	0	36	44	111	781	328	1300	212	22	28	1141	1404	-104	0	-12018
Mar-2021	0	40	57	60	874	377	1408	295	25	31	1265	1616	-208	0	-12226
Apr-2021	0	39	79	25	855	389	1387	378	15	28	1238	1659	-272	-1	-12498
May-2021	0	40	91	6	898	434	1469	491	6	27	1303	1827	-357	0	-12855
Jun-2021	0	39	98	0	882	455	1474	582	3	25	1288	1898	-424	0	-13279
Jul-2021	0	40	122	0	917	516	1595	727	1	25	1366	2119	-524	0	-13803
Aug-2021	0	40	112	0	924	534	1609	752	0	24	1388	2164	-554	0	-14357
Sep-2021	0	39	89	102	886	478	1593	602	12	26	1331	1970	-377	0	-14734
Oct-2021	0	40	65	94	918	458	1575	508	18	27	1354	1907	-332	0	-15066
Nov-2021	0	39	43	34	895	410	1421	385	13	25	1284	1707	-286	0	-15352
Dec-2021	0	40	33	18	935	398	1424	338	5	24	1306	1674	-250	0	-15602

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage		Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Change in GW Storage				
Jan-2022	0	40	33	212	937	343	1565	282	15	26	1287	1610	-45	0		-15648
Feb-2022	0	36	44	276	846	262	1466	212	19	24	1145	1399	66	1		-15582
Mar-2022	0	40	57	230	937	323	1587	295	26	27	1270	1617	-30	0		-15612
Apr-2022	0	39	79	46	908	370	1442	378	22	26	1243	1669	-227	0		-15839
May-2022	0	40	92	46	940	417	1535	491	20	26	1309	1846	-311	0		-16150
Jun-2022	0	39	99	5	920	442	1504	582	6	23	1295	1905	-401	0		-16552
Jul-2022	0	40	123	0	958	504	1625	727	2	23	1374	2126	-501	0		-17053
Aug-2022	0	40	113	0	962	523	1638	752	0	22	1397	2171	-533	0		-17586
Sep-2022	0	39	89	0	936	476	1541	602	0	21	1341	1964	-424	0		-18010
Oct-2022	0	40	65	27	962	456	1550	508	3	22	1367	1899	-349	0		-18359
Nov-2022	0	39	44	36	933	404	1456	385	5	22	1298	1709	-254	0		-18612
Dec-2022	0	40	33	147	965	376	1561	338	10	24	1322	1694	-134	0		-18746
Jan-2023	130	40	33	502	877	308	1891	282	18	27	1301	1628	262	1		-18484
Feb-2023	671	36	45	2668	591	-173	3837	212	30	28	1141	1410	2426	1		-16058
Mar-2023	1328	40	58	1948	545	-7	3911	295	55	35	1279	1663	2247	1		-13811
Apr-2023	0	39	80	751	664	205	1738	378	50	32	1256	1716	22	0		-13789
May-2023	0	40	93	178	721	444	1476	491	53	33	1326	1902	-426	0		-14216
Jun-2023	0	39	100	142	738	472	1490	582	52	32	1314	1980	-489	0		-14705
Jul-2023	0	40	124	44	776	541	1524	727	30	30	1397	2183	-658	0		-15363
Aug-2023	0	40	114	0	818	562	1533	752	20	28	1422	2222	-688	0		-16052
Sep-2023	0	39	90	45	800	510	1484	602	30	27	1367	2026	-542	0		-16593
Oct-2023	59	40	66	231	780	470	1646	508	35	30	1395	1968	-322	0		-16916
Nov-2023	0	39	44	62	815	432	1391	385	33	28	1328	1774	-383	0		-17299
Dec-2023	698	40	33	1041	688	298	2797	338	48	33	1354	1773	1024	0		-16275
Jan-2024	683	40	33	10442	109	-1489	9818	282	238	130	1317	1967	7851	0		-8424
Feb-2024	3467	37	45	7523	-187	-892	9993	219	738	220	1213	2390	7602	0		-822
Mar-2024	2027	40	58	2912	-27	1	5011	295	463	214	1299	2271	2740	0		1918
Apr-2024	31	39	80	398	206	386	1141	378	235	133	1292	2038	-897	0		1022
May-2024	71	40	93	117	314	527	1163	491	176	90	1369	2126	-963	0		59
Jun-2024	0	39	100	428	297	523	1388	582	152	82	1359	2175	-787	0		-729
Jul-2024	62	40	125	16	426	600	1270	727	72	74	1446	2319	-1049	0		-1778
Aug-2024	0	40	114	5	493	615	1267	752	52	67	1474	2345	-1077	0		-2855
Sep-2024	0	39	90	108	517	553	1307	602	79	64	1419	2164	-856	0		-3712
Oct-2024	323	40	66	443	470	512	1854	508	100	73	1450	2130	-276	0		-3988
Nov-2024	0	39	44	898	473	336	1790	385	104	73	1381	1942	-153	0		-4140
Dec-2024	1510	40	33	1984	379	90	4037	338	241	101	1410	2090	1947	0		-2194
Jan-2025	3315	40	34	9294	180	-968	11894	605	1234	219	1369	3427	8468	0		6274
Feb-2025	2273	36	45	13163	122	-1925	13713	445	2669	324	1384	4821	8892	0		15166
Mar-2025	827	40	59	4572	160	-21	5637	622	2395	351	1459	4827	809	0		15975
Apr-2025	0	39	81	1090	229	377	1816	794	555	237	1395	2981	-1165	0		14811

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Error			
May-2025	0	40	94	239	368	548	1289	1038	253	169	1433	2894	-1605	0	13206
Jun-2025	126	39	101	110	399	623	1398	1233	179	131	1384	2927	-1529	0	11677
Jul-2025	0	40	126	54	462	718	1400	1541	118	118	1429	3206	-1806	0	9871
Aug-2025	0	40	115	10	506	740	1411	1601	64	108	1419	3192	-1781	0	8090
Sep-2025	0	39	91	64	520	654	1368	1282	77	99	1348	2806	-1438	0	6652
Oct-2025	110	40	67	1214	425	509	2366	1087	154	117	1365	2722	-356	0	6296
Nov-2025	145	39	45	1232	382	394	2237	825	183	120	1295	2424	-186	0	6110
Dec-2025	194	40	34	3078	259	109	3713	728	250	152	1284	2414	1299	0	7408
Jan-2026	0	40	34	388	429	407	1298	605	202	127	1290	2224	-926	0	6483
Feb-2026	0	36	46	493	436	323	1334	445	168	110	1158	1880	-547	1	5936
Mar-2026	0	40	59	497	529	401	1525	622	178	116	1283	2199	-674	0	5261
Apr-2026	0	39	82	319	546	479	1465	794	164	106	1246	2310	-845	0	4416
May-2026	0	40	95	163	594	589	1481	1038	150	104	1293	2585	-1104	0	3313
Jun-2026	0	39	102	80	599	632	1452	1233	91	94	1256	2674	-1223	0	2090
Jul-2026	0	40	127	20	644	724	1554	1541	58	88	1305	2992	-1437	0	653
Aug-2026	0	40	116	7	671	746	1580	1601	44	81	1302	3028	-1448	0	-795
Sep-2026	0	39	92	37	667	659	1493	1282	55	74	1241	2652	-1158	0	-1954
Oct-2026	0	40	67	102	709	610	1529	1087	65	75	1264	2491	-962	0	-2915
Nov-2026	0	39	45	193	704	507	1488	825	67	73	1206	2170	-683	0	-3598
Dec-2026	0	40	34	941	745	264	2023	728	72	76	1234	2109	-86	0	-3684
Jan-2027	4280	40	34	3389	234	-110	7868	282	233	129	1227	1872	5996	0	2312
Feb-2027	376	36	46	6481	159	-577	6522	212	888	197	1073	2369	4152	0	6464
Mar-2027	1616	40	59	2452	200	131	4499	295	673	219	1233	2420	2078	0	8542
Apr-2027	140	39	82	887	322	364	1834	378	512	188	1234	2312	-478	0	8065
May-2027	51	40	95	729	341	477	1732	491	252	165	1310	2218	-485	-1	7580
Jun-2027	148	39	103	156	431	553	1429	582	206	135	1303	2225	-796	0	6784
Jul-2027	0	40	128	62	501	614	1343	727	120	124	1387	2357	-1014	0	5771
Aug-2027	0	40	117	8	547	621	1334	752	61	114	1413	2340	-1006	0	4764
Sep-2027	0	39	92	6	566	562	1265	602	47	102	1358	2110	-843	-2	3921
Oct-2027	0	40	68	907	486	469	1969	508	88	115	1383	2093	-124	0	3797
Nov-2027	0	39	45	761	456	406	1707	385	101	115	1312	1912	-205	0	3592
Dec-2027	454	40	34	6746	79	-463	6890	338	414	227	1230	2209	4681	0	8273
Jan-2028	321	40	34	2035	139	209	2779	605	322	218	1256	2400	379	0	8652
Feb-2028	728	37	46	938	210	325	2285	461	426	173	1162	2222	62	0	8714
Mar-2028	225	40	60	730	336	438	1829	622	339	170	1241	2371	-542	0	8172
Apr-2028	14	39	83	315	398	545	1393	794	208	139	1203	2343	-951	0	7222
May-2028	74	40	96	151	461	646	1469	1038	182	126	1247	2593	-1124	0	6098
Jun-2028	0	39	103	46	492	675	1355	1233	91	111	1212	2648	-1293	0	4805
Jul-2028	0	40	128	16	548	759	1491	1541	53	106	1259	2958	-1467	0	3338
Aug-2028	0	40	118	0	593	776	1527	1601	44	99	1255	2999	-1473	0	1866

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	Subsurface Inflow From	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Error			
Sep-2028	0	39	93	155	552	671	1510	1282	64	92	1196	2634	-1124	-1	742
Oct-2028	141	40	68	154	623	626	1651	1087	74	96	1217	2473	-822	0	-80
Nov-2028	115	39	46	1043	514	410	2166	825	88	99	1159	2171	-5	0	-85
Dec-2028	941	40	34	1890	375	225	3506	728	130	114	1174	2146	1360	0	1275
Jan-2029	261	40	34	571	488	367	1762	605	130	109	1167	2010	-248	0	1027
Feb-2029	9	36	47	687	458	323	1560	445	112	94	1047	1698	-138	0	889
Mar-2029	0	40	60	202	547	470	1319	622	108	98	1164	1992	-673	0	215
Apr-2029	0	39	83	120	567	513	1322	794	84	88	1134	2100	-778	0	-563
May-2029	0	40	97	118	604	581	1440	1038	65	82	1181	2366	-926	0	-1489
Jun-2029	0	39	104	6	633	632	1413	1233	40	73	1151	2497	-1084	0	-2572
Jul-2029	2	40	129	4	684	723	1582	1541	33	71	1198	2843	-1260	0	-3833
Aug-2029	0	40	118	50	703	742	1653	1601	50	68	1197	2915	-1262	0	-5095
Sep-2029	21	39	94	69	699	653	1574	1282	51	64	1141	2539	-964	-1	-6059
Oct-2029	0	40	69	245	743	572	1669	1087	56	66	1162	2371	-702	0	-6761
Nov-2029	146	39	46	587	721	389	1928	825	59	64	1109	2058	-130	0	-6891
Dec-2029	263	40	34	830	746	303	2217	728	65	68	1137	1998	218	0	-6673
Jan-2030	747	40	35	23764	364	-4218	20731	605	1459	219	1703	3986	16745	0	10072
Feb-2030	4709	36	47	7543	68	-1025	11378	445	2152	319	1455	4371	7007	0	17079
Mar-2030	852	40	61	8881	205	-880	9158	622	2911	456	1528	5518	3641	0	20720
Apr-2030	488	39	84	9703	223	-468	10067	794	4783	560	1320	7456	2613	-1	23333
May-2030	1177	40	97	667	280	541	2802	1038	1199	391	1353	3980	-1178	0	22155
Jun-2030	13	39	105	1379	276	475	2287	1233	474	301	1316	3323	-1036	0	21118
Jul-2030	0	40	130	81	395	692	1337	1541	190	210	1374	3315	-1978	0	19140
Aug-2030	0	40	119	91	444	720	1415	1601	146	169	1378	3293	-1878	0	17262
Sep-2030	45	39	94	89	457	640	1365	1282	112	148	1318	2861	-1495	-1	15767
Oct-2030	71	40	69	139	512	599	1430	1087	139	145	1345	2715	-1285	0	14482
Nov-2030	291	39	46	189	508	518	1591	825	147	138	1285	2395	-804	0	13678
Dec-2030	298	40	35	287	505	497	1660	728	155	140	1316	2339	-679	0	13000
Jan-2031	0	40	35	92	580	473	1220	605	102	131	1304	2142	-922	0	12077
Feb-2031	0	36	47	85	547	397	1113	445	87	113	1168	1813	-700	0	11377
Mar-2031	0	40	61	204	629	443	1377	622	104	123	1294	2143	-767	0	10611
Apr-2031	0	39	84	224	626	468	1441	794	107	115	1257	2273	-832	0	9779
May-2031	0	40	98	197	664	548	1548	1038	110	114	1304	2566	-1019	0	8760
Jun-2031	0	39	105	107	657	606	1515	1233	93	103	1267	2697	-1182	0	7578
Jul-2031	0	40	131	80	693	704	1647	1541	81	100	1314	3036	-1389	0	6189
Aug-2031	0	40	120	46	708	730	1645	1601	70	92	1309	3072	-1428	0	4762
Sep-2031	0	39	95	52	700	647	1533	1282	64	85	1245	2676	-1142	-1	3619
Oct-2031	0	40	70	54	740	605	1509	1087	61	83	1265	2497	-988	0	2631
Nov-2031	0	39	46	31	731	524	1371	825	47	76	1206	2154	-783	0	1849
Dec-2031	0	40	35	80	769	498	1422	728	56	77	1232	2093	-671	0	1178

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Jan-2032	36	40	35	214	753	439	1518	605	59	76	1220	1960	-442	0	736
Feb-2032	281	37	48	296	676	372	1710	461	59	72	1131	1722	-12	0	724
Mar-2032	94	40	61	122	737	440	1494	622	60	73	1210	1965	-471	1	253
Apr-2032	63	39	85	73	724	479	1463	794	43	67	1176	2080	-617	0	-364
May-2032	0	40	99	12	778	561	1489	1038	26	66	1222	2352	-863	0	-1227
Jun-2032	0	39	106	0	774	604	1523	1233	19	62	1188	2503	-979	0	-2206
Jul-2032	0	40	132	0	813	697	1682	1541	17	62	1234	2853	-1172	0	-3378
Aug-2032	9	40	121	0	825	720	1715	1601	14	60	1231	2905	-1190	0	-4568
Sep-2032	0	39	96	0	811	635	1581	1282	11	56	1171	2521	-939	-1	-5507
Oct-2032	34	40	70	4	848	593	1588	1087	9	57	1191	2343	-755	0	-6262
Nov-2032	0	39	47	311	805	457	1659	825	26	56	1135	2042	-383	0	-6646
Dec-2032	0	40	35	538	843	362	1818	728	36	57	1161	1982	-164	0	-6810
Jan-2033	812	40	35	1229	666	235	3017	282	57	66	1175	1581	1436	0	-5374
Feb-2033	1498	36	48	1703	522	-65	3742	212	66	67	1064	1409	2331	2	-3042
Mar-2033	471	40	62	996	617	205	2390	295	74	78	1196	1643	748	0	-2295
Apr-2033	356	39	86	309	657	396	1843	378	75	77	1183	1713	129	0	-2166
May-2033	0	40	99	303	704	445	1591	491	79	79	1256	1906	-315	0	-2481
Jun-2033	0	39	107	5	732	502	1384	582	44	68	1250	1944	-560	0	-3040
Jul-2033	0	40	133	0	777	561	1511	727	36	65	1334	2162	-650	0	-3691
Aug-2033	0	40	122	0	793	576	1530	752	31	60	1361	2204	-674	0	-4365
Sep-2033	0	39	96	11	776	522	1444	602	26	55	1310	1993	-549	0	-4914
Oct-2033	31	40	71	95	806	496	1539	508	48	58	1336	1951	-412	0	-5325
Nov-2033	443	39	47	2000	560	175	3264	385	68	66	1260	1779	1485	0	-3840
Dec-2033	181	40	35	4476	378	-327	4785	338	89	89	1259	1775	3010	0	-831
Jan-2034	0	40	36	50	554	401	1081	282	73	70	1258	1682	-602	0	-1432
Feb-2034	0	36	48	111	541	375	1111	212	65	62	1126	1464	-353	0	-1785
Mar-2034	0	40	62	60	641	433	1236	295	67	64	1253	1678	-442	0	-2228
Apr-2034	0	39	86	25	653	440	1242	378	45	57	1229	1709	-466	0	-2694
May-2034	0	40	100	6	709	481	1336	491	30	55	1296	1872	-536	0	-3230
Jun-2034	0	39	108	0	714	497	1358	582	24	51	1283	1940	-582	0	-3812
Jul-2034	0	40	134	0	758	556	1487	727	21	51	1362	2161	-674	0	-4486
Aug-2034	0	40	122	0	776	570	1509	752	19	49	1384	2204	-695	0	-5181
Sep-2034	0	39	97	102	755	510	1502	602	37	49	1327	2015	-511	-1	-5692
Oct-2034	0	40	71	94	793	489	1488	508	44	50	1350	1952	-465	0	-6156
Nov-2034	0	39	47	34	782	438	1340	385	34	46	1281	1746	-405	0	-6562
Dec-2034	0	40	36	18	825	425	1343	338	21	45	1304	1708	-365	0	-6927
Jan-2035	0	40	36	703	819	228	1825	282	37	46	1284	1648	177	0	-6750
Feb-2035	587	36	49	1363	628	62	2725	212	45	46	1140	1443	1282	0	-5467
Mar-2035	155	40	63	751	755	207	1970	295	56	52	1264	1666	304	1	-5164
Apr-2035	153	39	87	326	742	357	1703	378	59	52	1237	1726	-23	0	-5187

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 4					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Acton Basin and Other Upstream Tributaries	TOTAL INFLOW		Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW		Error		
May-2035	110	40	101	109	781	457	1598	491	65	53	1301	1911	-313	0	-5500
Jun-2035	0	39	108	0	782	481	1410	582	34	46	1287	1949	-539	0	-6038
Jul-2035	1	40	135	0	821	539	1536	727	28	44	1365	2164	-628	0	-6666
Aug-2035	0	40	123	0	832	554	1550	752	24	42	1385	2203	-654	0	-7320
Sep-2035	0	39	98	0	816	503	1455	602	20	40	1327	1988	-533	-1	-7853
Oct-2035	71	40	72	278	782	449	1692	508	18	41	1350	1916	-225	0	-8077
Nov-2035	41	39	48	36	792	416	1371	385	15	38	1280	1717	-346	0	-8423
Dec-2035	167	40	36	494	739	359	1836	338	14	40	1302	1694	142	0	-8281

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Change in GW Storage				
Jan-2012	216	23	3	367	0	-70	539	0	0	75	21	96	443	0		443
Feb-2012	305	21	4	199	0	-41	489	0	0	82	24	106	383	0		827
Mar-2012	101	23	6	367	0	-90	406	0	0	94	20	114	292	0		1119
Apr-2012	8	22	8	55	0	-49	43	0	0	88	24	112	-69	0		1050
May-2012	8	23	9	0	0	-37	3	0	0	87	26	113	-110	0		941
Jun-2012	0	22	10	0	0	-31	1	0	0	80	25	105	-104	0		837
Jul-2012	0	23	12	0	0	-30	6	0	0	78	27	105	-99	0		738
Aug-2012	0	23	11	0	0	-28	6	0	0	74	27	101	-94	0		644
Sep-2012	0	22	9	0	0	-23	8	0	0	68	26	94	-86	0		557
Oct-2012	0	23	7	69	0	-21	78	0	0	69	27	96	-18	0		539
Nov-2012	0	22	4	355	0	-74	307	0	0	73	20	93	214	0		753
Dec-2012	28	23	3	26	0	-39	42	0	0	74	26	100	-58	0		695
Jan-2013	12	23	3	2	0	-26	15	0	0	71	27	97	-82	0		613
Feb-2013	4	21	4	1	0	-17	13	0	0	61	24	86	-73	0		540
Mar-2013	14	23	6	7	0	-16	34	0	0	65	27	92	-58	0		482
Apr-2013	1	22	8	1	0	-14	18	0	0	60	26	86	-68	0		414
May-2013	0	23	9	0	0	-15	17	0	0	57	27	84	-67	0		347
Jun-2013	0	22	10	0	0	-15	17	0	0	52	26	78	-61	0		286
Jul-2013	0	23	12	0	0	-18	17	0	0	50	27	77	-60	0		226
Aug-2013	0	23	11	0	0	-20	15	0	0	46	28	74	-59	0		167
Sep-2013	0	22	9	1	0	-18	14	0	0	42	27	69	-55	0		112
Oct-2013	1	23	7	0	0	-16	15	0	0	41	28	69	-54	0		58
Nov-2013	9	22	4	4	0	-13	27	0	0	38	27	65	-38	0		20
Dec-2013	1	23	3	2	0	-11	18	0	0	37	28	65	-47	0		-27
Jan-2014	48	23	3	185	0	-17	242	0	0	58	27	86	156	0		130
Feb-2014	18	21	5	146	0	-18	170	0	0	59	24	83	87	0		217
Mar-2014	138	23	6	278	0	-47	398	0	0	73	25	98	299	0		517
Apr-2014	16	22	8	98	0	-33	111	0	0	72	24	95	15	0		532
May-2014	2	23	9	4	0	-28	10	0	0	71	25	96	-86	0		446
Jun-2014	0	22	10	0	0	-25	7	0	0	65	24	89	-82	0		364
Jul-2014	0	23	13	0	0	-26	9	0	0	63	26	89	-80	0		284
Aug-2014	0	23	11	25	0	-26	34	0	0	60	26	86	-53	0		232
Sep-2014	15	22	9	39	0	-22	63	0	0	58	26	84	-21	0		210
Oct-2014	4	23	7	37	0	-19	51	0	0	59	27	86	-35	0		175
Nov-2014	77	22	4	107	0	-21	191	0	0	61	27	88	103	0		278
Dec-2014	43	23	3	109	0	-22	156	0	0	65	28	93	63	0		342
Jan-2015	255	23	3	0	0	-18	263	0	0	72	28	100	164	0		505
Feb-2015	201	21	5	0	0	-13	214	0	0	68	25	93	121	0		626
Mar-2015	384	23	6	96	0	-17	492	0	0	86	28	114	378	0		1005
Apr-2015	136	22	8	25	0	-13	177	0	0	84	27	111	66	0		1071

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Change in GW Storage				
May-2015	6	23	9	0	0	-13	26	0	0	81	28	109	-84	0		988
Jun-2015	0	22	10	0	0	-13	20	0	0	74	28	101	-82	0		906
Jul-2015	0	23	13	0	0	-15	20	0	0	73	29	101	-81	0		825
Aug-2015	34	23	12	0	0	-16	53	0	0	71	29	100	-47	0		778
Sep-2015	54	22	9	18	0	-14	89	0	0	68	28	96	-7	0		770
Oct-2015	51	23	7	57	0	-12	125	0	0	70	29	99	25	0		796
Nov-2015	148	22	4	355	0	-67	462	0	0	79	21	100	363	0		1158
Dec-2015	151	23	3	367	0	-92	452	0	0	90	21	111	341	0		1499
Jan-2016	0	23	3	0	0	-45	-19	0	0	86	27	113	-131	0		1368
Feb-2016	0	21	5	0	0	-27	-1	0	0	77	26	103	-104	0		1264
Mar-2016	0	23	6	0	0	-21	7	0	0	78	28	106	-99	0		1165
Apr-2016	0	22	8	0	0	-18	13	0	0	71	28	99	-86	0		1079
May-2016	0	23	9	0	0	-17	15	0	0	70	29	99	-84	0		995
Jun-2016	0	22	10	0	0	-16	16	0	0	65	28	93	-77	0		918
Jul-2016	0	23	13	0	0	-19	17	0	0	63	29	92	-75	0		844
Aug-2016	0	23	12	0	0	-19	15	0	0	59	29	88	-73	0		771
Sep-2016	0	22	9	0	0	-17	14	0	0	53	29	81	-67	0		704
Oct-2016	0	23	7	0	0	-15	15	0	0	52	30	81	-66	0		638
Nov-2016	0	22	4	0	0	-11	15	0	0	47	29	76	-60	0		578
Dec-2016	0	23	3	0	0	-9	17	0	0	46	30	75	-58	0		520
Jan-2017	0	23	3	0	0	-7	19	0	0	43	30	72	-53	0		466
Feb-2017	0	21	5	0	0	-5	20	0	0	36	27	63	-43	0		424
Mar-2017	0	23	6	0	0	-6	23	0	0	37	29	67	-44	0		380
Apr-2017	0	22	8	0	0	-7	24	0	0	34	28	62	-39	0		342
May-2017	0	23	10	0	0	-9	23	0	0	33	29	62	-39	0		302
Jun-2017	0	22	10	0	0	-11	21	0	0	30	29	59	-38	0		265
Jul-2017	0	23	13	0	0	-15	21	0	0	30	30	60	-39	0		226
Aug-2017	0	23	12	0	0	-17	17	0	0	28	30	59	-41	0		184
Sep-2017	0	22	9	0	0	-16	15	0	0	26	29	56	-40	0		144
Oct-2017	0	23	7	0	0	-15	15	0	0	26	30	56	-42	0		103
Nov-2017	0	22	5	0	0	-12	15	0	0	24	29	54	-39	0		63
Dec-2017	0	23	3	0	0	-11	16	0	0	24	30	55	-39	0		25
Jan-2018	73	23	3	100	0	-13	186	0	0	42	30	72	114	0		138
Feb-2018	83	21	5	29	0	-9	128	0	0	41	27	69	60	0		198
Mar-2018	67	23	6	80	0	-11	166	0	0	51	30	82	84	0		282
Apr-2018	11	22	8	7	0	-10	38	0	0	46	30	76	-38	0		244
May-2018	0	23	10	0	0	-12	21	0	0	43	31	74	-53	0		190
Jun-2018	0	22	10	0	0	-13	19	0	0	38	30	68	-49	0		142
Jul-2018	1	23	13	4	0	-16	24	0	0	36	31	67	-43	0		99
Aug-2018	0	23	12	1	0	-18	17	0	0	34	31	65	-48	0		51

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Error			
Sep-2018	22	22	9	0	0	-17	37	0	0	31	30	62	-25	0	27
Oct-2018	8	23	7	165	0	-22	181	0	0	53	31	85	96	0	123
Nov-2018	19	22	5	182	0	-25	204	0	0	60	29	89	114	0	237
Dec-2018	3	23	3	228	0	-35	222	0	0	67	28	95	127	0	364
Jan-2019	5	23	3	2	0	-28	6	0	0	64	27	91	-86	0	279
Feb-2019	2	21	5	2	0	-21	8	0	0	53	25	78	-70	0	209
Mar-2019	4	23	6	1	0	-20	14	0	0	54	28	82	-69	0	140
Apr-2019	0	22	8	3	0	-19	14	0	0	48	28	76	-62	0	78
May-2019	0	23	10	0	0	-21	12	0	0	45	29	75	-63	0	15
Jun-2019	0	22	10	0	0	-22	10	0	0	40	29	69	-59	0	-44
Jul-2019	0	23	13	0	0	-27	9	0	0	38	30	68	-59	0	-103
Aug-2019	0	23	12	0	0	-29	5	0	0	35	31	65	-60	0	-163
Sep-2019	0	22	9	0	0	-27	5	0	0	31	30	61	-56	0	-219
Oct-2019	9	23	7	0	0	-24	14	0	0	30	31	61	-47	0	-266
Nov-2019	10	22	5	1	0	-20	17	0	0	28	30	58	-41	0	-306
Dec-2019	12	23	3	5	0	-17	26	0	0	28	31	59	-34	0	-340
Jan-2020	27	23	3	43	0	-15	81	0	0	34	31	65	16	0	-324
Feb-2020	28	21	5	201	0	-21	234	0	0	51	28	78	156	0	-168
Mar-2020	10	23	6	63	0	-22	80	0	0	53	29	82	-3	0	-171
Apr-2020	33	22	8	15	0	-22	56	0	0	49	28	77	-21	0	-192
May-2020	1	23	10	0	0	-24	9	0	0	45	30	75	-66	0	-257
Jun-2020	0	22	10	0	0	-26	7	0	0	39	29	68	-61	0	-318
Jul-2020	0	23	13	0	0	-31	5	0	0	36	31	67	-62	0	-380
Aug-2020	0	23	12	0	0	-33	2	0	0	33	31	65	-63	0	-443
Sep-2020	1	22	9	30	0	-30	32	0	0	33	31	64	-32	0	-475
Oct-2020	0	23	7	42	0	-29	43	0	0	36	32	68	-26	0	-501
Nov-2020	8	22	5	18	0	-25	28	0	0	33	32	65	-37	0	-538
Dec-2020	59	23	3	0	0	-23	63	0	0	34	33	67	-4	0	-542
Jan-2021	0	23	3	0	0	-19	8	0	0	32	33	65	-57	0	-599
Feb-2021	0	21	5	0	0	-14	11	0	0	27	30	57	-46	0	-645
Mar-2021	0	23	6	0	0	-15	14	0	0	29	33	62	-48	0	-693
Apr-2021	0	22	8	0	0	-15	15	0	0	27	32	59	-44	0	-737
May-2021	0	23	10	0	0	-18	15	0	0	26	34	60	-45	0	-782
Jun-2021	0	22	10	0	0	-20	13	0	0	24	33	57	-44	0	-826
Jul-2021	0	23	13	0	0	-25	11	0	0	23	34	57	-47	0	-873
Aug-2021	0	23	12	0	0	-28	7	0	0	22	34	56	-50	0	-922
Sep-2021	0	22	9	0	0	-26	5	0	0	20	33	54	-48	0	-970
Oct-2021	0	23	7	0	0	-24	6	0	0	20	34	55	-49	0	-1019
Nov-2021	0	22	5	0	0	-19	7	0	0	19	33	52	-45	0	-1064
Dec-2021	0	23	3	0	0	-17	9	0	0	19	34	53	-44	0	-1108

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Error			
Jan-2022	0	23	3	0	0	-15	11	0	0	18	34	52	-41	0	-1149
Feb-2022	0	21	5	0	0	-12	13	0	0	16	31	47	-34	0	-1183
Mar-2022	0	23	6	0	0	-14	15	0	0	17	34	51	-37	0	-1219
Apr-2022	0	22	8	0	0	-16	15	0	0	16	33	49	-35	0	-1254
May-2022	0	23	10	0	0	-19	13	0	0	16	34	50	-37	0	-1291
Jun-2022	0	22	10	0	0	-22	10	0	0	15	33	49	-38	0	-1330
Jul-2022	0	23	13	0	0	-28	8	0	0	16	35	50	-42	0	-1371
Aug-2022	0	23	12	0	0	-30	4	0	0	15	35	50	-46	0	-1417
Sep-2022	0	22	9	0	0	-28	3	0	0	15	34	49	-45	0	-1463
Oct-2022	0	23	7	0	0	-27	3	0	0	15	35	50	-47	0	-1510
Nov-2022	0	22	5	0	0	-23	4	0	0	14	34	48	-45	0	-1555
Dec-2022	0	23	3	0	0	-21	5	0	0	15	35	50	-44	0	-1599
Jan-2023	16	23	3	84	0	-21	105	0	0	25	35	60	45	0	-1554
Feb-2023	82	21	5	331	0	-70	368	0	0	40	25	65	303	0	-1251
Mar-2023	162	23	6	248	0	-65	374	0	0	59	32	91	283	0	-968
Apr-2023	0	22	8	4	0	-45	-10	0	0	52	31	83	-94	0	-1062
May-2023	0	23	10	9	0	-41	1	0	0	48	33	81	-81	0	-1142
Jun-2023	0	22	11	0	0	-38	-6	0	0	42	32	74	-80	0	-1222
Jul-2023	0	23	13	8	0	-41	3	0	0	38	34	73	-70	0	-1292
Aug-2023	0	23	12	0	0	-42	-7	0	0	34	35	69	-76	0	-1368
Sep-2023	0	22	9	0	0	-37	-6	0	0	30	34	64	-70	0	-1438
Oct-2023	7	23	7	40	0	-35	41	0	0	34	36	70	-29	0	-1467
Nov-2023	0	22	5	0	0	-30	-4	0	0	29	35	64	-68	0	-1535
Dec-2023	85	23	3	185	0	-36	260	0	0	52	36	89	171	0	-1363
Jan-2024	83	23	4	367	0	-92	384	0	0	61	28	90	295	0	-1069
Feb-2024	422	21	5	343	0	-107	685	0	0	72	25	97	587	0	-481
Mar-2024	247	23	6	363	0	-125	514	0	0	88	32	120	395	0	-86
Apr-2024	4	22	8	0	0	-73	-39	0	0	81	34	115	-153	0	-240
May-2024	9	23	10	0	0	-59	-18	0	0	79	36	115	-132	0	-372
Jun-2024	0	22	11	55	0	-52	37	0	0	74	35	109	-73	0	-445
Jul-2024	8	23	13	0	0	-51	-7	0	0	72	37	109	-116	0	-561
Aug-2024	0	23	12	0	0	-48	-13	0	0	68	37	105	-118	0	-679
Sep-2024	0	22	10	0	0	-42	-10	0	0	61	37	98	-108	0	-787
Oct-2024	39	23	7	48	0	-38	79	0	0	63	38	101	-22	0	-809
Nov-2024	0	22	5	64	0	-33	58	0	0	60	37	98	-40	0	-849
Dec-2024	184	23	4	85	0	-32	263	0	0	69	39	108	155	0	-694
Jan-2025	404	23	4	104	0	-30	505	0	0	81	38	120	385	0	-309
Feb-2025	277	21	5	331	0	-73	561	0	0	86	28	114	447	0	138
Mar-2025	101	23	6	367	0	-101	396	0	0	101	29	130	265	0	403
Apr-2025	0	22	9	91	0	-55	67	0	0	95	35	130	-63	0	340

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



	Net Inflow of Water from the Saugus Formation and Adjoining Areas														Cum. Change in GW Storage After 2011
Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2025	0	23	10	0	0	-39	-7	0	0	94	37	131	-138	0	203
Jun-2025	15	22	11	0	0	-31	17	0	0	87	36	123	-106	0	97
Jul-2025	0	23	13	0	0	-28	8	0	0	85	37	122	-114	0	-17
Aug-2025	0	23	12	0	0	-25	10	0	0	80	37	117	-107	0	-124
Sep-2025	0	22	10	0	0	-20	12	0	0	73	35	108	-96	0	-221
Oct-2025	13	23	7	170	0	-24	189	0	0	82	36	118	71	0	-149
Nov-2025	18	22	5	155	0	-24	175	0	0	84	34	118	57	0	-92
Dec-2025	24	23	4	367	0	-79	337	0	0	91	27	119	219	0	126
Jan-2026	0	23	4	0	0	-40	-14	0	0	88	33	121	-135	0	-8
Feb-2026	0	21	5	0	0	-24	1	0	0	76	30	106	-105	0	-113
Mar-2026	0	23	6	0	0	-21	9	0	0	79	33	112	-104	0	-217
Apr-2026	0	22	9	0	0	-18	13	0	0	72	32	104	-91	0	-307
May-2026	0	23	10	0	0	-18	15	0	0	71	33	103	-89	0	-396
Jun-2026	0	22	11	0	0	-19	14	0	0	65	31	97	-82	0	-479
Jul-2026	0	23	13	0	0	-22	14	0	0	64	32	96	-83	0	-561
Aug-2026	0	23	12	0	0	-24	11	0	0	60	32	93	-82	0	-643
Sep-2026	0	22	10	0	0	-21	11	0	0	55	31	86	-75	0	-718
Oct-2026	0	23	7	0	0	-18	12	0	0	53	32	85	-73	0	-792
Nov-2026	0	22	5	0	0	-13	13	0	0	48	31	79	-66	0	-857
Dec-2026	0	23	4	0	0	-11	16	0	0	47	32	78	-63	0	-920
Jan-2027	521	23	4	331	0	-56	823	0	0	77	26	102	721	0	-200
Feb-2027	46	21	5	331	0	-75	328	0	0	73	21	94	234	0	34
Mar-2027	197	23	6	232	0	-57	401	0	0	93	27	120	281	0	315
Apr-2027	17	22	9	14	0	-36	26	0	0	87	27	113	-87	0	228
May-2027	6	23	10	76	0	-30	85	0	0	87	28	114	-30	0	198
Jun-2027	18	22	11	0	0	-25	26	0	0	80	27	107	-82	0	117
Jul-2027	0	23	13	0	0	-25	12	0	0	78	28	107	-95	0	22
Aug-2027	0	23	12	0	0	-23	12	0	0	73	28	102	-90	0	-68
Sep-2027	0	22	10	0	0	-19	13	0	0	67	28	95	-82	0	-150
Oct-2027	0	23	7	145	0	-22	153	0	0	73	29	102	51	0	-100
Nov-2027	0	22	5	118	0	-21	124	0	0	73	28	100	23	0	-77
Dec-2027	55	23	4	367	0	-77	371	0	0	84	22	106	265	0	189
Jan-2028	39	23	4	325	0	-83	307	0	0	89	19	108	199	0	387
Feb-2028	89	21	5	11	0	-43	84	0	0	84	24	107	-24	0	364
Mar-2028	27	23	6	0	0	-31	26	0	0	85	27	112	-86	0	277
Apr-2028	2	22	9	0	0	-23	9	0	0	78	27	105	-95	0	182
May-2028	9	23	10	0	0	-21	21	0	0	76	28	104	-83	0	100
Jun-2028	0	22	11	0	0	-19	14	0	0	70	27	96	-82	0	17
Jul-2028	0	23	13	2	0	-20	19	0	0	69	28	96	-77	0	-60
Aug-2028	0	23	12	0	0	-19	16	0	0	65	28	93	-77	0	-137

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Change in GW Storage				
Sep-2028	0	22	10	26	0	-16	41	0	0	61	27	88	-46	0		-183
Oct-2028	17	23	7	0	0	-14	33	0	0	59	28	87	-54	0		-236
Nov-2028	14	22	5	182	0	-18	205	0	0	67	26	93	112	0		-125
Dec-2028	115	23	4	327	0	-61	407	0	0	79	18	98	310	0		185
Jan-2029	32	23	4	13	0	-32	40	0	0	77	24	101	-61	0		124
Feb-2029	1	21	5	82	0	-21	87	0	0	68	22	90	-3	0		121
Mar-2029	0	23	6	15	0	-18	26	0	0	72	24	97	-71	0		50
Apr-2029	0	22	9	9	0	-15	24	0	0	67	24	91	-67	0		-17
May-2029	0	23	10	21	0	-15	39	0	0	67	25	92	-53	0		-70
Jun-2029	0	22	11	0	0	-15	18	0	0	61	24	85	-67	0		-137
Jul-2029	0	23	13	0	0	-17	20	0	0	59	25	85	-65	0		-202
Aug-2029	0	23	12	0	0	-18	17	0	0	56	26	81	-64	0		-266
Sep-2029	3	22	10	1	0	-15	20	0	0	50	25	75	-55	0		-321
Oct-2029	0	23	7	1	0	-13	18	0	0	48	26	74	-56	0		-377
Nov-2029	18	22	5	5	0	-10	40	0	0	45	25	70	-30	0		-407
Dec-2029	32	23	4	5	0	-8	55	0	0	45	26	71	-15	0		-423
Jan-2030	91	23	4	367	0	-67	418	0	0	64	19	83	335	0		-88
Feb-2030	573	21	5	212	0	-46	765	0	0	79	20	99	666	0		578
Mar-2030	104	23	6	367	0	-90	409	0	0	93	18	111	298	0		876
Apr-2030	59	22	9	355	0	-103	342	0	0	94	17	111	230	0		1106
May-2030	143	23	10	0	0	-62	115	0	0	98	22	120	-6	0		1101
Jun-2030	2	22	11	156	0	-51	139	0	0	96	23	118	21	0		1122
Jul-2030	0	23	14	0	0	-45	-8	0	0	95	24	119	-127	0		995
Aug-2030	0	23	12	0	0	-39	-4	0	0	89	24	113	-117	0		878
Sep-2030	5	22	10	3	0	-31	9	0	0	82	24	106	-96	0		782
Oct-2030	9	23	7	0	0	-26	13	0	0	80	25	105	-92	0		690
Nov-2030	35	22	5	0	0	-19	43	0	0	75	24	99	-56	0		634
Dec-2030	36	23	4	16	0	-16	63	0	0	75	25	100	-37	0		597
Jan-2031	0	23	4	0	0	-11	15	0	0	70	25	95	-80	0		517
Feb-2031	0	21	5	0	0	-8	18	0	0	60	23	82	-64	0		452
Mar-2031	0	23	6	0	0	-7	22	0	0	61	25	87	-65	0		388
Apr-2031	0	22	9	0	0	-7	24	0	0	55	25	80	-57	0		331
May-2031	0	23	10	0	0	-9	24	0	0	54	26	80	-56	0		276
Jun-2031	0	22	11	0	0	-10	23	0	0	49	25	74	-52	0		224
Jul-2031	0	23	14	0	0	-14	23	0	0	48	26	74	-51	0		173
Aug-2031	0	23	12	0	0	-15	20	0	0	45	26	71	-51	0		121
Sep-2031	0	22	10	0	0	-14	18	0	0	41	25	66	-48	0		73
Oct-2031	0	23	7	0	0	-12	18	0	0	39	26	66	-48	0		25
Nov-2031	0	22	5	0	0	-9	17	0	0	36	26	61	-44	0		-19
Dec-2031	0	23	4	0	0	-8	19	0	0	35	26	61	-43	0		-61

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas							Subsurface Outflow to Management Zone 3					Change in GW Storage		Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Change in GW Storage				
Jan-2032	4	23	4	17	0	-6	42	0	0	36	26	62	-21	0		-82
Feb-2032	34	21	5	32	0	-5	88	0	0	37	25	61	26	0		-55
Mar-2032	11	23	6	10	0	-5	46	0	0	37	26	64	-18	0		-73
Apr-2032	8	22	9	8	0	-6	40	0	0	35	25	60	-20	0		-94
May-2032	0	23	10	0	0	-8	25	0	0	34	26	60	-35	0		-129
Jun-2032	0	22	11	0	0	-10	23	0	0	31	25	57	-34	0		-163
Jul-2032	0	23	14	0	0	-14	22	0	0	30	26	57	-34	0		-198
Aug-2032	1	23	12	0	0	-16	20	0	0	29	27	55	-35	0		-233
Sep-2032	0	22	10	0	0	-15	17	0	0	26	26	52	-35	0		-268
Oct-2032	4	23	7	1	0	-14	21	0	0	26	27	53	-32	0		-299
Nov-2032	0	22	5	9	0	-11	25	0	0	26	26	51	-26	0		-326
Dec-2032	0	23	4	4	0	-10	21	0	0	26	27	52	-31	0		-357
Jan-2033	99	23	4	183	0	-18	290	0	0	52	26	78	212	0		-145
Feb-2033	182	21	5	60	0	-15	253	0	0	54	23	77	175	0		30
Mar-2033	57	23	6	45	0	-15	116	0	0	58	26	84	32	0		62
Apr-2033	43	22	9	6	0	-15	65	0	0	55	25	80	-15	0		47
May-2033	0	23	10	14	0	-18	30	0	0	51	26	78	-48	0		-1
Jun-2033	0	22	11	1	0	-20	15	0	0	45	26	71	-56	0		-57
Jul-2033	0	23	14	0	0	-25	12	0	0	42	27	70	-58	0		-115
Aug-2033	0	23	13	0	0	-27	8	0	0	39	28	67	-59	0		-174
Sep-2033	0	22	10	2	0	-25	9	0	0	35	28	63	-54	0		-228
Oct-2033	4	23	7	0	0	-23	11	0	0	35	29	64	-53	0		-281
Nov-2033	54	22	5	355	0	-75	361	0	0	55	27	82	279	0		-2
Dec-2033	22	23	4	367	0	-100	315	0	0	65	22	87	228	0		227
Jan-2034	0	23	4	0	0	-51	-24	0	0	60	27	88	-112	0		115
Feb-2034	0	21	5	0	0	-31	-5	0	0	50	26	76	-81	0		34
Mar-2034	0	23	6	0	0	-26	3	0	0	50	29	79	-76	0		-42
Apr-2034	0	22	9	0	0	-21	10	0	0	44	28	72	-62	0		-105
May-2034	0	23	10	0	0	-21	13	0	0	41	29	70	-58	0		-162
Jun-2034	0	22	11	0	0	-20	13	0	0	37	28	65	-52	0		-214
Jul-2034	0	23	14	0	0	-22	14	0	0	35	29	64	-50	0		-263
Aug-2034	0	23	13	0	0	-23	12	0	0	32	30	61	-49	0		-313
Sep-2034	0	22	10	0	0	-21	11	0	0	29	29	57	-46	0		-359
Oct-2034	0	23	7	0	0	-19	12	0	0	28	30	58	-46	0		-405
Nov-2034	0	22	5	0	0	-15	12	0	0	25	29	54	-43	0		-447
Dec-2034	0	23	4	0	0	-13	13	0	0	25	30	55	-42	0		-489
Jan-2035	0	23	4	11	0	-11	26	0	0	26	30	56	-30	0		-519
Feb-2035	71	21	5	131	0	-14	215	0	0	43	26	69	145	0		-374
Mar-2035	19	23	6	6	0	-13	41	0	0	44	29	72	-31	0		-405
Apr-2035	19	22	9	3	0	-12	41	0	0	38	28	66	-25	0		-430

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas														Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2035	13	23	10	0	0	-14	33	0	0	36	29	65	-31	0	-462
Jun-2035	0	22	11	0	0	-15	19	0	0	31	28	59	-40	0	-502
Jul-2035	0	23	14	0	0	-18	19	0	0	29	29	59	-40	0	-542
Aug-2035	0	23	13	0	0	-19	16	0	0	27	30	57	-41	0	-582
Sep-2035	0	22	10	0	0	-18	14	0	0	25	29	54	-39	0	-622
Oct-2035	9	23	7	78	0	-18	99	0	0	37	30	67	32	0	-590
Nov-2035	5	22	5	10	0	-14	28	0	0	33	29	62	-34	0	-623
Dec-2035	20	23	4	139	0	-18	168	0	0	51	29	81	87	0	-536

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
Jan-2012	1367	15	29	1521	0	21	214	3167	0	0	303	504	807	2360	0	2360
Feb-2012	1930	14	39	895	0	24	257	3159	0	0	338	494	832	2327	0	4687
Mar-2012	638	15	51	1530	0	20	216	2470	0	0	375	554	929	1541	0	6228
Apr-2012	47	15	70	248	0	24	223	627	0	0	352	512	863	-235	-1	5993
May-2012	53	15	82	0	0	26	182	357	0	0	344	497	841	-484	0	5509
Jun-2012	0	15	88	0	0	25	108	236	0	0	315	446	761	-524	0	4984
Jul-2012	0	15	109	0	0	27	18	169	0	0	306	420	726	-557	0	4427
Aug-2012	0	15	100	0	0	27	-23	119	0	0	284	398	682	-562	0	3865
Sep-2012	0	15	79	0	0	26	38	158	0	0	255	400	654	-496	-1	3368
Oct-2012	0	15	58	313	0	27	114	527	0	0	259	434	693	-166	0	3203
Nov-2012	0	15	39	1460	0	20	80	1613	0	0	280	444	725	889	0	4091
Dec-2012	179	15	29	119	0	26	201	569	0	0	285	477	762	-193	0	3899
Jan-2013	78	15	29	99	0	27	278	526	0	0	271	499	770	-244	0	3654
Feb-2013	27	14	39	36	0	24	305	446	0	0	227	470	697	-251	0	3403
Mar-2013	90	15	51	282	0	27	318	783	0	0	244	514	758	25	0	3428
Apr-2013	8	15	70	32	0	26	263	415	0	0	222	478	700	-285	0	3143
May-2013	0	15	82	4	0	27	206	334	0	0	214	466	681	-346	0	2797
Jun-2013	0	15	88	0	0	26	125	254	0	0	194	419	613	-359	0	2438
Jul-2013	0	15	109	0	0	27	30	181	0	0	189	395	583	-402	0	2036
Aug-2013	0	15	100	0	0	28	-16	127	0	0	178	374	551	-425	0	1611
Sep-2013	0	15	79	30	0	27	40	191	0	0	163	377	541	-349	0	1262
Oct-2013	9	15	58	7	0	28	119	238	0	0	160	412	572	-334	0	928
Nov-2013	59	15	39	159	0	27	192	490	0	0	153	423	576	-86	0	842
Dec-2013	4	15	29	88	0	28	254	417	0	0	152	456	608	-191	0	651
Jan-2014	305	15	29	890	0	27	188	1456	0	0	220	434	654	802	0	1453
Feb-2014	111	14	39	703	0	24	219	1111	0	0	222	411	633	478	0	1930
Mar-2014	871	15	51	1342	0	25	62	2366	0	0	298	422	720	1646	1	3576
Apr-2014	100	15	70	473	0	24	69	751	0	0	292	393	685	67	0	3643
May-2014	12	15	82	21	0	25	3	157	0	0	288	371	659	-502	0	3141
Jun-2014	0	15	88	0	0	24	-82	46	0	0	260	326	587	-541	0	2600
Jul-2014	0	15	109	0	0	26	-185	-35	0	0	249	312	560	-595	0	2005
Aug-2014	0	15	100	120	0	26	-218	44	0	0	235	306	541	-497	0	1508
Sep-2014	94	15	79	190	0	26	-141	262	0	0	220	304	524	-262	0	1246
Oct-2014	23	15	58	179	0	27	-42	260	0	0	217	337	554	-295	0	952
Nov-2014	490	15	39	517	0	27	65	1152	0	0	242	357	599	553	0	1505
Dec-2014	271	15	29	527	0	28	143	1012	0	0	262	397	659	353	0	1858
Jan-2015	1612	15	29	0	0	28	283	1967	0	0	296	467	763	1205	0	3062
Feb-2015	1274	14	39	0	0	25	356	1708	0	0	282	475	757	951	0	4013
Mar-2015	2430	15	51	412	0	28	331	3267	0	0	366	522	887	2379	0	6392
Apr-2015	857	15	70	107	0	27	273	1349	0	0	348	494	842	505	1	6897

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011	
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error		
May-2015	37	15	82	0	0	28		210	372	0	0	328	479	807	-434	0	6463
Jun-2015	0	15	88	0	0	28		124	254	0	0	291	429	720	-466	0	5997
Jul-2015	0	15	109	0	0	29		27	181	0	0	276	404	681	-500	0	5498
Aug-2015	218	15	100	0	0	29		-21	341	0	0	264	383	647	-306	0	5192
Sep-2015	344	15	79	76	0	28		29	572	0	0	253	386	639	-67	0	5125
Oct-2015	324	15	58	244	0	29		108	778	0	0	261	420	681	97	0	5221
Nov-2015	937	15	39	1531	0	21		55	2598	0	0	320	438	757	1841	0	7062
Dec-2015	954	15	29	1583	0	21		178	2780	0	0	369	548	917	1863	0	8925
Jan-2016	0	15	29	0	0	27		274	345	0	0	348	545	893	-548	0	8378
Feb-2016	0	14	39	0	0	26		304	384	0	0	308	517	825	-441	0	7937
Mar-2016	0	15	51	0	0	28		307	402	0	0	308	540	848	-446	0	7491
Apr-2016	0	15	70	0	0	28		252	365	0	0	276	502	777	-412	0	7078
May-2016	0	15	82	0	0	29		196	322	0	0	262	490	752	-429	0	6649
Jun-2016	0	15	88	0	0	28		118	249	0	0	233	442	676	-427	0	6222
Jul-2016	0	15	109	0	0	29		26	179	0	0	223	420	643	-464	0	5758
Aug-2016	0	15	100	0	0	29		-17	128	0	0	208	399	607	-479	0	5279
Sep-2016	0	15	79	0	0	29		40	163	0	0	189	400	589	-426	0	4853
Oct-2016	0	15	58	0	0	30		121	224	0	0	184	434	618	-394	0	4459
Nov-2016	0	15	39	0	0	29		198	280	0	0	168	445	613	-333	0	4126
Dec-2016	0	15	29	0	0	30		260	334	0	0	164	478	641	-307	0	3819
Jan-2017	0	15	29	0	0	30		228	302	0	0	155	458	613	-311	0	3508
Feb-2017	0	14	39	0	0	27		257	337	0	0	133	431	564	-227	0	3281
Mar-2017	0	15	51	0	0	29		251	347	0	0	138	463	601	-254	-1	3028
Apr-2017	0	15	71	0	0	28		172	286	0	0	126	420	545	-260	0	2768
May-2017	0	15	82	0	0	29		85	211	0	0	122	397	519	-308	0	2460
Jun-2017	0	15	88	0	0	29		-13	118	0	0	110	350	461	-342	0	2118
Jul-2017	0	15	109	0	0	30		-123	31	0	0	107	335	443	-411	0	1707
Aug-2017	0	15	100	0	0	30		-161	-16	0	0	101	328	429	-445	0	1262
Sep-2017	0	15	79	0	0	29		-86	37	0	0	93	325	417	-380	0	882
Oct-2017	0	15	58	0	0	30		12	116	0	0	90	357	447	-331	0	551
Nov-2017	0	15	39	0	0	29		119	202	0	0	82	378	460	-259	0	292
Dec-2017	0	15	29	0	0	30		197	272	0	0	80	417	497	-225	0	67
Jan-2018	460	15	29	500	0	30		253	1289	0	0	146	444	590	698	0	765
Feb-2018	524	14	39	145	0	27		285	1035	0	0	148	426	574	461	0	1227
Mar-2018	425	15	51	403	0	30		272	1196	0	0	192	460	652	543	1	1769
Apr-2018	69	15	71	33	0	30		193	411	0	0	173	417	590	-179	0	1590
May-2018	0	15	82	0	0	31		106	234	0	0	162	395	557	-323	0	1267
Jun-2018	0	15	88	0	0	30		4	137	0	0	142	348	490	-353	0	914
Jul-2018	4	15	109	21	0	31		-110	71	0	0	136	330	466	-395	0	519
Aug-2018	0	15	100	5	0	31		-150	2	0	0	124	322	446	-444	0	75

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
Sep-2018	140	15	79	0	0	30	-76	189	0	0	114	321	435	-246	0	-171
Oct-2018	54	15	58	827	0	31	-1	984	0	0	185	351	536	448	0	278
Nov-2018	122	15	39	915	0	29	82	1202	0	0	218	374	592	610	0	888
Dec-2018	19	15	29	1143	0	28	116	1351	0	0	251	414	665	686	0	1574
Jan-2019	33	15	29	117	0	27	278	500	0	0	243	484	727	-227	0	1347
Feb-2019	10	14	40	121	0	25	307	516	0	0	209	463	672	-157	1	1190
Mar-2019	27	15	51	42	0	28	313	476	0	0	215	508	723	-247	0	943
Apr-2019	2	15	71	143	0	28	241	499	0	0	197	473	670	-171	0	772
May-2019	0	15	82	3	0	29	169	299	0	0	187	461	648	-349	0	422
Jun-2019	0	15	88	0	0	29	76	207	0	0	166	415	581	-374	0	49
Jul-2019	1	15	110	0	0	30	-47	109	0	0	158	393	551	-442	0	-393
Aug-2019	0	15	100	0	0	31	-107	39	0	0	146	376	521	-482	0	-875
Sep-2019	0	15	79	4	0	30	-46	82	0	0	130	382	512	-431	0	-1305
Oct-2019	55	15	58	0	0	31	47	206	0	0	125	418	543	-337	0	-1642
Nov-2019	61	15	39	33	0	30	138	315	0	0	117	430	547	-232	0	-1874
Dec-2019	76	15	29	256	0	31	203	610	0	0	139	463	602	8	0	-1866
Jan-2020	172	15	29	250	0	31	147	645	0	0	148	442	590	56	0	-1810
Feb-2020	179	14	40	1161	0	28	95	1516	0	0	193	425	618	897	0	-913
Mar-2020	61	15	51	365	0	29	99	621	0	0	215	444	659	-38	0	-951
Apr-2020	210	15	71	84	0	28	26	434	0	0	200	403	602	-168	0	-1119
May-2020	5	15	82	0	0	30	-65	66	0	0	186	381	567	-501	0	-1620
Jun-2020	0	15	88	0	0	29	-164	-32	0	0	165	334	500	-531	0	-2151
Jul-2020	0	15	110	0	0	31	-299	-143	0	0	159	317	476	-619	0	-2771
Aug-2020	0	15	100	0	0	31	-348	-201	0	0	149	310	458	-659	0	-3429
Sep-2020	5	15	79	174	0	31	-260	45	0	0	140	315	455	-410	0	-3839
Oct-2020	0	15	58	242	0	32	-162	186	0	0	148	354	502	-316	0	-4155
Nov-2020	48	15	39	104	0	32	-26	211	0	0	140	380	519	-308	0	-4463
Dec-2020	376	15	29	0	0	33	63	517	0	0	146	421	567	-50	0	-4514
Jan-2021	0	15	29	0	0	33	177	254	0	0	136	450	586	-331	0	-4845
Feb-2021	0	14	40	0	0	30	244	327	0	0	116	432	548	-221	0	-5066
Mar-2021	0	15	51	0	0	33	243	343	0	0	121	465	586	-244	0	-5309
Apr-2021	0	15	71	0	0	32	159	277	0	0	110	420	530	-252	0	-5562
May-2021	0	15	82	0	0	34	61	192	0	0	106	394	501	-309	0	-5870
Jun-2021	0	15	88	0	0	33	-51	85	0	0	96	343	439	-354	0	-6224
Jul-2021	0	15	110	0	0	34	-194	-35	0	0	93	319	412	-446	0	-6671
Aug-2021	0	15	100	0	0	34	-250	-99	0	0	87	307	394	-493	0	-7164
Sep-2021	0	15	79	0	0	33	-159	-32	0	0	79	315	394	-426	0	-7589
Oct-2021	0	15	58	0	0	34	-38	70	0	0	77	355	432	-362	0	-7951
Nov-2021	0	15	39	0	0	33	90	177	0	0	70	382	452	-275	0	-8226
Dec-2021	0	15	29	0	0	34	180	259	0	0	68	424	491	-232	0	-8458

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Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
Jan-2022	0	15	29	0	0	34	239	318	0	0	64	455	519	-200	0	-8659
Feb-2022	0	14	40	0	0	31	273	357	0	0	56	439	494	-137	1	-8796
Mar-2022	0	15	51	0	0	34	257	357	0	0	59	473	532	-175	0	-8971
Apr-2022	0	15	71	0	0	33	159	278	0	0	56	427	483	-205	0	-9176
May-2022	0	15	82	0	0	34	52	183	0	0	56	402	458	-274	0	-9450
Jun-2022	0	15	88	0	0	33	-67	69	0	0	53	348	401	-331	0	-9782
Jul-2022	0	15	110	0	0	35	-215	-56	0	0	53	322	376	-431	0	-10213
Aug-2022	0	15	101	0	0	35	-276	-125	0	0	52	310	362	-487	0	-10700
Sep-2022	0	15	80	0	0	34	-184	-56	0	0	49	321	371	-427	0	-11127
Oct-2022	0	15	58	0	0	35	-80	29	0	0	49	366	415	-386	0	-11513
Nov-2022	0	15	39	0	0	34	53	141	0	0	46	394	441	-300	0	-11813
Dec-2022	0	15	29	0	0	35	146	226	0	0	46	438	484	-258	0	-12071
Jan-2023	100	15	29	405	0	35	203	788	0	0	89	470	559	229	0	-11842
Feb-2023	516	14	40	1369	0	25	131	2095	0	0	143	458	601	1493	1	-10350
Mar-2023	1023	15	51	1202	0	32	63	2385	0	0	215	486	701	1684	0	-8665
Apr-2023	0	15	71	19	0	31	29	164	0	0	193	439	632	-468	0	-9133
May-2023	0	15	82	42	0	33	-65	107	0	0	183	414	596	-489	0	-9622
Jun-2023	0	15	88	0	0	32	-170	-34	0	0	158	359	517	-552	0	-10173
Jul-2023	0	15	110	37	0	34	-311	-115	0	0	148	332	480	-594	0	-10768
Aug-2023	0	15	101	0	0	35	-362	-211	0	0	130	319	449	-660	0	-11427
Sep-2023	0	15	80	0	0	34	-258	-129	0	0	111	333	444	-573	0	-12000
Oct-2023	45	15	58	191	0	36	-160	187	0	0	121	381	502	-315	0	-12315
Nov-2023	0	15	39	0	0	35	-29	60	0	0	105	412	517	-458	0	-12773
Dec-2023	537	15	29	895	0	36	28	1541	0	0	183	457	640	901	0	-11872
Jan-2024	526	15	29	1583	0	28	10	2191	0	0	231	496	727	1464	0	-10408
Feb-2024	2669	14	40	1466	0	25	2	4217	0	0	295	490	785	3432	0	-6977
Mar-2024	1561	15	51	1446	0	32	-66	3039	0	0	352	506	858	2181	0	-4796
Apr-2024	24	15	71	0	0	34	-54	90	0	0	323	453	776	-686	0	-5481
May-2024	55	15	82	0	0	36	-124	64	0	0	311	429	740	-676	0	-6157
Jun-2024	0	15	88	242	0	35	-218	163	0	0	289	375	664	-501	0	-6658
Jul-2024	48	15	110	0	0	37	-347	-137	0	0	281	347	628	-765	0	-7423
Aug-2024	0	15	101	0	0	37	-388	-235	0	0	258	334	592	-826	0	-8249
Sep-2024	0	15	80	0	0	37	-274	-143	0	0	229	350	579	-721	0	-8971
Oct-2024	249	15	58	212	0	38	-168	405	0	0	235	400	635	-230	0	-9201
Nov-2024	0	15	39	280	0	37	-31	339	0	0	222	432	654	-314	0	-9515
Dec-2024	1163	15	29	373	0	39	51	1670	0	0	265	480	745	925	0	-8590
Jan-2025	2553	15	29	462	0	38	291	3389	0	0	334	558	891	2497	0	-6093
Feb-2025	1750	14	40	1429	0	28	309	3570	0	0	344	562	906	2664	0	-3429
Mar-2025	637	15	51	1514	0	29	315	2561	0	0	390	622	1011	1549	0	-1880
Apr-2025	0	15	71	404	0	35	350	875	0	0	362	576	938	-63	0	-1943

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Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2025	0	15	82	0	0	37		460	0	0	354	563	917	-457	0	-2400
Jun-2025	97	15	89	0	0	36		488	0	0	328	508	836	-348	0	-2748
Jul-2025	0	15	110	0	0	37		331	0	0	319	483	803	-471	0	-3219
Aug-2025	0	15	101	0	0	37		282	0	0	301	461	761	-480	0	-3698
Sep-2025	0	15	80	0	0	35		316	0	0	272	463	735	-420	0	-4118
Oct-2025	85	15	58	751	0	36		1213	0	0	296	503	799	414	0	-3704
Nov-2025	112	15	39	684	0	34		1227	0	0	295	516	812	415	0	-3289
Dec-2025	149	15	29	1505	0	27		2048	0	0	331	569	900	1147	0	-2142
Jan-2026	0	15	29	0	0	33		482	0	0	319	583	901	-419	0	-2562
Feb-2026	0	14	40	0	0	30		499	0	0	276	542	817	-320	1	-2881
Mar-2026	0	15	51	0	0	33		533	0	0	287	589	876	-343	0	-3224
Apr-2026	0	15	71	0	0	32		477	0	0	261	547	808	-331	0	-3555
May-2026	0	15	82	0	0	33		420	0	0	253	534	787	-367	0	-3922
Jun-2026	0	15	89	0	0	31		326	0	0	231	482	713	-387	0	-4309
Jul-2026	0	15	110	0	0	32		228	0	0	224	459	682	-455	0	-4764
Aug-2026	0	15	101	0	0	32		157	0	0	209	438	647	-490	0	-5253
Sep-2026	0	15	80	0	0	31		193	0	0	189	443	631	-438	0	-5692
Oct-2026	0	15	59	0	0	32		272	0	0	182	481	663	-392	0	-6083
Nov-2026	0	15	39	0	0	31		339	0	0	165	492	657	-317	0	-6401
Dec-2026	0	15	29	0	0	32		404	0	0	158	527	685	-281	0	-6682
Jan-2027	3296	15	29	1406	0	26		4942	0	0	317	497	814	4127	0	-2555
Feb-2027	289	14	40	1396	0	21		1968	0	0	301	483	784	1184	0	-1370
Mar-2027	1245	15	51	1024	0	27		2586	0	0	365	513	878	1708	0	338
Apr-2027	108	15	71	64	0	27		464	0	0	338	459	796	-332	0	6
May-2027	39	15	82	335	0	28		597	0	0	335	428	764	-166	-1	-160
Jun-2027	114	15	89	0	0	27		246	0	0	310	370	680	-434	0	-594
Jul-2027	0	15	110	0	0	28		42	0	0	300	341	641	-599	0	-1193
Aug-2027	0	15	101	0	0	28		-5	0	0	277	325	603	-608	0	-1801
Sep-2027	0	15	80	0	0	28		66	0	0	248	335	583	-516	-1	-2317
Oct-2027	0	15	59	640	0	29		796	0	0	271	375	647	149	0	-2168
Nov-2027	0	15	39	522	0	28		773	0	0	265	404	669	104	0	-2064
Dec-2027	349	15	29	1559	0	22		2219	0	0	314	512	826	1393	0	-671
Jan-2028	247	15	29	1427	0	19		2080	0	0	334	579	913	1167	0	496
Feb-2028	561	14	40	55	0	24		1109	0	0	317	554	871	238	0	734
Mar-2028	173	15	51	0	0	27		701	0	0	325	578	903	-202	0	532
Apr-2028	11	15	71	0	0	27		494	0	0	297	533	830	-336	0	195
May-2028	57	15	82	0	0	28		491	0	0	286	517	803	-312	0	-116
Jun-2028	0	15	89	0	0	27		349	0	0	258	464	722	-372	0	-489
Jul-2028	0	15	110	12	0	28		285	0	0	248	438	686	-400	0	-889
Aug-2028	0	15	101	0	0	28		214	0	0	231	415	646	-432	0	-1321

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Sep-2028	0	15	80	128	0	27		367	0	0	212	418	630	-262	0	-1584
Oct-2028	108	15	59	0	0	28		409	0	0	204	453	657	-248	0	-1832
Nov-2028	88	15	39	898	0	26		1310	0	0	244	464	708	601	0	-1230
Dec-2028	725	15	29	1430	0	18		2414	0	0	301	497	798	1616	0	386
Jan-2029	201	15	29	111	0	24		685	0	0	293	510	803	-119	0	267
Feb-2029	7	14	40	699	0	22		1099	0	0	268	478	746	354	0	621
Mar-2029	0	15	51	126	0	24		561	0	0	282	520	803	-241	0	380
Apr-2029	0	15	71	72	0	24		471	0	0	257	483	740	-268	0	111
May-2029	0	15	83	175	0	25		528	0	0	252	470	722	-194	0	-83
Jun-2029	0	15	89	2	0	24		280	0	0	225	422	647	-367	0	-450
Jul-2029	2	15	110	0	0	25		208	0	0	216	397	613	-405	0	-856
Aug-2029	0	15	101	0	0	26		152	0	0	199	377	577	-425	0	-1281
Sep-2029	16	15	80	7	0	25		209	0	0	181	383	564	-355	0	-1635
Oct-2029	0	15	59	10	0	26		259	0	0	176	418	594	-335	0	-1970
Nov-2029	112	15	39	43	0	25		457	0	0	164	430	594	-138	0	-2108
Dec-2029	203	15	29	44	0	26		600	0	0	166	463	629	-29	0	-2137
Jan-2030	575	15	29	1529	0	19		2555	0	0	248	579	827	1727	0	-409
Feb-2030	3626	14	40	924	0	20		5079	0	0	334	599	932	4147	0	3738
Mar-2030	656	15	51	1558	0	18		2742	0	0	379	689	1069	1673	0	5410
Apr-2030	376	15	71	1531	0	17		2242	0	0	374	601	976	1266	0	6676
May-2030	906	15	83	0	0	22		1218	0	0	391	561	952	266	0	6942
Jun-2030	10	15	89	682	0	23		936	0	0	371	498	869	67	0	7010
Jul-2030	0	15	110	0	0	24		181	0	0	367	471	838	-656	0	6353
Aug-2030	0	15	101	0	0	24		136	0	0	349	446	795	-659	0	5694
Sep-2030	35	15	80	14	0	24		227	0	0	322	446	768	-540	-1	5155
Oct-2030	54	15	59	0	0	25		302	0	0	313	481	794	-492	0	4662
Nov-2030	224	15	39	0	0	24		529	0	0	288	490	778	-250	0	4413
Dec-2030	229	15	29	71	0	25		661	0	0	286	525	811	-150	0	4262
Jan-2031	0	15	29	0	0	25		419	0	0	262	543	805	-386	0	3876
Feb-2031	0	14	40	0	0	23		438	0	0	219	507	727	-289	0	3588
Mar-2031	0	15	51	0	0	25		474	0	0	224	554	778	-304	0	3284
Apr-2031	0	15	71	0	0	25		431	0	0	201	516	717	-286	0	2998
May-2031	0	15	83	0	0	26		386	0	0	195	505	700	-313	0	2684
Jun-2031	0	15	89	0	0	25		307	0	0	178	456	634	-327	0	2357
Jul-2031	0	15	110	0	0	26		235	0	0	173	432	605	-370	0	1987
Aug-2031	0	15	101	0	0	26		178	0	0	161	410	571	-392	0	1595
Sep-2031	0	15	80	0	0	25		210	0	0	144	412	556	-346	0	1249
Oct-2031	0	15	59	0	0	26		270	0	0	137	446	583	-313	0	936
Nov-2031	0	15	39	0	0	26		322	0	0	122	456	578	-256	0	680
Dec-2031	0	15	29	0	0	26		376	0	0	116	489	605	-230	0	450

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011	
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error		
Jan-2032	28	15	29	212	0	26		350	661	0	0	133	508	641	20	0	471
Feb-2032	217	14	40	390	0	25		363	1049	0	0	158	493	650	399	0	869
Mar-2032	72	15	52	123	0	26		366	654	0	0	168	519	687	-33	0	836
Apr-2032	48	15	71	93	0	25		303	556	0	0	158	483	641	-85	0	751
May-2032	0	15	83	0	0	26		244	369	0	0	150	471	621	-252	0	499
Jun-2032	0	15	89	0	0	25		159	288	0	0	136	423	559	-270	0	229
Jul-2032	0	15	111	0	0	26		62	215	0	0	130	399	529	-314	0	-85
Aug-2032	7	15	101	0	0	27		14	165	0	0	121	378	498	-334	0	-419
Sep-2032	0	15	80	0	0	26		68	189	0	0	108	382	489	-300	0	-720
Oct-2032	26	15	59	8	0	27		146	281	0	0	105	416	521	-240	0	-960
Nov-2032	0	15	39	115	0	26		218	413	0	0	106	427	534	-121	0	-1080
Dec-2032	0	15	29	47	0	27		279	397	0	0	106	460	566	-169	0	-1249
Jan-2033	626	15	30	852	0	26		178	1727	0	0	192	438	630	1097	0	-152
Feb-2033	1154	14	40	280	0	23		200	1711	0	0	207	416	623	1088	1	935
Mar-2033	362	15	52	209	0	26		180	844	0	0	224	449	673	171	0	1107
Apr-2033	274	15	71	27	0	25		95	508	0	0	204	406	610	-102	0	1005
May-2033	0	15	83	66	0	26		-1	189	0	0	191	384	575	-386	0	619
Jun-2033	0	15	89	5	0	26		-104	31	0	0	168	338	506	-474	0	145
Jul-2033	0	15	111	0	0	27		-239	-85	0	0	160	322	482	-567	0	-422
Aug-2033	0	15	101	0	0	28		-288	-143	0	0	149	315	464	-607	0	-1029
Sep-2033	0	15	80	11	0	28		-201	-68	0	0	135	316	451	-519	0	-1548
Oct-2033	24	15	59	0	0	29		-85	42	0	0	130	352	482	-440	0	-1989
Nov-2033	341	15	39	1420	0	27		-81	1761	0	0	204	370	574	1187	0	-801
Dec-2033	139	15	30	1536	0	22		-33	1709	0	0	250	423	673	1036	0	235
Jan-2034	0	15	30	0	0	27		168	240	0	0	233	454	687	-447	0	-212
Feb-2034	0	14	40	0	0	26		250	330	0	0	196	437	633	-303	0	-515
Mar-2034	0	15	52	0	0	29		260	355	0	0	196	470	666	-310	0	-826
Apr-2034	0	15	71	0	0	28		184	299	0	0	168	424	592	-293	0	-1119
May-2034	0	15	83	0	0	29		99	226	0	0	153	399	552	-325	0	-1444
Jun-2034	0	15	89	0	0	28		-2	130	0	0	132	348	480	-350	0	-1794
Jul-2034	0	15	111	0	0	29		-117	39	0	0	123	327	450	-411	0	-2206
Aug-2034	0	15	101	0	0	30		-157	-10	0	0	113	316	429	-440	0	-2645
Sep-2034	0	15	80	0	0	29		-77	47	0	0	100	319	419	-371	-1	-3016
Oct-2034	0	15	59	0	0	30		26	130	0	0	95	354	450	-320	0	-3336
Nov-2034	0	15	39	0	0	29		135	218	0	0	86	377	463	-245	0	-3581
Dec-2034	0	15	30	0	0	30		215	289	0	0	83	417	499	-210	0	-3791
Jan-2035	0	15	30	63	0	30		285	422	0	0	83	444	528	-106	0	-3897
Feb-2035	452	14	40	777	0	26		289	1598	0	0	150	426	576	1022	0	-2874
Mar-2035	119	15	52	36	0	29		292	543	0	0	154	459	613	-71	1	-2945
Apr-2035	118	15	71	19	0	28		209	460	0	0	136	415	550	-90	0	-3036

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas															Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	TOTAL INFLOW		Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2035	85	15	83	0	0	29	331		0	0	125	390	515	-184	0	-3220
Jun-2035	0	15	89	0	0	28	147		0	0	107	340	447	-300	0	-3520
Jul-2035	1	15	111	0	0	29	55		0	0	99	319	418	-364	0	-3883
Aug-2035	0	15	101	0	0	30	2		0	0	91	309	400	-397	0	-4281
Sep-2035	0	15	80	0	0	29	59		0	0	82	312	394	-335	0	-4615
Oct-2035	55	15	59	461	0	30	647		0	0	136	348	484	163	0	-4452
Nov-2035	32	15	39	62	0	29	312		0	0	126	372	497	-185	0	-4637
Dec-2035	129	15	30	822	0	29	1212		0	0	182	411	593	618	0	-4019

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
Jan-2012	1587	12	25	2842	0	1176	504	-1205	4941	677	554	74	541	1846	3095	0	3095
Feb-2012	2241	12	34	1831	0	1102	494	-960	4754	530	680	100	537	1848	2906	0	6001
Mar-2012	741	12	44	2411	0	1358	554	-1137	3983	712	760	127	547	2146	1836	1	7837
Apr-2012	55	12	61	1094	0	1256	512	-713	2277	914	652	113	560	2239	40	-3	7877
May-2012	61	12	70	328	0	1285	497	-398	1856	1186	609	104	598	2498	-641	0	7236
Jun-2012	0	12	76	330	0	1244	446	-227	1882	1402	531	91	591	2616	-734	0	6502
Jul-2012	0	12	94	361	0	1289	420	-96	2082	1752	487	85	615	2939	-857	0	5645
Aug-2012	0	12	86	384	0	1284	398	-46	2118	1810	450	78	620	2957	-839	0	4806
Sep-2012	0	12	68	385	0	1222	400	-151	1936	1449	424	71	599	2542	-605	-2	4201
Oct-2012	0	12	50	1391	0	1242	434	-496	2633	1221	443	75	619	2358	275	0	4476
Nov-2012	0	12	33	3650	0	1171	444	-1306	4005	923	452	94	592	2061	1944	0	6420
Dec-2012	208	12	25	766	0	1200	477	-648	2040	811	500	90	607	2008	31	0	6451
Jan-2013	90	12	25	375	0	1191	499	-577	1615	677	516	86	604	1883	-268	0	6183
Feb-2013	31	11	34	334	0	1068	470	-554	1394	512	469	74	542	1597	-203	0	5980
Mar-2013	104	12	44	362	0	1186	514	-555	1668	712	522	79	605	1919	-253	1	5727
Apr-2013	9	12	61	352	0	1155	478	-440	1627	914	490	73	582	2059	-432	0	5296
May-2013	0	12	70	371	0	1202	466	-340	1782	1186	486	71	607	2350	-568	0	4727
Jun-2013	0	12	76	370	0	1171	419	-208	1840	1402	443	64	596	2506	-665	0	4062
Jul-2013	0	12	94	402	0	1217	395	-86	2035	1752	416	61	626	2855	-820	0	3242
Aug-2013	0	12	86	423	0	1215	374	-40	2070	1810	389	56	639	2893	-823	0	2419
Sep-2013	0	12	68	424	0	1157	377	-147	1891	1449	369	51	621	2491	-598	-1	1821
Oct-2013	11	12	50	444	0	1177	412	-257	1850	1221	389	51	644	2304	-454	0	1367
Nov-2013	69	12	33	427	0	1123	423	-358	1730	923	389	48	621	1982	-252	0	1115
Dec-2013	4	12	25	439	0	1150	456	-443	1643	811	410	49	641	1912	-269	0	846
Jan-2014	355	12	25	1818	0	1163	434	-721	3087	970	421	60	660	2111	976	0	1822
Feb-2014	129	11	34	1577	0	1050	411	-764	2449	720	378	58	586	1742	706	0	2528
Mar-2014	1012	12	44	1819	0	1175	422	-730	3755	1005	466	87	656	2214	1539	2	4066
Apr-2014	116	12	61	1435	0	1162	393	-568	2610	1285	408	76	643	2412	199	-1	4266
May-2014	14	12	71	478	0	1233	371	-159	2020	1676	381	67	678	2803	-782	0	3483
Jun-2014	0	12	76	440	0	1228	326	50	2132	1988	336	56	671	3051	-919	0	2565
Jul-2014	0	12	94	464	0	1310	312	233	2426	2484	304	48	707	3542	-1116	0	1449
Aug-2014	0	12	86	748	0	1337	306	272	2761	2576	273	40	716	3605	-844	0	605
Sep-2014	109	12	68	887	0	1285	304	86	2751	2063	260	35	680	3038	-285	-1	320
Oct-2014	27	12	50	879	0	1310	337	-56	2559	1745	273	34	690	2741	-182	0	138
Nov-2014	569	12	33	1597	0	1243	357	-450	3361	1323	299	38	653	2314	1047	0	1185
Dec-2014	314	12	25	1287	0	1265	397	-487	2814	1165	329	44	667	2206	607	0	1792
Jan-2015	1871	12	25	447	0	1223	467	-531	3514	677	427	59	636	1800	1714	0	3506
Feb-2015	1479	11	34	451	0	1189	475	-574	3065	512	437	65	568	1582	1483	0	4989
Mar-2015	2821	12	44	1481	0	1234	522	-712	5402	712	697	126	621	2156	3245	1	8234
Apr-2015	995	12	61	743	0	1218	494	-448	3075	914	679	119	601	2313	757	4	8991

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2015	43	12	71	322	0	1247	479	-270	1903	1186	602	110	636	2535	-631	0	8360
Jun-2015	0	12	76	323	0	1210	429	-125	1926	1402	538	97	590	2627	-701	0	7659
Jul-2015	0	12	94	352	0	1257	404	1	2122	1752	502	90	607	2951	-829	0	6830
Aug-2015	253	12	87	364	0	1255	383	51	2405	1810	480	85	620	2995	-590	0	6241
Sep-2015	399	12	68	654	0	1196	386	-88	2629	1449	464	82	612	2607	22	-1	6263
Oct-2015	376	12	50	1260	0	1217	420	-350	2984	1221	502	95	634	2453	531	0	6794
Nov-2015	1088	12	33	2539	0	1143	438	-827	4426	923	584	127	612	2246	2180	0	8974
Dec-2015	1107	12	25	2802	0	1485	548	-1138	4842	811	720	159	632	2321	2520	0	11494
Jan-2016	0	12	25	315	0	1307	545	-589	1616	677	675	144	638	2135	-519	0	10975
Feb-2016	0	12	34	297	0	1194	517	-509	1544	530	613	126	594	1863	-319	0	10656
Mar-2016	0	12	44	319	0	1276	540	-472	1720	712	638	126	638	2115	-395	0	10261
Apr-2016	0	12	61	311	0	1242	502	-363	1765	914	588	114	619	2235	-469	-1	9792
May-2016	0	12	71	326	0	1292	490	-267	1925	1186	570	109	647	2513	-587	0	9205
Jun-2016	0	12	76	321	0	1259	442	-143	1967	1402	508	98	634	2642	-675	0	8530
Jul-2016	0	12	95	347	0	1308	420	-28	2153	1752	466	93	663	2974	-820	0	7710
Aug-2016	0	12	87	368	0	1305	399	9	2180	1810	427	85	672	2994	-814	0	6896
Sep-2016	0	12	69	371	0	1243	400	-105	1990	1449	399	77	651	2576	-584	-1	6311
Oct-2016	0	12	50	389	0	1265	434	-217	1934	1221	417	76	671	2385	-451	0	5860
Nov-2016	0	12	34	375	0	1206	445	-320	1752	923	417	71	648	2059	-306	0	5554
Dec-2016	0	12	25	383	0	1234	478	-403	1730	811	447	71	667	1995	-265	0	5289
Jan-2017	0	12	25	389	0	1249	458	-348	1785	970	437	67	683	2157	-372	0	4917
Feb-2017	0	11	34	353	0	1129	431	-385	1573	720	390	58	605	1773	-200	0	4717
Mar-2017	0	12	44	396	0	1265	463	-364	1817	1005	418	61	675	2160	-341	-2	4376
Apr-2017	0	12	61	395	0	1246	420	-234	1901	1285	377	56	659	2377	-475	-1	3901
May-2017	0	12	71	429	0	1317	397	-92	2134	1676	357	53	696	2782	-647	0	3253
Jun-2017	0	12	76	440	0	1305	350	70	2254	1988	317	47	689	3041	-786	0	2467
Jul-2017	0	12	95	466	0	1386	335	240	2534	2484	288	41	726	3539	-1005	0	1462
Aug-2017	0	12	87	471	0	1409	328	299	2606	2576	260	34	739	3608	-1001	0	461
Sep-2017	0	12	69	459	0	1351	325	157	2373	2063	243	30	704	3039	-665	-1	-204
Oct-2017	0	12	50	475	0	1375	357	16	2286	1745	256	29	716	2746	-460	0	-664
Nov-2017	0	12	34	459	0	1306	378	-149	2041	1323	260	28	679	2289	-249	0	-913
Dec-2017	0	12	25	474	0	1329	417	-269	1990	1165	282	29	691	2168	-178	0	-1092
Jan-2018	534	12	25	1341	0	1309	444	-594	3072	970	316	33	680	1998	1073	0	-18
Feb-2018	609	11	34	681	0	1165	426	-488	2438	720	309	33	601	1663	775	0	757
Mar-2018	493	12	44	1165	0	1291	460	-599	2867	1005	352	40	671	2068	796	3	1553
Apr-2018	81	12	61	508	0	1263	417	-321	2020	1285	325	38	648	2296	-275	0	1277
May-2018	0	12	71	466	0	1328	395	-148	2124	1676	317	37	680	2710	-586	0	691
Jun-2018	0	12	76	454	0	1312	348	31	2234	1988	284	33	672	2977	-743	0	-51
Jul-2018	5	12	95	512	0	1390	330	208	2553	2484	257	30	709	3479	-926	0	-977
Aug-2018	0	12	87	485	0	1411	322	273	2591	2576	229	26	722	3553	-962	0	-1939

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow to Management Zone 5					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW				
Sep-2018	163	12	69	462	0	1352	321	135	2514	2063	221	24	689	2996	-480	-1	-2420
Oct-2018	62	12	51	1586	0	1372	351	-288	3146	1745	236	24	702	2707	439	0	-1981
Nov-2018	142	12	34	1567	0	1298	374	-499	2928	1323	247	25	668	2262	666	0	-1315
Dec-2018	22	12	25	1678	0	1317	414	-667	2802	1165	270	27	682	2145	657	0	-659
Jan-2019	39	12	25	474	0	1270	484	-649	1656	677	291	29	650	1648	8	0	-651
Feb-2019	11	11	34	428	0	1119	463	-652	1415	512	269	28	577	1386	26	3	-625
Mar-2019	31	12	44	472	0	1228	508	-690	1606	712	302	32	641	1688	-82	0	-706
Apr-2019	3	12	61	457	0	1186	473	-586	1605	914	291	32	611	1848	-242	0	-949
May-2019	0	12	71	472	0	1227	461	-497	1747	1186	290	34	647	2156	-410	0	-1359
Jun-2019	0	12	77	458	0	1190	415	-360	1792	1402	267	32	636	2338	-545	0	-1904
Jul-2019	2	12	95	475	0	1235	393	-263	1950	1752	248	31	665	2696	-747	0	-2650
Aug-2019	0	12	87	478	0	1231	376	-225	1959	1810	230	28	674	2742	-783	0	-3433
Sep-2019	0	12	69	464	0	1172	382	-329	1770	1449	217	26	653	2345	-574	0	-4008
Oct-2019	64	12	51	479	0	1192	418	-423	1792	1221	236	27	674	2158	-366	0	-4373
Nov-2019	70	12	34	462	0	1137	430	-512	1633	923	244	26	648	1841	-208	0	-4581
Dec-2019	88	12	25	476	0	1163	463	-598	1630	811	267	28	666	1772	-143	0	-4724
Jan-2020	200	12	25	682	0	1179	442	-577	1965	970	269	28	680	1947	18	0	-4705
Feb-2020	207	12	34	885	0	1104	425	-689	1979	746	250	27	623	1646	331	1	-4374
Mar-2020	71	12	45	779	0	1197	444	-645	1903	1005	255	27	669	1957	-54	0	-4428
Apr-2020	243	12	62	533	0	1184	403	-470	1967	1285	232	25	652	2195	-228	0	-4656
May-2020	6	12	72	481	0	1256	381	-326	1882	1676	210	24	686	2596	-714	0	-5369
Jun-2020	0	12	77	469	0	1251	334	-150	1993	1988	173	20	677	2858	-864	0	-6234
Jul-2020	0	12	96	495	0	1335	317	-44	2210	2484	133	17	712	3347	-1136	0	-7370
Aug-2020	0	12	88	503	0	1363	310	-5	2270	2576	100	15	724	3415	-1144	0	-8514
Sep-2020	6	12	69	633	0	1312	315	-159	2188	2063	81	12	686	2842	-654	0	-9169
Oct-2020	0	12	51	706	0	1340	354	-326	2137	1745	82	12	691	2529	-392	0	-9560
Nov-2020	56	12	34	575	0	1275	380	-444	1889	1323	90	12	647	2072	-183	0	-9744
Dec-2020	437	12	25	504	0	1301	421	-560	2141	1165	117	14	654	1950	191	0	-9552
Jan-2021	0	12	26	503	0	1283	450	-634	1640	970	127	14	640	1751	-111	0	-9663
Feb-2021	0	11	35	454	0	1141	432	-657	1416	720	120	13	564	1417	-1	0	-9664
Mar-2021	0	12	45	502	0	1265	465	-663	1628	1005	134	15	629	1784	-156	0	-9820
Apr-2021	0	12	62	486	0	1238	420	-512	1707	1285	122	14	616	2037	-329	-1	-10149
May-2021	0	12	72	504	0	1303	394	-362	1923	1676	114	14	653	2457	-534	0	-10683
Jun-2021	0	12	77	488	0	1288	343	-172	2037	1988	94	13	650	2745	-708	0	-11391
Jul-2021	0	12	96	508	0	1366	319	-10	2291	2484	68	12	692	3256	-964	0	-12355
Aug-2021	0	12	88	510	0	1388	307	52	2357	2576	46	10	707	3339	-982	0	-13337
Sep-2021	0	12	70	495	0	1331	315	-94	2128	2063	39	9	673	2783	-654	-1	-13991
Oct-2021	0	12	51	511	0	1354	355	-234	2050	1745	47	10	678	2479	-429	0	-14420
Nov-2021	0	12	34	494	0	1284	382	-390	1817	1323	57	10	635	2025	-209	0	-14629
Dec-2021	0	12	26	510	0	1306	424	-519	1759	1165	73	11	640	1890	-131	0	-14759

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow to Management Zone 5					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW				
Jan-2022	0	12	26	509	0	1287	455	-671	1618	970	83	11	623	1688	-70	0	-14829
Feb-2022	0	11	35	459	0	1145	439	-720	1369	720	78	10	547	1356	11	2	-14818
Mar-2022	0	12	45	508	0	1270	473	-751	1558	1005	86	11	610	1712	-154	0	-14971
Apr-2022	0	12	62	493	0	1243	427	-607	1631	1285	72	10	598	1966	-334	0	-15306
May-2022	0	12	72	510	0	1309	402	-467	1838	1676	59	10	636	2382	-544	0	-15850
Jun-2022	0	12	78	496	0	1295	348	-277	1952	1988	41	9	636	2673	-721	0	-16571
Jul-2022	0	12	97	522	0	1374	322	-158	2170	2484	15	8	677	3184	-1014	0	-17585
Aug-2022	0	12	89	534	0	1397	310	-108	2235	2576	2	7	693	3278	-1043	0	-18628
Sep-2022	0	12	70	524	0	1341	321	-258	2012	2063	0	6	658	2727	-715	0	-19343
Oct-2022	0	12	51	541	0	1367	366	-423	1915	1745	0	6	661	2412	-497	0	-19840
Nov-2022	0	12	34	518	0	1298	394	-542	1714	1323	2	6	617	1948	-234	0	-20074
Dec-2022	0	12	26	531	0	1322	438	-670	1658	1165	8	7	619	1800	-142	0	-20216
Jan-2023	116	12	26	1324	0	1301	470	-1051	2199	970	13	7	599	1590	608	1	-19608
Feb-2023	599	11	35	1996	0	1141	458	-1308	2933	720	23	7	510	1261	1670	3	-17938
Mar-2023	1187	12	45	1690	0	1279	486	-1313	3387	1005	45	9	564	1623	1762	1	-16176
Apr-2023	0	12	63	547	0	1256	439	-914	1404	1285	25	8	568	1886	-482	0	-16658
May-2023	0	12	73	624	0	1326	414	-739	1709	1676	10	7	612	2306	-597	0	-17255
Jun-2023	0	12	78	523	0	1314	359	-521	1765	1988	0	6	617	2611	-845	0	-18100
Jul-2023	0	12	97	635	0	1397	332	-377	2097	2484	0	4	657	3145	-1048	0	-19148
Aug-2023	0	12	89	551	0	1422	319	-301	2092	2576	0	3	665	3243	-1152	0	-20300
Sep-2023	0	12	70	533	0	1367	333	-438	1878	2063	0	2	626	2691	-812	-1	-21112
Oct-2023	52	12	52	974	0	1395	381	-694	2173	1745	0	2	625	2371	-197	-1	-21310
Nov-2023	0	12	34	533	0	1328	412	-804	1517	1323	0	1	580	1905	-388	0	-21698
Dec-2023	624	12	26	1548	0	1354	457	-1131	2891	1165	0	2	572	1740	1151	0	-20547
Jan-2024	611	12	26	2859	0	1317	496	-1696	3627	970	0	3	547	1520	2106	0	-18441
Feb-2024	3099	12	35	2585	0	1213	490	-1749	5684	746	14	7	492	1259	4425	0	-14016
Mar-2024	1812	12	45	2490	0	1299	506	-1730	4436	1005	40	9	537	1591	2845	1	-11171
Apr-2024	28	12	63	506	0	1292	453	-1066	1288	1285	25	8	531	1849	-560	-1	-11731
May-2024	63	12	73	529	0	1369	429	-847	1628	1676	10	7	585	2279	-651	0	-12382
Jun-2024	0	12	78	1383	0	1359	375	-813	2395	1988	0	6	595	2589	-194	0	-12576
Jul-2024	56	12	98	551	0	1446	347	-503	2008	2484	0	4	637	3125	-1117	0	-13693
Aug-2024	0	12	89	551	0	1474	334	-402	2058	2576	0	3	646	3225	-1166	0	-14859
Sep-2024	0	12	71	533	0	1419	350	-531	1854	2063	0	2	608	2673	-818	-1	-15676
Oct-2024	289	12	52	1308	0	1450	400	-884	2627	1745	0	2	608	2354	272	0	-15404
Nov-2024	0	12	35	1412	0	1381	432	-1099	2172	1323	0	2	565	1890	282	0	-15122
Dec-2024	1350	12	26	1581	0	1410	480	-1286	3574	1165	0	4	558	1727	1847	0	-13275
Jan-2025	2964	12	26	1654	0	1369	558	-1434	5149	677	35	9	519	1240	3909	0	-9366
Feb-2025	2032	11	35	2502	0	1384	562	-1692	4834	512	85	15	471	1083	3752	0	-5614
Mar-2025	740	12	46	2579	0	1459	622	-1824	3633	712	119	32	537	1400	2233	0	-3382
Apr-2025	0	12	63	1861	0	1395	576	-1502	2405	914	116	39	529	1598	807	0	-2575

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2025	0	12	73	504	0	1433	563	-1037	1549	1186	124	30	562	1902	-353	0	-2928
Jun-2025	113	12	79	487	0	1384	508	-794	1789	1402	125	25	558	2110	-321	0	-3249
Jul-2025	0	12	98	503	0	1429	483	-642	1884	1752	122	22	588	2484	-599	0	-3848
Aug-2025	0	12	90	503	0	1419	461	-558	1926	1810	123	19	597	2548	-622	0	-4470
Sep-2025	0	12	71	485	0	1348	463	-623	1756	1449	138	18	556	2161	-405	0	-4874
Oct-2025	99	12	52	2386	0	1365	503	-1227	3191	1221	158	30	600	2008	1182	0	-3692
Nov-2025	130	12	35	2246	0	1295	516	-1356	2878	923	173	41	586	1724	1153	0	-2539
Dec-2025	173	12	26	3988	0	1284	569	-2048	4006	811	226	61	559	1657	2349	0	-190
Jan-2026	0	12	26	484	0	1290	583	-1211	1184	677	235	48	585	1545	-361	0	-551
Feb-2026	0	11	35	436	0	1158	542	-1052	1130	512	214	37	530	1293	-165	2	-716
Mar-2026	0	12	46	482	0	1283	589	-1089	1324	712	237	37	595	1581	-258	0	-974
Apr-2026	0	12	63	465	0	1246	547	-940	1394	914	244	33	536	1727	-333	0	-1308
May-2026	0	12	73	481	0	1293	534	-844	1550	1186	239	31	590	2047	-497	0	-1805
Jun-2026	0	12	79	467	0	1256	482	-680	1616	1402	215	28	589	2234	-618	0	-2423
Jul-2026	0	12	98	485	0	1305	459	-579	1780	1752	194	25	621	2592	-811	0	-3234
Aug-2026	0	12	90	489	0	1302	438	-528	1803	1810	176	22	632	2641	-838	0	-4072
Sep-2026	0	12	71	475	0	1241	443	-616	1626	1449	165	20	613	2246	-620	0	-4692
Oct-2026	0	12	52	490	0	1264	481	-714	1585	1221	177	20	635	2053	-468	0	-5160
Nov-2026	0	12	35	474	0	1206	492	-789	1428	923	183	19	611	1737	-308	0	-5468
Dec-2026	0	12	26	488	0	1234	527	-881	1406	811	200	20	629	1660	-254	0	-5722
Jan-2027	3826	12	26	2786	0	1227	497	-1342	7034	970	370	55	620	2016	5018	0	-704
Feb-2027	336	11	35	3252	0	1073	483	-1593	3597	720	322	65	549	1656	1941	0	1237
Mar-2027	1445	12	46	2148	0	1233	513	-1271	4127	1005	394	96	628	2123	2004	0	3241
Apr-2027	125	12	63	678	0	1234	459	-679	1892	1285	338	80	625	2328	-436	0	2804
May-2027	45	12	73	1612	0	1310	428	-700	2781	1676	311	84	667	2738	46	-3	2850
Jun-2027	132	12	79	456	0	1303	370	-237	2115	1988	287	71	631	2977	-861	-1	1990
Jul-2027	0	12	98	475	0	1387	341	0	2314	2484	266	62	648	3460	-1146	0	843
Aug-2027	0	12	90	478	0	1413	325	92	2411	2576	247	54	644	3520	-1109	0	-266
Sep-2027	0	12	71	465	0	1358	335	-44	2198	2063	219	46	642	2969	-767	-4	-1033
Oct-2027	0	12	52	2222	0	1383	375	-638	3406	1745	222	65	665	2696	710	0	-323
Nov-2027	0	12	35	2015	0	1312	404	-821	2957	1323	222	75	635	2255	702	0	379
Dec-2027	406	12	26	6116	0	1230	512	-2394	5908	1165	289	95	586	2136	3772	0	4150
Jan-2028	287	12	26	2067	0	1256	579	-1497	2730	677	320	108	587	1693	1037	0	5187
Feb-2028	651	12	36	549	0	1162	554	-1013	1950	530	331	98	553	1512	438	0	5625
Mar-2028	201	12	46	466	0	1241	578	-936	1609	712	359	98	602	1771	-163	1	5462
Apr-2028	13	12	63	449	0	1203	533	-772	1502	914	354	89	557	1913	-412	1	5050
May-2028	66	12	74	462	0	1247	517	-652	1727	1186	369	86	580	2221	-494	0	4556
Jun-2028	0	12	79	449	0	1212	464	-485	1731	1402	338	76	594	2410	-679	0	3877
Jul-2028	0	12	98	492	0	1259	438	-349	1950	1752	320	71	631	2775	-825	0	3052
Aug-2028	0	12	90	470	0	1255	415	-280	1962	1810	302	64	646	2822	-860	0	2193

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow to Management Zone 5					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	TOTAL OUTFLOW	Error				
Sep-2028	0	12	71	710	0	1196	418	-386	2020	1449	288	57	628	2422	-400	-2	1793
Oct-2028	126	12	52	470	0	1217	453	-479	1852	1221	310	56	650	2238	-386	0	1407
Nov-2028	103	12	35	1651	0	1159	464	-865	2559	923	316	62	628	1929	630	0	2037
Dec-2028	842	12	26	2055	0	1174	497	-1070	3537	811	389	94	622	1916	1621	0	3658
Jan-2029	233	12	26	455	0	1167	510	-771	1633	677	396	84	634	1792	-159	0	3499
Feb-2029	8	11	36	411	0	1047	478	-707	1284	512	350	70	571	1503	-219	0	3279
Mar-2029	0	12	46	450	0	1164	520	-713	1480	712	406	73	592	1782	-303	1	2976
Apr-2029	0	12	64	435	0	1134	483	-586	1541	914	383	66	584	1946	-405	0	2571
May-2029	0	12	74	453	0	1181	470	-486	1704	1186	377	63	623	2250	-546	0	2025
Jun-2029	0	12	79	444	0	1151	422	-341	1767	1402	346	56	617	2421	-653	0	1372
Jul-2029	2	12	99	463	0	1198	397	-211	1961	1752	328	52	648	2780	-819	0	553
Aug-2029	0	12	90	467	0	1197	377	-153	1991	1810	309	46	659	2824	-833	0	-280
Sep-2029	19	12	71	454	0	1141	383	-250	1830	1449	294	41	639	2423	-592	-2	-872
Oct-2029	0	12	52	470	0	1162	418	-359	1756	1221	310	40	660	2231	-475	0	-1346
Nov-2029	131	12	35	453	0	1109	430	-454	1717	923	315	38	637	1913	-196	0	-1542
Dec-2029	235	12	26	466	0	1137	463	-537	1803	811	344	39	656	1850	-47	0	-1590
Jan-2030	668	12	26	2983	0	1703	579	-1459	4514	677	393	64	623	1758	2755	0	1166
Feb-2030	4209	11	36	2011	0	1455	599	-1263	7058	512	648	113	563	1836	5221	0	6387
Mar-2030	762	12	46	2817	0	1528	689	-1541	4314	712	758	147	628	2246	2068	0	8455
Apr-2030	436	12	64	2597	0	1320	601	-1338	3693	914	688	156	611	2368	1325	0	9780
May-2030	1052	12	74	303	0	1353	561	-568	2788	1186	748	155	638	2727	61	-1	9840
Jun-2030	11	12	80	1877	0	1316	498	-694	3100	1402	631	155	625	2814	287	0	10127
Jul-2030	0	12	99	326	0	1374	471	-247	2035	1752	553	144	644	3092	-1057	0	9070
Aug-2030	0	12	91	344	0	1378	446	-148	2123	1810	476	130	667	3083	-960	0	8110
Sep-2030	40	12	72	404	0	1318	446	-248	2044	1449	434	117	649	2648	-601	-2	7509
Oct-2030	63	12	53	370	0	1345	481	-352	1971	1221	448	114	669	2452	-480	0	7029
Nov-2030	260	12	35	350	0	1285	490	-437	1995	923	461	107	641	2132	-138	0	6891
Dec-2030	266	12	26	617	0	1316	525	-536	2227	811	522	110	632	2074	153	0	7044
Jan-2031	0	12	26	350	0	1304	543	-579	1658	677	530	105	629	1941	-284	0	6760
Feb-2031	0	11	36	313	0	1168	507	-571	1464	512	488	91	555	1646	-182	0	6578
Mar-2031	0	12	46	345	0	1294	554	-586	1666	712	540	97	619	1968	-303	0	6275
Apr-2031	0	12	64	333	0	1257	516	-466	1715	914	539	90	548	2091	-376	0	5899
May-2031	0	12	74	346	0	1304	505	-362	1880	1186	553	89	564	2393	-513	0	5387
Jun-2031	0	12	80	343	0	1267	456	-232	1926	1402	493	81	588	2564	-637	0	4749
Jul-2031	0	12	99	375	0	1314	432	-116	2116	1752	452	77	628	2909	-793	0	3956
Aug-2031	0	12	91	398	0	1309	410	-75	2145	1810	413	71	645	2940	-794	0	3162
Sep-2031	0	12	72	398	0	1245	412	-184	1954	1449	384	65	630	2528	-572	-1	2590
Oct-2031	0	12	53	417	0	1265	446	-297	1897	1221	399	64	654	2338	-441	0	2149
Nov-2031	0	12	35	404	0	1206	456	-400	1713	923	395	60	632	2010	-298	0	1851
Dec-2031	0	12	26	413	0	1232	489	-486	1688	811	418	60	654	1943	-255	0	1596

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3		TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
Jan-2032	32	12	26	408	0	1220	508	-556	1650	677	428	59	651	1815	-165	0	1431
Feb-2032	252	12	36	368	0	1131	493	-574	1716	530	418	56	602	1606	110	0	1541
Mar-2032	84	12	46	388	0	1210	519	-562	1698	712	460	60	623	1855	-158	1	1383
Apr-2032	56	12	64	376	0	1176	483	-453	1714	914	429	56	616	2015	-301	0	1082
May-2032	0	12	74	395	0	1222	471	-358	1817	1186	425	55	636	2303	-487	0	596
Jun-2032	0	12	80	394	0	1188	423	-226	1872	1402	390	51	621	2464	-592	0	3
Jul-2032	0	12	99	427	0	1234	399	-104	2067	1752	362	49	659	2823	-755	0	-752
Aug-2032	8	12	91	447	0	1231	378	-57	2110	1810	340	46	672	2868	-758	0	-1510
Sep-2032	0	12	72	443	0	1171	382	-163	1917	1449	325	42	651	2467	-549	-1	-2059
Oct-2032	30	12	53	460	0	1191	416	-271	1891	1221	344	43	673	2281	-390	0	-2449
Nov-2032	0	12	35	444	0	1135	427	-372	1682	923	344	41	649	1957	-275	0	-2724
Dec-2032	0	12	26	458	0	1161	460	-458	1659	811	365	43	669	1887	-229	0	-2953
Jan-2033	726	12	26	1687	0	1175	438	-680	3386	970	396	50	675	2091	1295	0	-1658
Feb-2033	1339	11	36	1047	0	1064	416	-616	3297	720	408	51	594	1774	1520	3	-138
Mar-2033	421	12	46	969	0	1196	449	-560	2534	1005	430	54	662	2151	383	0	245
Apr-2033	319	12	64	488	0	1183	406	-324	2148	1285	380	50	655	2370	-221	0	24
May-2033	0	12	74	640	0	1256	384	-183	2184	1676	348	45	693	2763	-579	0	-555
Jun-2033	0	12	80	465	0	1250	338	-1	2144	1988	299	38	686	3011	-866	0	-1421
Jul-2033	0	12	99	473	0	1334	322	147	2388	2484	257	32	722	3494	-1106	0	-2527
Aug-2033	0	12	91	478	0	1361	315	192	2449	2576	217	26	732	3551	-1101	0	-3628
Sep-2033	0	12	72	496	0	1310	316	37	2243	2063	192	22	697	2973	-730	0	-4358
Oct-2033	27	12	53	482	0	1336	352	-96	2167	1745	200	22	706	2673	-505	0	-4864
Nov-2033	396	12	35	2481	0	1260	370	-740	3814	1323	223	25	657	2228	1586	0	-3278
Dec-2033	162	12	26	3904	0	1259	423	-1471	4316	1165	248	37	665	2115	2200	0	-1078
Jan-2034	0	12	27	479	0	1258	454	-684	1545	970	254	31	664	1919	-374	0	-1451
Feb-2034	0	11	36	432	0	1126	437	-605	1437	720	232	26	589	1568	-131	0	-1583
Mar-2034	0	12	46	478	0	1253	470	-574	1685	1005	257	28	658	1949	-264	0	-1847
Apr-2034	0	12	64	463	0	1229	424	-414	1779	1285	238	26	643	2192	-413	-1	-2259
May-2034	0	12	74	479	0	1296	399	-252	2008	1676	231	26	680	2612	-603	-1	-2862
Jun-2034	0	12	80	465	0	1283	348	-61	2127	1988	204	23	673	2888	-761	0	-3623
Jul-2034	0	12	100	484	0	1362	327	126	2410	2484	179	21	710	3394	-983	0	-4606
Aug-2034	0	12	91	488	0	1384	316	200	2491	2576	157	19	723	3475	-983	0	-5589
Sep-2034	0	12	72	475	0	1327	319	63	2267	2063	149	18	688	2917	-647	-3	-6236
Oct-2034	0	12	53	491	0	1350	354	-79	2181	1745	162	18	698	2623	-442	0	-6678
Nov-2034	0	12	35	474	0	1281	377	-238	1941	1323	170	18	660	2171	-230	0	-6908
Dec-2034	0	12	27	488	0	1304	417	-359	1888	1165	190	19	671	2046	-158	0	-7066
Jan-2035	0	12	27	532	0	1284	444	-470	1828	970	202	20	658	1850	-22	0	-7088
Feb-2035	524	11	36	861	0	1140	426	-595	2403	720	207	19	581	1528	875	0	-6213
Mar-2035	138	12	46	507	0	1264	459	-529	1898	1005	232	22	649	1908	-12	2	-6225
Apr-2035	136	12	64	479	0	1237	415	-371	1972	1285	234	22	598	2139	-167	0	-6392

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas														Cum. Change in GW Storage After 2011		
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2035	99	12	75	480	0	1301	390	-213	2145	1676	235	22	634	2567	-422	0	-6814
Jun-2035	0	12	80	466	0	1287	340	-28	2158	1988	202	21	645	2855	-697	0	-7511
Jul-2035	1	12	100	486	0	1365	319	155	2438	2484	174	20	686	3363	-925	0	-8436
Aug-2035	0	12	91	492	0	1385	309	224	2514	2576	151	18	701	3445	-931	0	-9367
Sep-2035	0	12	72	478	0	1327	312	83	2285	2063	141	17	669	2889	-603	-1	-9970
Oct-2035	64	12	53	834	0	1350	348	-108	2552	1745	155	17	680	2596	-44	0	-10014
Nov-2035	37	12	35	522	0	1280	372	-235	2023	1323	162	17	644	2146	-123	0	-10137
Dec-2035	149	12	27	1096	0	1302	411	-497	2500	1165	185	19	655	2024	476	0	-9661

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Error				
Jan-2012	1427	9	6	2711	144	0	541	-12	4826	596	1285	198	578	2656	2170	0	2170
Feb-2012	2016	8	8	1174	135	0	537	372	4250	618	1404	201	559	2782	1468	0	3638
Mar-2012	667	9	10	1895	144	0	547	245	3517	797	1352	233	571	2952	566	0	4204
Apr-2012	50	8	14	650	140	0	560	674	2096	1065	1006	181	537	2789	-693	0	3511
May-2012	55	9	17	463	144	0	598	890	2176	1301	880	166	551	2899	-722	0	2789
Jun-2012	0	8	18	1329	140	0	591	623	2709	1465	738	148	531	2882	-173	0	2616
Jul-2012	0	9	22	1611	144	0	615	604	3006	1825	650	143	547	3165	-159	0	2456
Aug-2012	0	9	20	1499	144	0	620	605	2898	1778	601	140	546	3065	-168	0	2289
Sep-2012	0	8	16	559	140	0	599	805	2126	1416	600	130	528	2673	-547	0	1742
Oct-2012	0	9	12	880	144	0	619	653	2318	1121	687	144	545	2497	-179	0	1563
Nov-2012	0	8	8	2578	140	0	592	-30	3295	804	756	162	529	2250	1045	0	2608
Dec-2012	187	9	6	569	144	0	607	634	2157	665	905	167	551	2288	-131	0	2476
Jan-2013	81	9	6	520	144	0	604	708	2072	596	962	172	550	2279	-208	0	2269
Feb-2013	28	8	8	375	130	0	542	689	1780	596	860	153	496	2106	-326	0	1943
Mar-2013	94	9	11	426	144	0	605	799	2087	797	930	166	550	2442	-355	0	1589
Apr-2013	8	8	15	1936	140	0	582	337	3026	1065	812	153	530	2561	465	0	2054
May-2013	0	9	17	548	144	0	607	795	2120	1301	763	148	547	2760	-640	0	1414
Jun-2013	0	8	18	520	140	0	596	862	2144	1465	668	136	529	2798	-653	0	761
Jul-2013	0	9	23	577	144	0	626	947	2326	1825	590	130	545	3091	-765	0	-4
Aug-2013	0	9	21	595	144	0	639	942	2350	1778	541	125	544	2989	-640	0	-643
Sep-2013	0	8	17	574	140	0	621	851	2211	1416	538	122	526	2602	-392	0	-1035
Oct-2013	10	9	12	568	144	0	644	827	2214	1121	622	132	544	2420	-206	0	-1241
Nov-2013	62	8	8	509	140	0	621	763	2111	804	693	138	529	2163	-52	0	-1293
Dec-2013	4	9	6	475	144	0	641	772	2051	665	793	151	546	2156	-105	0	-1397
Jan-2014	319	9	6	1139	144	0	660	430	2707	701	892	162	553	2308	399	0	-998
Feb-2014	116	8	9	946	130	0	586	428	2224	671	794	148	498	2110	113	0	-885
Mar-2014	910	9	11	1474	144	0	656	444	3648	902	995	173	567	2637	1012	0	126
Apr-2014	104	8	15	812	140	0	643	667	2390	1198	788	158	535	2679	-289	0	-163
May-2014	12	9	18	522	144	0	678	943	2327	1477	691	151	548	2867	-541	0	-704
Jun-2014	0	8	19	1201	140	0	671	777	2818	1675	577	136	529	2918	-100	0	-804
Jul-2014	0	9	24	1439	144	0	707	765	3088	2088	487	129	546	3250	-161	0	-965
Aug-2014	0	9	22	1449	144	0	716	709	3049	2053	434	124	544	3156	-107	0	-1072
Sep-2014	98	8	17	743	140	0	680	794	2479	1636	447	122	528	2733	-254	0	-1326
Oct-2014	24	9	13	729	144	0	690	773	2381	1308	523	133	545	2509	-128	0	-1454
Nov-2014	512	8	8	917	140	0	653	589	2827	947	667	147	539	2300	528	0	-926
Dec-2014	283	9	6	880	144	0	667	597	2586	792	784	165	554	2294	292	0	-634
Jan-2015	1684	9	7	334	144	0	636	857	3671	596	1151	185	584	2515	1156	0	521
Feb-2015	1330	8	9	267	130	0	568	816	3128	596	1123	171	528	2418	710	0	1231
Mar-2015	2538	9	11	598	144	0	621	860	4782	797	1580	210	609	3196	1586	0	2817
Apr-2015	895	8	16	441	140	0	601	953	3054	1065	1212	188	561	3026	29	0	2846

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage	Error	Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW			
May-2015	39	9	18	432	144	0	636	1013	2292	1301	917	171	556	2945	-654	0	2192
Jun-2015	0	8	20	1236	140	0	590	791	2785	1465	816	155	533	2970	-184	0	2008
Jul-2015	0	9	25	1188	144	0	607	858	2831	1825	743	148	549	3265	-434	0	1574
Aug-2015	227	9	22	922	144	0	620	926	2870	1778	727	143	552	3201	-331	0	1243
Sep-2015	359	8	18	606	140	0	612	904	2648	1416	712	139	538	2804	-156	0	1087
Oct-2015	338	9	13	793	144	0	634	817	2749	1121	846	157	556	2679	70	0	1156
Nov-2015	979	8	9	1450	140	0	612	434	3632	804	1079	173	553	2609	1023	0	2179
Dec-2015	996	9	7	1568	144	0	632	381	3736	665	1313	197	575	2750	986	0	3165
Jan-2016	0	9	7	342	144	0	638	861	2001	596	1108	186	555	2444	-444	0	2721
Feb-2016	0	8	9	354	135	0	594	828	1928	618	954	167	516	2254	-327	0	2395
Mar-2016	0	9	12	407	144	0	638	902	2112	797	950	172	550	2469	-357	0	2037
Apr-2016	0	8	16	433	140	0	619	911	2128	1065	820	156	532	2573	-445	0	1592
May-2016	0	9	19	491	144	0	647	969	2279	1301	762	152	549	2764	-485	0	1107
Jun-2016	0	8	20	513	140	0	634	968	2283	1465	662	139	530	2796	-513	0	594
Jul-2016	0	9	25	571	144	0	663	1040	2452	1825	584	133	547	3090	-638	0	-44
Aug-2016	0	9	23	591	144	0	672	1023	2462	1778	538	128	546	2990	-528	0	-572
Sep-2016	0	8	18	569	140	0	651	922	2308	1416	537	124	528	2605	-297	0	-869
Oct-2016	0	9	13	562	144	0	671	894	2294	1121	623	134	546	2424	-130	0	-998
Nov-2016	0	8	9	504	140	0	648	819	2128	804	688	139	529	2160	-31	0	-1029
Dec-2016	0	9	7	467	144	0	667	827	2120	665	796	153	547	2161	-40	0	-1070
Jan-2017	0	9	7	435	144	0	683	839	2118	701	842	159	548	2249	-131	0	-1201
Feb-2017	0	8	9	391	130	0	605	762	1906	671	759	143	495	2068	-162	0	-1363
Mar-2017	0	9	12	444	144	0	675	870	2154	902	807	155	548	2412	-258	0	-1621
Apr-2017	0	8	17	466	140	0	659	893	2183	1198	700	143	530	2571	-388	0	-2008
May-2017	0	9	20	524	144	0	696	962	2354	1477	643	140	547	2808	-454	0	-2462
Jun-2017	0	8	21	543	140	0	689	974	2375	1675	548	129	529	2881	-507	0	-2969
Jul-2017	0	9	26	604	144	0	726	1061	2570	2088	467	124	546	3224	-653	0	-3622
Aug-2017	0	9	24	626	144	0	739	1048	2590	2053	417	119	545	3134	-544	0	-4166
Sep-2017	0	8	19	604	140	0	704	936	2411	1636	417	116	527	2696	-284	0	-4450
Oct-2017	0	9	14	599	144	0	716	895	2377	1308	494	127	544	2473	-97	0	-4547
Nov-2017	0	8	9	540	140	0	679	809	2185	947	561	132	528	2168	17	0	-4530
Dec-2017	0	9	7	504	144	0	691	810	2165	792	668	147	546	2153	12	0	-4518
Jan-2018	481	9	7	871	144	0	680	622	2813	701	819	158	557	2234	579	0	-3939
Feb-2018	548	8	10	465	130	0	601	706	2468	671	806	146	507	2131	337	0	-3602
Mar-2018	444	9	13	682	144	0	671	725	2688	902	873	161	559	2495	193	0	-3409
Apr-2018	72	8	18	1963	140	0	648	408	3258	1198	716	145	534	2594	664	0	-2744
May-2018	0	9	21	565	144	0	680	876	2295	1477	640	141	548	2806	-511	0	-3255
Jun-2018	0	8	22	543	140	0	672	936	2321	1675	541	129	529	2874	-553	0	-3809
Jul-2018	4	9	28	620	144	0	709	1023	2538	2088	459	124	546	3216	-679	0	-4487
Aug-2018	0	9	25	632	144	0	722	1022	2555	2053	409	119	545	3125	-571	0	-5058

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas																Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4			Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Sep-2018	147	8	20	601	140	0	689	921	2526	1636	426	117	530	2709	-183	0	-5241
Oct-2018	56	9	15	1145	144	0	702	589	2661	1308	500	128	546	2482	178	0	-5063
Nov-2018	128	8	10	1141	140	0	668	497	2591	947	578	135	531	2191	401	0	-4662
Dec-2018	20	9	7	1260	144	0	682	440	2562	792	676	150	547	2165	397	0	-4265
Jan-2019	35	9	8	564	144	0	650	742	2152	596	749	156	548	2048	104	0	-4161
Feb-2019	10	8	11	411	130	0	577	684	1830	596	682	140	495	1914	-83	0	-4244
Mar-2019	28	9	14	464	144	0	641	771	2071	797	736	153	548	2233	-162	0	-4406
Apr-2019	2	8	20	840	140	0	611	713	2334	1065	691	143	529	2428	-94	0	-4500
May-2019	0	9	23	580	144	0	647	823	2227	1301	613	139	547	2600	-373	0	-4874
Jun-2019	0	8	25	554	140	0	636	838	2202	1465	521	127	528	2641	-440	0	-5313
Jul-2019	1	9	31	614	144	0	665	894	2359	1825	443	122	545	2935	-577	0	-5890
Aug-2019	0	9	28	635	144	0	674	870	2361	1778	398	117	544	2837	-476	0	-6365
Sep-2019	0	8	22	614	140	0	653	765	2202	1416	394	114	526	2450	-247	0	-6613
Oct-2019	57	9	16	609	144	0	674	738	2248	1121	474	125	545	2265	-17	0	-6629
Nov-2019	63	8	11	762	140	0	648	633	2266	804	543	130	529	2006	260	0	-6370
Dec-2019	79	9	8	513	144	0	666	669	2089	665	651	145	548	2008	81	0	-6289
Jan-2020	180	9	9	542	144	0	680	637	2201	701	717	153	550	2121	80	0	-6209
Feb-2020	187	8	13	766	135	0	623	430	2161	695	684	144	516	2039	122	0	-6087
Mar-2020	64	9	16	1392	144	0	669	491	2786	902	686	150	549	2287	499	0	-5588
Apr-2020	219	8	23	855	140	0	652	633	2529	1198	608	139	534	2480	49	0	-5539
May-2020	5	9	26	1459	144	0	686	594	2923	1477	530	135	547	2690	234	0	-5305
Jun-2020	0	8	28	585	140	0	677	760	2198	1675	439	123	528	2766	-568	0	-5873
Jul-2020	0	9	35	648	144	0	712	828	2377	2088	355	116	545	3103	-726	0	-6599
Aug-2020	0	9	32	672	144	0	724	803	2385	2053	301	109	544	3006	-622	0	-7221
Sep-2020	6	8	26	703	140	0	686	657	2226	1636	290	105	526	2557	-331	0	-7552
Oct-2020	0	9	19	729	144	0	691	589	2180	1308	339	115	543	2306	-125	0	-7677
Nov-2020	51	8	12	637	140	0	647	559	2054	947	401	121	528	1997	57	0	-7620
Dec-2020	393	9	9	552	144	0	654	595	2356	792	538	139	554	2023	334	0	-7286
Jan-2021	0	9	11	521	144	0	640	597	1922	701	572	145	547	1965	-43	0	-7329
Feb-2021	0	8	15	465	130	0	564	550	1733	671	524	132	494	1821	-88	0	-7417
Mar-2021	0	9	20	522	144	0	629	646	1970	902	564	144	547	2156	-185	0	-7603
Apr-2021	0	8	27	540	140	0	616	688	2018	1198	487	132	529	2346	-328	0	-7931
May-2021	0	9	31	600	144	0	653	759	2197	1477	447	130	546	2600	-403	0	-8334
Jun-2021	0	8	34	612	140	0	650	785	2230	1675	377	118	527	2698	-468	0	-8802
Jul-2021	0	9	42	666	144	0	692	860	2413	2088	307	111	544	3051	-638	0	-9439
Aug-2021	0	9	38	687	144	0	707	844	2430	2053	266	104	543	2966	-537	0	-9976
Sep-2021	0	8	30	664	140	0	673	734	2249	1636	260	101	525	2522	-273	0	-10249
Oct-2021	0	9	22	668	144	0	678	693	2214	1308	313	112	543	2276	-61	0	-10311
Nov-2021	0	8	15	619	140	0	635	613	2030	947	370	118	526	1961	69	0	-10242
Dec-2021	0	9	11	592	144	0	640	607	2003	792	454	133	545	1924	79	0	-10163

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Error				
Jan-2022	0	9	13	549	144	0	623	585	1924	701	511	141	546	1897	26	0	-10137
Feb-2022	0	8	17	487	130	0	547	527	1716	671	475	128	493	1767	-51	0	-10188
Mar-2022	0	9	22	545	144	0	610	609	1939	902	511	140	546	2099	-160	0	-10347
Apr-2022	0	8	31	562	140	0	598	644	1983	1198	441	129	528	2296	-313	0	-10661
May-2022	0	9	36	620	144	0	636	708	2154	1477	401	126	545	2548	-395	0	-11056
Jun-2022	0	8	38	629	140	0	636	732	2183	1675	332	113	527	2648	-465	0	-11520
Jul-2022	0	9	48	687	144	0	677	783	2348	2088	269	105	543	3005	-657	0	-12178
Aug-2022	0	9	44	716	144	0	693	754	2360	2053	236	97	542	2929	-569	0	-12746
Sep-2022	0	8	35	694	140	0	658	639	2174	1636	227	93	524	2481	-307	0	-13053
Oct-2022	0	9	25	699	144	0	661	578	2116	1308	261	102	542	2214	-97	0	-13150
Nov-2022	0	8	17	652	140	0	617	516	1950	947	305	108	526	1886	65	0	-13086
Dec-2022	0	9	13	632	144	0	619	511	1928	792	375	123	544	1835	93	0	-12993
Jan-2023	105	9	13	897	144	0	599	283	2050	701	429	132	547	1809	241	0	-12751
Feb-2023	539	8	18	1915	130	0	510	-249	2872	671	495	129	504	1799	1073	0	-11678
Mar-2023	1068	9	23	1454	144	0	564	51	3314	902	653	150	570	2275	1039	0	-10639
Apr-2023	0	8	32	561	140	0	568	531	1840	1198	449	130	533	2310	-470	0	-11109
May-2023	0	9	38	660	144	0	612	579	2042	1477	375	122	547	2520	-478	0	-11588
Jun-2023	0	8	40	648	140	0	617	617	2070	1675	301	107	528	2611	-541	0	-12129
Jul-2023	0	9	50	739	144	0	657	664	2263	2088	248	96	544	2976	-713	0	-12842
Aug-2023	0	9	46	741	144	0	665	658	2263	2053	218	86	543	2900	-637	0	-13479
Sep-2023	0	8	36	722	140	0	626	547	2080	1636	206	80	525	2447	-367	0	-13846
Oct-2023	47	9	27	874	144	0	625	387	2113	1308	228	87	543	2167	-54	0	-13900
Nov-2023	0	8	18	675	140	0	580	375	1797	947	250	92	526	1815	-18	0	-13918
Dec-2023	561	9	13	1407	144	0	572	5	2712	792	366	114	556	1828	884	0	-13035
Jan-2024	550	9	14	5268	144	0	547	-1303	5229	701	508	131	560	1899	3331	0	-9704
Feb-2024	2788	8	19	2253	135	0	492	-389	5307	695	902	156	572	2325	2982	0	-6722
Mar-2024	1630	9	24	2251	144	0	537	-224	4372	902	919	168	593	2581	1791	0	-4930
Apr-2024	25	8	34	1529	140	0	531	236	2503	1198	579	141	539	2458	45	0	-4885
May-2024	57	9	39	1253	144	0	585	395	2483	1477	437	129	552	2595	-112	0	-4997
Jun-2024	0	8	42	1037	140	0	595	359	2181	1675	338	112	531	2656	-474	0	-5471
Jul-2024	50	9	52	717	144	0	637	605	2215	2088	277	100	548	3013	-798	0	-6269
Aug-2024	0	9	48	726	144	0	646	605	2178	2053	238	89	545	2926	-748	0	-7017
Sep-2024	0	8	38	708	140	0	608	504	2007	1636	222	84	527	2469	-462	0	-7479
Oct-2024	260	9	28	949	144	0	608	304	2300	1308	266	94	550	2218	83	0	-7397
Nov-2024	0	8	18	982	140	0	565	170	1883	947	280	98	528	1854	29	0	-7367
Dec-2024	1215	9	14	1012	144	0	558	178	3130	792	481	128	572	1973	1156	0	-6211
Jan-2025	2666	9	14	968	144	0	519	286	4605	596	906	169	608	2278	2327	0	-3884
Feb-2025	1828	8	19	1461	130	0	471	75	3992	596	998	168	544	2306	1687	0	-2197
Mar-2025	665	9	25	1221	144	0	537	269	2870	797	913	178	573	2461	409	0	-1788
Apr-2025	0	8	35	809	140	0	529	502	2023	1065	668	158	537	2428	-405	0	-2193

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Month-Year	Net Inflow of Water from the Saugus Formation and Adjoining Areas									Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
May-2025	0	9	40	687	144	0	562	708	2150	1301	588	150	551	2590	-440	0	-2633
Jun-2025	101	8	43	704	140	0	558	738	2293	1465	519	137	534	2655	-362	0	-2996
Jul-2025	0	9	54	776	144	0	588	815	2385	1825	450	130	548	2953	-568	0	-3563
Aug-2025	0	9	49	974	144	0	597	738	2511	1778	386	121	547	2832	-321	0	-3884
Sep-2025	0	8	39	1374	140	0	556	517	2634	1416	422	119	528	2486	149	0	-3735
Oct-2025	89	9	29	1453	144	0	600	323	2646	1121	482	131	548	2282	364	0	-3372
Nov-2025	117	8	19	1315	140	0	586	274	2460	804	545	139	532	2020	440	0	-2931
Dec-2025	156	9	14	1962	144	0	559	85	2930	665	741	160	551	2116	813	0	-2118
Jan-2026	0	9	15	668	144	0	585	496	1917	596	749	161	549	2054	-137	0	-2255
Feb-2026	0	8	20	417	130	0	530	545	1650	596	662	143	495	1897	-247	0	-2502
Mar-2026	0	9	26	475	144	0	595	638	1887	797	700	154	548	2199	-311	0	-2813
Apr-2026	0	8	36	1523	140	0	536	378	2621	1065	685	144	530	2424	197	0	-2616
May-2026	0	9	41	630	144	0	590	653	2068	1301	601	139	547	2589	-521	0	-3137
Jun-2026	0	8	44	559	140	0	589	727	2068	1465	505	127	529	2626	-558	0	-3696
Jul-2026	0	9	55	620	144	0	621	794	2243	1825	425	121	546	2917	-674	0	-4370
Aug-2026	0	9	51	642	144	0	632	779	2257	1778	377	116	545	2816	-559	0	-4929
Sep-2026	0	8	40	621	140	0	613	685	2107	1416	372	112	527	2426	-320	0	-5249
Oct-2026	0	9	29	622	144	0	635	656	2095	1121	438	122	544	2226	-131	0	-5380
Nov-2026	0	8	20	566	140	0	611	593	1938	804	498	128	528	1957	-19	0	-5399
Dec-2026	0	9	15	533	144	0	629	596	1926	665	592	142	546	1944	-18	0	-5417
Jan-2027	3443	9	15	1327	144	0	620	415	5973	701	1392	187	620	2899	3074	0	-2343
Feb-2027	302	8	20	1411	130	0	549	212	2633	671	998	160	513	2342	291	0	-2052
Mar-2027	1300	9	26	782	144	0	628	603	3492	902	1186	183	581	2851	641	0	-1411
Apr-2027	113	8	37	479	140	0	625	805	2208	1198	827	157	539	2722	-515	0	-1925
May-2027	41	9	42	870	144	0	667	726	2499	1477	686	153	552	2867	-368	0	-2293
Jun-2027	119	8	46	1126	140	0	631	752	2822	1675	636	142	534	2986	-164	0	-2458
Jul-2027	0	9	57	1426	144	0	648	762	3046	2088	562	135	548	3333	-288	0	-2745
Aug-2027	0	9	52	1574	144	0	644	702	3126	2053	522	129	547	3251	-125	0	-2871
Sep-2027	0	8	41	582	140	0	642	838	2252	1636	468	122	528	2754	-502	0	-3373
Oct-2027	0	9	30	1312	144	0	665	506	2665	1308	520	134	546	2508	157	0	-3216
Nov-2027	0	8	20	1123	140	0	635	466	2392	947	571	140	529	2188	205	0	-3011
Dec-2027	365	9	15	2692	144	0	586	-67	3743	792	839	166	555	2352	1391	0	-1620
Jan-2028	258	9	16	1570	144	0	587	220	2804	596	895	173	555	2218	586	0	-1034
Feb-2028	586	8	21	406	135	0	553	640	2348	618	909	164	526	2217	132	0	-902
Mar-2028	181	9	27	415	144	0	602	766	2145	797	893	168	555	2413	-269	0	-1171
Apr-2028	11	8	38	1163	140	0	557	599	2517	1065	824	155	532	2576	-59	0	-1230
May-2028	59	9	44	1048	144	0	580	689	2574	1301	804	153	550	2808	-234	0	-1465
Jun-2028	0	8	47	515	140	0	594	844	2148	1465	645	137	530	2778	-629	0	-2094
Jul-2028	0	9	58	588	144	0	631	930	2361	1825	547	130	547	3049	-688	0	-2782
Aug-2028	0	9	54	602	144	0	646	927	2382	1778	492	124	546	2940	-558	0	-3340

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW					
Sep-2028	0	8	42	672	140	0	628	794	2285	1416	487	121	527	2551	-266	0	-3606
Oct-2028	113	9	31	572	144	0	650	809	2329	1121	580	132	548	2380	-52	0	-3658
Nov-2028	92	8	21	1158	140	0	628	466	2513	804	649	140	531	2123	390	0	-3268
Dec-2028	757	9	16	1206	144	0	622	485	3239	665	952	168	563	2347	891	0	-2377
Jan-2029	210	9	16	407	144	0	634	757	2177	596	934	168	555	2253	-75	0	-2452
Feb-2029	7	8	22	402	130	0	571	688	1828	596	791	148	497	2032	-203	0	-2655
Mar-2029	0	9	28	1429	144	0	592	518	2719	797	918	163	549	2425	294	0	-2361
Apr-2029	0	8	39	1323	140	0	584	515	2609	1065	772	147	530	2514	95	0	-2266
May-2029	0	9	45	515	144	0	623	810	2146	1301	706	144	547	2698	-552	0	-2818
Jun-2029	0	8	48	530	140	0	617	855	2198	1465	606	132	529	2732	-534	0	-3352
Jul-2029	2	9	60	587	144	0	648	939	2389	1825	527	126	546	3025	-636	0	-3988
Aug-2029	0	9	55	607	144	0	659	932	2406	1778	480	122	545	2925	-518	0	-4506
Sep-2029	17	8	44	585	140	0	639	840	2272	1416	479	119	527	2541	-269	0	-4776
Oct-2029	0	9	32	581	144	0	660	811	2237	1121	556	129	545	2350	-113	0	-4889
Nov-2029	117	8	21	521	140	0	637	744	2188	804	635	136	530	2105	84	0	-4806
Dec-2029	212	9	16	782	144	0	656	653	2472	665	764	151	551	2132	340	0	-4466
Jan-2030	601	9	16	1721	144	0	623	239	3353	596	988	166	561	2310	1042	0	-3423
Feb-2030	3787	8	22	594	130	0	563	668	5772	596	1653	186	575	3011	2761	0	-662
Mar-2030	685	9	29	1275	144	0	628	484	3255	797	1372	191	578	2938	316	0	-346
Apr-2030	392	8	40	1403	140	0	611	451	3046	1065	1133	175	547	2919	127	0	-219
May-2030	947	9	46	533	144	0	638	970	3287	1301	1119	174	573	3168	120	0	-100
Jun-2030	10	8	50	856	140	0	625	818	2507	1465	853	157	536	3011	-503	0	-603
Jul-2030	0	9	62	907	144	0	644	970	2735	1825	734	148	550	3258	-522	0	-1125
Aug-2030	0	9	56	997	144	0	667	906	2779	1778	617	137	548	3081	-302	0	-1427
Sep-2030	36	8	45	1026	140	0	649	762	2665	1416	593	131	531	2671	-6	0	-1432
Oct-2030	57	9	33	842	144	0	669	787	2541	1121	674	141	549	2484	58	0	-1375
Nov-2030	234	8	22	1121	140	0	641	605	2770	804	767	146	535	2252	519	0	-856
Dec-2030	239	9	16	1434	144	0	632	488	2962	665	921	162	554	2301	660	0	-196
Jan-2031	0	9	17	1018	144	0	629	567	2384	596	951	165	550	2261	124	0	-72
Feb-2031	0	8	23	1059	130	0	555	480	2255	596	855	148	496	2096	159	0	87
Mar-2031	0	9	29	422	144	0	619	783	2008	797	914	160	549	2420	-413	0	-326
Apr-2031	0	8	41	1859	140	0	548	445	3041	1065	905	155	531	2656	385	0	60
May-2031	0	9	47	1671	144	0	564	504	2940	1301	850	155	548	2854	86	0	145
Jun-2031	0	8	51	651	140	0	588	811	2248	1465	719	136	530	2850	-602	0	-456
Jul-2031	0	9	63	563	144	0	628	957	2364	1825	625	131	547	3128	-764	0	-1220
Aug-2031	0	9	58	584	144	0	645	964	2404	1778	569	126	546	3019	-615	0	-1835
Sep-2031	0	8	46	563	140	0	630	877	2264	1416	560	123	528	2627	-363	0	-2198
Oct-2031	0	9	34	557	144	0	654	856	2254	1121	641	134	546	2441	-187	0	-2385
Nov-2031	0	8	22	501	140	0	632	789	2092	804	700	139	529	2170	-78	0	-2463
Dec-2031	0	9	17	464	144	0	654	799	2087	665	802	152	547	2166	-79	0	-2541

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW					
Jan-2032	29	9	17	431	144	0	651	796	2077	596	863	159	548	2165	-87	0	-2629
Feb-2032	226	8	23	1048	135	0	602	579	2621	618	845	150	517	2131	491	0	-2138
Mar-2032	76	9	30	1282	144	0	623	579	2742	797	888	158	550	2393	349	0	-1789
Apr-2032	50	8	41	446	140	0	616	801	2104	1065	770	146	532	2512	-408	0	-2197
May-2032	0	9	48	1048	144	0	636	771	2656	1301	765	146	548	2760	-104	0	-2301
Jun-2032	0	8	52	1007	140	0	621	784	2612	1465	685	136	529	2815	-204	0	-2505
Jul-2032	0	9	64	574	144	0	659	958	2409	1825	567	129	546	3066	-658	0	-3163
Aug-2032	7	9	59	597	144	0	672	955	2444	1778	508	123	545	2955	-511	0	-3674
Sep-2032	0	8	47	577	140	0	651	862	2285	1416	502	120	527	2565	-280	0	-3953
Oct-2032	27	9	34	571	144	0	673	835	2293	1121	584	131	545	2381	-88	0	-4041
Nov-2032	0	8	23	516	140	0	649	763	2099	804	645	136	528	2112	-13	0	-4055
Dec-2032	0	9	17	479	144	0	669	771	2088	665	747	150	546	2108	-20	0	-4075
Jan-2033	653	9	17	1191	144	0	675	475	3166	701	936	163	561	2361	805	0	-3270
Feb-2033	1205	8	24	919	130	0	594	547	3427	671	1045	157	522	2395	1033	0	-2237
Mar-2033	379	9	31	982	144	0	662	662	2868	902	1031	168	561	2662	206	0	-2032
Apr-2033	287	8	42	442	140	0	655	846	2419	1198	818	151	539	2706	-287	0	-2319
May-2033	0	9	49	558	144	0	693	887	2340	1477	682	144	550	2852	-512	0	-2831
Jun-2033	0	8	53	539	140	0	686	921	2347	1675	558	131	530	2894	-547	0	-3378
Jul-2033	0	9	65	604	144	0	722	992	2536	2088	463	125	547	3222	-686	0	-4064
Aug-2033	0	9	60	631	144	0	732	968	2544	2053	404	119	546	3121	-577	0	-4641
Sep-2033	0	8	47	622	140	0	697	845	2359	1636	395	115	527	2673	-314	0	-4955
Oct-2033	25	9	35	609	144	0	706	813	2341	1308	464	126	546	2444	-104	0	-5059
Nov-2033	356	8	23	1892	140	0	657	104	3181	947	620	137	536	2240	941	0	-4118
Dec-2033	146	9	17	2865	144	0	665	-309	3537	792	745	153	551	2242	1296	0	-2822
Jan-2034	0	9	18	452	144	0	664	738	2025	701	745	156	548	2150	-124	0	-2947
Feb-2034	0	8	24	412	130	0	589	700	1862	671	663	139	495	1969	-107	0	-3053
Mar-2034	0	9	31	469	144	0	658	806	2117	902	705	151	548	2306	-188	0	-3242
Apr-2034	0	8	43	489	140	0	643	836	2159	1198	609	139	530	2476	-317	0	-3559
May-2034	0	9	50	546	144	0	680	907	2335	1477	559	137	547	2720	-385	0	-3944
Jun-2034	0	8	53	566	140	0	673	924	2365	1675	477	126	529	2807	-443	0	-4387
Jul-2034	0	9	66	627	144	0	710	1014	2571	2088	406	121	545	3160	-589	0	-4976
Aug-2034	0	9	61	648	144	0	723	1004	2587	2053	363	116	544	3076	-489	0	-5465
Sep-2034	0	8	48	624	140	0	688	893	2401	1636	363	113	526	2638	-237	0	-5701
Oct-2034	0	9	35	622	144	0	698	848	2356	1308	432	124	544	2409	-53	0	-5754
Nov-2034	0	8	24	563	140	0	660	761	2155	947	497	129	527	2100	55	0	-5699
Dec-2034	0	9	18	525	144	0	671	759	2126	792	597	144	546	2078	48	0	-5651
Jan-2035	0	9	18	500	144	0	658	742	2071	701	661	150	547	2058	12	0	-5639
Feb-2035	472	8	24	595	130	0	581	624	2434	671	690	141	504	2006	428	0	-5210
Mar-2035	124	9	31	470	144	0	649	789	2217	902	719	153	551	2325	-108	0	-5319
Apr-2035	123	8	43	1192	140	0	598	635	2739	1198	690	144	533	2565	174	0	-5145

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	TOTAL OUTFLOW	Change in GW Storage	Error			
May-2035	89	9	50	941	144	0	634	2619	1477	618	141	2785	-166	0	-5311		
Jun-2035	0	8	54	869	140	0	645	2495	1675	502	128	2834	-339	0	-5650		
Jul-2035	1	9	67	621	144	0	686	2504	2088	418	122	3173	-669	0	-6319		
Aug-2035	0	9	62	644	144	0	701	2538	2053	369	116	3082	-545	0	-6864		
Sep-2035	0	8	49	623	140	0	669	2361	1636	365	113	2641	-280	0	-7144		
Oct-2035	57	9	36	733	144	0	680	2445	1308	440	124	2418	28	0	-7116		
Nov-2035	33	8	24	574	140	0	644	2163	947	502	130	2107	55	0	-7061		
Dec-2035	134	9	18	717	144	0	655	2353	792	618	145	2104	249	0	-6812		

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	9426	106	105	3	0	0	1063	10703	866	0	214	0	1080	9618	5	9618
Feb-2012	13311	99	142	0	0	0	437	13989	791	0	305	0	1096	12888	5	22506
Mar-2012	4404	106	183	3	0	0	1258	5955	894	0	315	0	1209	4739	6	27245
Apr-2012	328	103	254	0	0	0	-11	673	949	0	259	0	1207	-531	-3	26714
May-2012	364	106	294	0	0	0	-489	276	1059	0	231	0	1291	-1010	-5	25704
Jun-2012	0	103	317	0	0	0	-372	47	1107	0	198	0	1305	-1253	-5	24451
Jul-2012	0	106	393	0	0	0	-446	54	1475	0	185	0	1660	-1601	-5	22850
Aug-2012	0	106	360	0	0	0	-488	-21	1485	0	172	0	1656	-1672	-5	21178
Sep-2012	0	103	285	0	0	0	-627	-239	1333	0	156	0	1489	-1725	-3	19453
Oct-2012	0	106	209	0	0	0	-270	45	1050	0	157	0	1207	-1167	5	18286
Nov-2012	0	103	139	3	0	0	1142	1388	926	0	148	0	1074	308	5	18594
Dec-2012	1237	106	105	0	0	0	-112	1337	906	0	158	0	1064	268	5	18861
Jan-2013	536	106	107	0	0	0	-265	484	866	0	154	0	1020	-542	5	18319
Feb-2013	187	96	144	0	0	0	-285	142	764	0	134	0	898	-761	5	17558
Mar-2013	619	106	186	0	0	0	-400	511	894	0	148	0	1042	-535	4	17024
Apr-2013	52	103	258	0	0	0	-30	382	949	0	138	0	1087	-699	-5	16325
May-2013	0	106	299	0	0	0	-564	-158	1059	0	137	0	1197	-1350	-5	14975
Jun-2013	0	103	322	0	0	0	-720	-296	1107	0	129	0	1237	-1527	-5	13448
Jul-2013	0	106	400	0	0	0	-870	-364	1475	0	130	0	1605	-1964	-5	11484
Aug-2013	0	106	366	0	0	0	-883	-411	1485	0	127	0	1612	-2017	-5	9467
Sep-2013	0	103	290	0	0	0	-716	-323	1333	0	120	0	1453	-1772	-4	7695
Oct-2013	65	106	213	0	0	0	-634	-250	1050	0	121	0	1171	-1426	5	6269
Nov-2013	407	103	142	0	0	0	-512	140	926	0	116	0	1042	-908	5	5362
Dec-2013	25	106	107	0	0	0	-475	-237	906	0	116	0	1022	-1264	5	4098
Jan-2014	2107	106	108	0	0	0	-38	2283	866	0	130	0	997	1281	5	5379
Feb-2014	766	96	147	0	0	0	27	1036	764	0	120	0	884	147	5	5526
Mar-2014	6010	106	190	0	0	0	155	6461	894	0	181	0	1075	5380	6	10905
Apr-2014	690	103	262	0	0	0	-155	899	949	0	165	0	1114	-209	-6	10696
May-2014	82	106	304	0	0	0	-608	-115	1059	0	155	0	1215	-1325	-5	9371
Jun-2014	0	103	327	0	0	0	-622	-192	1107	0	140	0	1247	-1433	-5	7938
Jul-2014	0	106	407	0	0	0	-718	-205	1475	0	136	0	1611	-1810	-5	6127
Aug-2014	0	106	373	0	0	0	-725	-246	1485	0	130	0	1614	-1855	-5	4272
Sep-2014	645	103	295	0	0	0	-700	343	1333	0	127	0	1459	-1113	-4	3160
Oct-2014	158	106	216	0	0	0	-612	-131	1050	0	126	0	1177	-1313	5	1847
Nov-2014	3378	103	144	0	0	0	-207	3419	926	0	148	0	1073	2340	5	4187
Dec-2014	1866	106	108	0	0	0	-235	1847	906	0	158	0	1064	777	5	4964
Jan-2015	11118	106	110	0	0	0	-413	10922	866	0	246	0	1112	9805	5	14769
Feb-2015	8784	96	149	0	0	0	-100	8930	764	0	272	0	1036	7889	5	22658
Mar-2015	16761	106	193	0	0	0	-201	16859	894	0	434	0	1329	15524	6	38183

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Apr-2015	5912	103	267	0	0	0	-319	5962	949	0	400	0	1349	4612	2	42794
May-2015	256	106	309	0	0	0	-725	-53	1059	0	334	0	1393	-1441	-5	41353
Jun-2015	0	103	333	0	0	0	-633	-197	1107	0	270	0	1378	-1570	-5	39784
Jul-2015	0	106	413	0	0	0	-778	-259	1475	0	241	0	1716	-1970	-5	37814
Aug-2015	1500	106	379	0	0	0	-872	1113	1485	0	232	0	1716	-598	-5	37216
Sep-2015	2372	103	300	0	0	0	-768	2007	1333	0	228	0	1560	448	-2	37664
Oct-2015	2231	106	220	0	0	0	-536	2021	1050	0	237	0	1288	728	5	38392
Nov-2015	6463	103	147	3	0	0	454	7170	926	0	283	0	1209	5956	5	44348
Dec-2015	6579	106	110	3	0	0	1499	8298	906	0	334	0	1240	7052	5	51400
Jan-2016	0	106	112	0	0	0	-157	61	866	0	279	0	1145	-1089	5	50310
Feb-2016	0	99	152	0	0	0	-289	-38	791	0	228	0	1019	-1062	5	49249
Mar-2016	0	106	196	0	0	0	-425	-123	894	0	219	0	1113	-1240	4	48009
Apr-2016	0	103	271	0	0	0	-543	-170	949	0	196	0	1145	-1309	-5	46700
May-2016	0	106	314	0	0	0	-682	-262	1059	0	190	0	1249	-1506	-5	45194
Jun-2016	0	103	338	0	0	0	-783	-342	1107	0	175	0	1283	-1620	-5	43574
Jul-2016	0	106	420	0	0	0	-925	-398	1475	0	175	0	1650	-2043	-5	41531
Aug-2016	0	106	385	0	0	0	-932	-441	1485	0	168	0	1653	-2089	-5	39443
Sep-2016	0	103	305	0	0	0	-760	-353	1333	0	158	0	1491	-1840	-4	37603
Oct-2016	0	106	223	0	0	0	-680	-350	1050	0	157	0	1208	-1563	5	36040
Nov-2016	0	103	149	0	0	0	-559	-307	926	0	147	0	1073	-1385	5	34655
Dec-2016	0	106	112	0	0	0	-526	-308	906	0	147	0	1052	-1366	5	33290
Jan-2017	0	106	114	0	0	0	-515	-295	866	0	143	0	1009	-1309	5	31980
Feb-2017	0	96	154	0	0	0	-437	-187	764	0	127	0	890	-1082	5	30898
Mar-2017	0	106	199	0	0	0	-548	-243	894	0	137	0	1032	-1276	2	29622
Apr-2017	0	103	275	0	0	0	-645	-267	949	0	131	0	1080	-1341	-5	28280
May-2017	0	106	320	0	0	0	-786	-360	1059	0	134	0	1193	-1548	-5	26733
Jun-2017	0	103	344	0	0	0	-893	-447	1107	0	128	0	1236	-1677	-5	25056
Jul-2017	0	106	427	0	0	0	-1065	-532	1475	0	131	0	1606	-2133	-5	22923
Aug-2017	0	106	391	0	0	0	-1092	-594	1485	0	129	0	1614	-2203	-5	20720
Sep-2017	0	103	310	0	0	0	-905	-492	1333	0	123	0	1456	-1944	-4	18776
Oct-2017	0	106	227	0	0	0	-804	-470	1050	0	125	0	1175	-1651	5	17126
Nov-2017	0	103	151	0	0	0	-648	-394	926	0	118	0	1044	-1443	5	15683
Dec-2017	0	106	114	0	0	0	-591	-371	906	0	119	0	1025	-1401	5	14282
Jan-2018	3175	106	117	0	0	0	-255	3144	866	0	141	0	1007	2131	5	16413
Feb-2018	3616	96	158	0	0	0	-368	3502	764	0	148	0	911	2586	5	18999
Mar-2018	2931	106	205	0	0	0	-318	2923	894	0	173	0	1067	1850	6	20850
Apr-2018	478	103	283	0	0	0	-137	728	949	0	155	0	1104	-371	-5	20479
May-2018	0	106	329	0	0	0	-693	-258	1059	0	148	0	1207	-1459	-5	19019
Jun-2018	0	103	354	0	0	0	-851	-395	1107	0	135	0	1242	-1632	-5	17388

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Jul-2018	27	106	439	0	0	0	-1030	-458	1475	0	134	0	1609	-2061	-5	15327
Aug-2018	0	106	402	0	0	0	-1066	-557	1485	0	130	0	1614	-2166	-5	13160
Sep-2018	968	103	318	0	0	0	-887	502	1333	0	129	0	1462	-957	-4	12204
Oct-2018	370	106	234	0	0	0	-403	306	1050	0	131	0	1181	-880	5	11323
Nov-2018	843	103	156	0	0	0	-173	928	926	0	129	0	1054	-131	5	11192
Dec-2018	130	106	117	0	0	0	4	358	906	0	129	0	1035	-683	5	10509
Jan-2019	229	106	123	0	0	0	-232	226	1282	0	127	0	1409	-1178	-5	9331
Feb-2019	66	96	166	0	0	0	-171	158	1125	0	112	0	1237	-1078	-1	8253
Mar-2019	184	106	214	0	0	0	-221	283	1311	0	122	0	1433	-1144	-5	7109
Apr-2019	15	103	297	0	0	0	-246	169	1375	0	116	0	1491	-1317	-5	5792
May-2019	0	106	344	0	0	0	-395	56	1527	0	118	0	1645	-1584	-5	4208
Jun-2019	0	103	370	0	0	0	-484	-11	1589	0	113	0	1701	-1708	-5	2500
Jul-2019	10	106	460	0	0	0	-552	24	2289	0	115	0	2404	-2375	-5	125
Aug-2019	2	106	422	0	0	0	-526	4	2307	0	114	0	2421	-2412	-5	-2287
Sep-2019	0	103	333	0	0	0	-356	80	2096	0	108	0	2204	-2119	-5	-4406
Oct-2019	378	106	245	0	0	0	-301	428	1526	0	112	0	1639	-1216	5	-5622
Nov-2019	418	103	163	0	0	0	-208	476	1359	0	108	0	1467	-996	5	-6617
Dec-2019	523	106	123	0	0	0	-169	582	1338	0	112	0	1450	-872	5	-7490
Jan-2020	1188	106	129	0	0	0	-85	1338	1695	0	116	0	1811	-468	-5	-7958
Feb-2020	1232	99	175	0	0	0	167	1673	1552	0	113	0	1664	9	0	-7949
Mar-2020	421	106	226	0	0	0	77	830	1724	0	118	0	1841	-1006	-5	-8955
Apr-2020	1446	103	312	0	0	0	-103	1758	1774	0	120	0	1894	-131	-5	-9086
May-2020	33	106	362	0	0	0	-165	336	1940	0	118	0	2058	-1716	-5	-10802
Jun-2020	0	103	390	0	0	0	-341	151	1988	0	110	0	2098	-1942	-5	-12744
Jul-2020	0	106	484	0	0	0	-389	202	2950	0	111	0	3061	-2853	-5	-15597
Aug-2020	0	106	444	0	0	0	-365	184	2968	0	108	0	3077	-2887	-5	-18484
Sep-2020	36	103	351	0	0	0	-170	320	2736	0	103	0	2839	-2514	-5	-20998
Oct-2020	0	106	258	0	0	0	-26	338	2445	0	104	0	2549	-2216	5	-23214
Nov-2020	334	103	172	0	0	0	20	629	1759	0	100	0	1859	-1235	5	-24449
Dec-2020	2594	106	129	0	0	0	49	2878	1751	0	117	0	1868	1005	5	-23444
Jan-2021	0	106	134	0	0	0	17	258	1282	0	110	0	1392	-1140	5	-24584
Feb-2021	0	96	181	0	0	0	17	294	1125	0	95	0	1220	-931	5	-25515
Mar-2021	0	106	234	0	0	0	-62	278	1311	0	102	0	1412	-1140	5	-26655
Apr-2021	0	103	324	0	0	0	-189	237	1375	0	97	0	1471	-1232	-2	-27887
May-2021	0	106	376	0	0	0	-328	154	1527	0	99	0	1625	-1466	-6	-29353
Jun-2021	0	103	404	0	0	0	-460	47	1589	0	94	0	1683	-1631	-5	-30984
Jul-2021	0	106	502	0	0	0	-576	33	2289	0	97	0	2386	-2348	-5	-33332
Aug-2021	0	106	460	0	0	0	-581	-14	2307	0	96	0	2403	-2412	-5	-35744
Sep-2021	0	103	364	0	0	0	-405	62	2096	0	92	0	2188	-2121	-5	-37865

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	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Oct-2021	0	106	267	0	0	0	-329	44	1526	0	93	0	1619	-1580	5	-39445
Nov-2021	0	103	178	0	0	0	-209	72	1359	0	88	0	1447	-1380	5	-40825
Dec-2021	0	106	134	0	0	0	-147	93	1338	0	89	0	1427	-1339	5	-42164
Jan-2022	0	106	137	0	0	0	-18	226	1695	0	88	0	1783	-1552	-5	-43716
Feb-2022	0	96	186	0	0	0	57	339	1498	0	78	0	1577	-1238	0	-44954
Mar-2022	0	106	240	0	0	0	34	380	1724	0	86	0	1810	-1424	-5	-46378
Apr-2022	0	103	332	0	0	0	-64	370	1774	0	83	0	1857	-1482	-5	-47860
May-2022	0	106	385	0	0	0	-175	316	1940	0	85	0	2025	-1704	-5	-49564
Jun-2022	0	103	414	0	0	0	-297	220	1988	0	83	0	2071	-1845	-5	-51409
Jul-2022	0	106	515	0	0	0	-340	282	2950	0	85	0	3035	-2748	-5	-54158
Aug-2022	0	106	472	0	0	0	-316	262	2968	0	85	0	3053	-2786	-5	-56943
Sep-2022	0	103	373	0	0	0	-131	345	2736	0	81	0	2817	-2467	-5	-59410
Oct-2022	0	106	274	0	0	0	7	387	2445	0	83	0	2528	-2146	5	-61557
Nov-2022	0	103	183	0	0	0	69	354	1759	0	79	0	1838	-1488	5	-63045
Dec-2022	0	106	137	0	0	0	125	369	1751	0	80	0	1831	-1468	5	-64512
Jan-2023	691	106	140	0	0	0	548	1485	2565	0	82	0	2648	-1162	-1	-65674
Feb-2023	3561	96	189	0	0	0	997	4844	2284	0	90	0	2374	2466	3	-63208
Mar-2023	7054	106	244	0	0	0	990	8394	2594	0	135	0	2729	5670	-4	-57538
Apr-2023	0	103	338	0	0	0	515	956	2616	0	115	0	2732	-1771	-5	-59309
May-2023	0	106	392	0	0	0	380	879	2810	0	109	0	2918	-2034	-5	-61343
Jun-2023	0	103	422	0	0	0	216	741	2830	0	99	0	2929	-2183	-5	-63526
Jul-2023	0	106	524	0	0	0	130	760	3548	0	97	0	3646	-2880	-5	-66406
Aug-2023	0	106	480	0	0	0	105	692	3567	0	94	0	3661	-2963	-5	-69369
Sep-2023	0	103	380	0	0	0	255	738	3315	0	88	0	3403	-2660	-5	-72030
Oct-2023	311	106	279	0	0	0	521	1217	3296	0	90	0	3386	-2173	4	-74202
Nov-2023	0	103	186	0	0	0	585	874	2932	0	84	0	3016	-2148	5	-76350
Dec-2023	3704	106	140	0	0	0	936	4886	2621	0	106	0	2727	2153	5	-74197
Jan-2024	3629	106	142	3	0	0	2105	5986	2565	0	121	0	2686	3294	5	-70903
Feb-2024	18411	99	192	3	0	0	1873	20578	2365	0	226	0	2592	17981	5	-52922
Mar-2024	10765	106	248	3	0	0	1805	12928	2594	0	282	0	2875	10047	6	-42875
Apr-2024	166	103	343	0	0	0	1067	1679	2616	0	221	0	2837	-1153	-5	-44028
May-2024	376	106	398	0	0	0	747	1627	2810	0	194	0	3004	-1371	-5	-45399
Jun-2024	0	103	428	0	0	0	727	1258	2830	0	164	0	2994	-1731	-5	-47130
Jul-2024	332	106	532	0	0	0	445	1416	3548	0	155	0	3704	-2282	-5	-49413
Aug-2024	0	106	488	0	0	0	382	976	3567	0	142	0	3709	-2728	-5	-52140
Sep-2024	0	103	386	0	0	0	498	987	3315	0	129	0	3443	-2452	-4	-54593
Oct-2024	1715	106	283	0	0	0	828	2933	3296	0	139	0	3435	-507	5	-55100
Nov-2024	0	103	189	0	0	0	992	1284	2932	0	125	0	3057	-1779	5	-56879
Dec-2024	8021	106	142	0	0	0	1140	9410	2621	0	189	0	2810	6594	5	-50284

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December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2025	17607	106	144	0	0	0	1281	19138	866	0	331	0	1197	17935	5	-32349
Feb-2025	12070	96	195	3	0	0	2740	15105	764	0	360	0	1123	13977	5	-18373
Mar-2025	4394	106	252	3	0	0	1482	6237	894	0	365	0	1260	4972	5	-13401
Apr-2025	0	103	348	0	0	0	897	1348	949	0	291	0	1240	103	5	-13298
May-2025	0	106	404	0	0	0	295	805	1059	0	253	0	1312	-512	5	-13810
Jun-2025	669	103	434	0	0	0	39	1245	1107	0	221	0	1328	-86	2	-13895
Jul-2025	0	106	540	0	0	0	-161	485	1475	0	204	0	1679	-1188	-5	-15083
Aug-2025	0	106	495	0	0	0	-166	435	1485	0	186	0	1671	-1231	-5	-16314
Sep-2025	0	103	391	0	0	0	68	562	1333	0	168	0	1501	-944	5	-17258
Oct-2025	587	106	287	0	0	0	621	1601	1050	0	171	0	1222	375	5	-16884
Nov-2025	772	103	191	0	0	0	721	1787	926	0	167	0	1093	689	5	-16194
Dec-2025	1029	106	144	3	0	0	1557	2840	906	0	176	0	1081	1753	5	-14441
Jan-2026	0	106	146	0	0	0	482	734	1282	0	164	0	1447	-708	-5	-15149
Feb-2026	0	96	197	0	0	0	289	582	1125	0	141	0	1266	-687	3	-15836
Mar-2026	0	106	255	0	0	0	225	586	1311	0	150	0	1460	-869	-5	-16705
Apr-2026	0	103	353	0	0	0	376	831	1375	0	141	0	1515	-679	-5	-17384
May-2026	0	106	409	0	0	0	44	560	1527	0	142	0	1668	-1103	-5	-18487
Jun-2026	0	103	440	0	0	0	-138	405	1589	0	134	0	1723	-1312	-5	-19800
Jul-2026	0	106	547	0	0	0	-225	428	2289	0	136	0	2425	-1991	-5	-21791
Aug-2026	0	106	501	0	0	0	-221	387	2307	0	134	0	2441	-2049	-5	-23840
Sep-2026	0	103	397	0	0	0	-76	423	2096	0	126	0	2222	-1795	-5	-25635
Oct-2026	0	106	291	0	0	0	-23	374	1526	0	127	0	1654	-1285	5	-26920
Nov-2026	0	103	194	0	0	0	49	345	1359	0	120	0	1478	-1138	5	-28058
Dec-2026	0	106	146	0	0	0	84	336	1338	0	120	0	1458	-1127	5	-29185
Jan-2027	22733	106	148	1	0	0	788	23776	866	0	330	0	1196	22575	5	-6610
Feb-2027	1996	96	200	3	0	0	1055	3350	764	0	263	0	1026	2319	5	-4291
Mar-2027	8584	106	258	0	0	0	467	9416	894	0	338	0	1232	8178	5	3887
Apr-2027	745	103	357	0	0	0	-120	1085	949	0	276	0	1224	-144	4	3743
May-2027	269	106	415	0	0	0	-10	780	1059	0	247	0	1306	-522	-4	3221
Jun-2027	786	103	446	0	0	0	-345	990	1107	0	218	0	1325	-330	-5	2891
Jul-2027	0	106	554	0	0	0	-508	152	1475	0	201	0	1676	-1518	-5	1373
Aug-2027	0	106	508	0	0	0	-533	81	1485	0	185	0	1669	-1583	-5	-210
Sep-2027	0	103	402	0	0	0	-606	-102	1333	0	168	0	1500	-1600	-2	-1811
Oct-2027	0	106	295	0	0	0	9	410	1050	0	166	0	1216	-811	5	-2622
Nov-2027	0	103	197	0	0	0	143	442	926	0	156	0	1082	-645	5	-3267
Dec-2027	2410	106	148	3	0	0	1936	4603	906	0	181	0	1087	3511	5	244
Jan-2028	1707	106	150	0	0	0	962	2925	866	0	190	0	1056	1864	5	2108
Feb-2028	3868	99	203	0	0	0	124	4294	791	0	203	0	994	3295	5	5403
Mar-2028	1195	106	262	0	0	0	-78	1485	894	0	206	0	1101	379	6	5782

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Apr-2028	75	103	362	0	0	0	-40	500	949	0	181	0	1130	-626	-4	5156
May-2028	391	106	420	0	0	0	-215	702	1059	0	177	0	1236	-529	-5	4627
Jun-2028	0	103	452	0	0	0	-488	66	1107	0	161	0	1268	-1197	-5	3430
Jul-2028	0	106	562	0	0	0	-652	15	1475	0	159	0	1634	-1613	-5	1817
Aug-2028	0	106	514	0	0	0	-688	-67	1485	0	153	0	1637	-1699	-5	117
Sep-2028	0	103	407	0	0	0	-486	24	1333	0	143	0	1476	-1449	-3	-1331
Oct-2028	747	106	299	0	0	0	-452	700	1050	0	149	0	1199	-505	5	-1836
Nov-2028	609	103	199	0	0	0	186	1097	926	0	145	0	1070	21	5	-1815
Dec-2028	5000	106	150	0	0	0	448	5704	906	0	194	0	1100	4599	5	2784
Jan-2029	1387	106	152	0	0	0	-131	1514	866	0	187	0	1053	456	5	3240
Feb-2029	48	96	205	0	0	0	-130	219	764	0	154	0	918	-704	5	2536
Mar-2029	0	106	265	0	0	0	23	395	894	0	159	0	1053	-663	5	1872
Apr-2029	0	103	367	0	0	0	-96	374	949	0	146	0	1095	-716	-5	1156
May-2029	0	106	426	0	0	0	-454	78	1059	0	146	0	1205	-1122	-5	34
Jun-2029	0	103	458	0	0	0	-599	-39	1107	0	138	0	1245	-1279	-5	-1245
Jul-2029	10	106	569	0	0	0	-759	-73	1475	0	140	0	1614	-1682	-5	-2927
Aug-2029	0	106	521	0	0	0	-784	-156	1485	0	136	0	1621	-1772	-5	-4699
Sep-2029	110	103	412	0	0	0	-626	-1	1333	0	129	0	1462	-1460	-3	-6159
Oct-2029	0	106	302	0	0	0	-544	-135	1050	0	129	0	1180	-1320	5	-7479
Nov-2029	776	103	202	0	0	0	-428	652	926	0	127	0	1053	-406	5	-7885
Dec-2029	1397	106	152	0	0	0	-290	1365	906	0	137	0	1043	317	5	-7568
Jan-2030	3967	106	154	3	0	0	2787	7017	866	0	165	0	1031	5980	5	-1588
Feb-2030	25008	96	208	0	0	0	1023	26335	764	0	380	0	1144	25186	5	23598
Mar-2030	4524	106	268	3	0	0	1332	6234	894	0	386	0	1280	4948	6	28546
Apr-2030	2592	103	371	3	0	0	834	3903	949	0	335	0	1284	2614	5	31161
May-2030	6252	106	431	0	0	0	-287	6502	1059	0	362	0	1421	5086	-5	36247
Jun-2030	68	103	463	0	0	0	-164	470	1107	0	296	0	1403	-928	-5	35319
Jul-2030	0	106	576	0	0	0	-577	105	1475	0	264	0	1739	-1629	-5	33690
Aug-2030	0	106	528	0	0	0	-610	24	1485	0	234	0	1718	-1689	-5	32001
Sep-2030	239	103	417	0	0	0	-430	329	1333	0	208	0	1541	-1210	-3	30792
Oct-2030	375	106	306	0	0	0	-422	366	1050	0	202	0	1253	-892	5	29900
Nov-2030	1546	103	204	0	0	0	-211	1642	926	0	199	0	1125	512	5	30412
Dec-2030	1580	106	154	0	0	0	-68	1772	906	0	207	0	1112	655	5	31066
Jan-2031	0	106	155	0	0	0	-139	123	866	0	189	0	1056	-938	5	30128
Feb-2031	0	96	210	0	0	0	-79	228	764	0	162	0	925	-702	5	29426
Mar-2031	0	106	272	0	0	0	-388	-11	894	0	171	0	1065	-1079	4	28347
Apr-2031	0	103	376	0	0	0	-158	320	949	0	160	0	1109	-783	-5	27563
May-2031	0	106	436	0	0	0	-301	241	1059	0	160	0	1220	-973	-5	26590
Jun-2031	0	103	469	0	0	0	-703	-131	1107	0	151	0	1259	-1385	-5	25205

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Net Inflow from Alluvium + Net Lateral Inflow from								Subsurface Outflow at Blue Cut (County Line)					Change in GW Storage		Cum. Change in GW Storage After 2011
	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Jul-2031	0	106	583	0	0	0	-898	-209	1475	0	154	0	1628	-1833	-5	23373
Aug-2031	0	106	534	0	0	0	-917	-277	1485	0	150	0	1635	-1907	-5	21466
Sep-2031	0	103	422	0	0	0	-751	-226	1333	0	142	0	1475	-1697	-4	19768
Oct-2031	0	106	310	0	0	0	-670	-254	1050	0	143	0	1193	-1452	5	18316
Nov-2031	0	103	207	0	0	0	-547	-238	926	0	135	0	1060	-1303	5	17013
Dec-2031	0	106	155	0	0	0	-511	-249	906	0	136	0	1041	-1296	5	15717
Jan-2032	192	106	157	0	0	0	-463	-8	866	0	134	0	1000	-1014	5	14703
Feb-2032	1495	99	213	0	0	0	-264	1543	791	0	135	0	926	613	5	15316
Mar-2032	499	106	275	0	0	0	-292	589	894	0	142	0	1037	-452	4	14864
Apr-2032	333	103	380	0	0	0	-556	260	949	0	136	0	1085	-820	-5	14044
May-2032	0	106	441	0	0	0	-625	-77	1059	0	136	0	1195	-1267	-5	12778
Jun-2032	0	103	475	0	0	0	-724	-147	1107	0	128	0	1236	-1378	-5	11400
Jul-2032	0	106	590	0	0	0	-930	-234	1475	0	130	0	1605	-1834	-5	9565
Aug-2032	49	106	540	0	0	0	-937	-242	1485	0	129	0	1613	-1849	-5	7716
Sep-2032	0	103	427	0	0	0	-762	-232	1333	0	122	0	1455	-1683	-4	6033
Oct-2032	179	106	314	0	0	0	-676	-77	1050	0	124	0	1175	-1257	5	4776
Nov-2032	0	103	209	0	0	0	-545	-234	926	0	117	0	1043	-1282	5	3494
Dec-2032	0	106	157	0	0	0	-504	-241	906	0	118	0	1024	-1270	5	2224
Jan-2033	4315	106	159	0	0	0	-104	4476	1282	0	150	0	1432	3049	-5	5273
Feb-2033	7957	96	215	0	0	0	-128	8140	1125	0	190	0	1315	6822	2	12095
Mar-2033	2500	106	278	0	0	0	-236	2648	1311	0	205	0	1515	1138	-5	13233
Apr-2033	1893	103	385	0	0	0	-477	1903	1375	0	191	0	1565	343	-5	13576
May-2033	0	106	446	0	0	0	-587	-34	1527	0	174	0	1700	-1729	-5	11847
Jun-2033	0	103	480	0	0	0	-701	-118	1589	0	153	0	1742	-1855	-5	9992
Jul-2033	0	106	597	0	0	0	-801	-98	2289	0	148	0	2437	-2530	-5	7462
Aug-2033	0	106	546	0	0	0	-788	-135	2307	0	141	0	2448	-2578	-5	4884
Sep-2033	0	103	432	0	0	0	-592	-57	2096	0	131	0	2227	-2279	-5	2605
Oct-2033	163	106	317	0	0	0	-523	63	1526	0	132	0	1658	-1600	5	1005
Nov-2033	2352	103	211	0	0	0	275	2940	1359	0	143	0	1501	1434	5	2439
Dec-2033	961	106	159	3	0	0	945	2175	1338	0	147	0	1485	685	5	3124
Jan-2034	0	106	161	0	0	0	-55	212	866	0	138	0	1004	-797	5	2327
Feb-2034	0	96	218	0	0	0	-140	174	764	0	119	0	883	-714	5	1613
Mar-2034	0	106	281	0	0	0	-268	120	894	0	127	0	1022	-907	5	706
Apr-2034	0	103	389	0	0	0	-407	85	949	0	120	0	1069	-986	2	-280
May-2034	0	106	451	0	0	0	-572	-15	1059	0	122	0	1182	-1191	-6	-1471
Jun-2034	0	103	485	0	0	0	-713	-125	1107	0	117	0	1224	-1344	-5	-2815
Jul-2034	0	106	603	0	0	0	-901	-192	1475	0	120	0	1595	-1781	-5	-4596
Aug-2034	0	106	553	0	0	0	-943	-284	1485	0	119	0	1603	-1882	-5	-6478
Sep-2034	0	103	437	0	0	0	-769	-229	1333	0	113	0	1446	-1671	-3	-8150

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



							Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW								Cum. Change in GW Storage After 2011
Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow					Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	
Oct-2034	0	106	321	0	0		0	-669	-242	1050	0	114	0	1165	-1412	5	-9561
Nov-2034	0	103	214	0	0		0	-520	-204	926	0	108	0	1034	-1243	5	-10804
Dec-2034	0	106	161	0	0		0	-462	-195	906	0	109	0	1015	-1215	5	-12019
Jan-2035	0	106	163	0	0		0	-390	-121	866	0	107	0	974	-1100	5	-13119
Feb-2035	3116	96	220	0	0		0	-148	3284	764	0	116	0	880	2399	5	-10719
Mar-2035	821	106	284	0	0		0	-368	844	894	0	127	0	1021	-183	5	-10902
Apr-2035	811	103	393	0	0		0	-308	999	949	0	122	0	1071	-67	-5	-10969
May-2035	587	106	456	0	0		0	-510	639	1059	0	125	0	1184	-539	-5	-11508
Jun-2035	0	103	491	0	0		0	-650	-56	1107	0	115	0	1223	-1274	-5	-12782
Jul-2035	7	106	610	0	0		0	-938	-215	1475	0	116	0	1591	-1800	-5	-14582
Aug-2035	0	106	559	0	0		0	-983	-318	1485	0	113	0	1598	-1911	-5	-16493
Sep-2035	0	103	442	0	0		0	-805	-260	1333	0	107	0	1440	-1696	-4	-18189
Oct-2035	380	106	324	0	0		0	-605	205	1050	0	111	0	1161	-961	5	-19150
Nov-2035	217	103	216	0	0		0	-524	13	926	0	105	0	1031	-1023	5	-20173
Dec-2035	887	106	163	0	0		0	-229	927	906	0	111	0	1017	-95	5	-20268

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	15797	206	199	11190	144	380	-168	27747	2744	1927	956	578	6204	21537	6	21537
Feb-2012	22308	192	269	5650	135	282	210	29048	2400	2236	1131	559	6327	22715	5	44253
Mar-2012	7380	206	347	11523	144	341	-117	19824	3025	2344	1288	571	7228	12588	8	56841
Apr-2012	549	199	480	2920	140	388	388	5065	3721	1830	1115	537	7203	-2128	-10	54713
May-2012	610	206	558	1010	144	512	659	3698	4585	1638	1049	551	7822	-4118	-6	50595
Jun-2012	0	199	600	1738	140	540	697	3914	5208	1365	933	531	8037	-4117	-6	46478
Jul-2012	0	206	745	1979	144	599	748	4421	6593	1192	891	547	9223	-4796	-6	41682
Aug-2012	0	206	683	1883	144	636	744	4295	6674	1095	834	546	9149	-4848	-6	36834
Sep-2012	0	199	540	981	140	632	680	3172	5480	1079	758	528	7844	-4666	-7	32168
Oct-2012	0	206	396	3315	144	589	498	5148	4478	1199	790	545	7013	-1871	5	30297
Nov-2012	0	199	264	11186	140	409	-145	12053	3478	1306	860	529	6172	5876	5	36173
Dec-2012	2074	206	199	2180	144	492	384	5678	3109	1511	875	551	6046	-373	6	35800
Jan-2013	898	206	201	1631	144	571	459	4109	2744	1582	849	550	5725	-1622	6	34178
Feb-2013	313	186	272	858	130	550	535	2844	2317	1414	732	496	4959	-2119	5	32059
Mar-2013	1037	206	351	1532	144	610	546	4426	3025	1547	791	550	5913	-1495	7	30564
Apr-2013	87	199	486	2575	140	627	577	4690	3721	1394	730	530	6376	-1680	-6	28885
May-2013	0	206	564	1032	144	674	649	3269	4585	1334	711	547	7178	-3903	-6	24982
Jun-2013	0	199	607	909	140	675	657	3186	5208	1163	647	529	7546	-4355	-6	20627
Jul-2013	0	206	754	997	144	718	707	3526	6593	1050	628	545	8816	-5285	-6	15342
Aug-2013	0	206	691	1030	144	739	709	3518	6674	964	597	544	8779	-5255	-6	10087
Sep-2013	0	199	546	1379	140	725	582	3570	5480	963	563	526	7532	-3955	-6	6131
Oct-2013	109	206	401	1344	144	765	577	3545	4478	1074	572	544	6668	-3128	5	3003
Nov-2013	683	199	267	1423	140	732	536	3979	3478	1147	558	529	5711	-1738	5	1265
Dec-2013	41	206	201	1433	144	775	501	3301	3109	1272	572	546	5500	-2205	6	-939
Jan-2014	3531	206	203	5150	144	648	81	9963	2819	1394	704	553	5470	4488	6	3548
Feb-2014	1283	186	275	5408	130	559	-231	7610	2367	1251	676	498	4791	2814	5	6363
Mar-2014	10073	206	355	6921	144	516	-90	18125	3096	1585	901	567	6149	11966	10	18329
Apr-2014	1156	199	492	3508	140	546	276	6316	3810	1311	847	535	6503	-179	-7	18150
May-2014	138	206	571	1280	144	638	578	3554	4704	1182	815	548	7249	-3689	-6	14461
Jun-2014	0	199	614	1641	140	663	591	3848	5352	965	727	529	7573	-3719	-6	10742
Jul-2014	0	206	762	1904	144	710	623	4350	6773	833	690	546	8842	-4486	-6	6256
Aug-2014	0	206	699	2444	144	685	568	4745	6865	744	648	544	8802	-4051	-6	2205
Sep-2014	1082	199	553	2021	140	648	516	5159	5633	740	618	528	7519	-2354	-7	-150
Oct-2014	265	206	405	2073	144	677	515	4285	4611	853	628	545	6637	-2358	5	-2507
Nov-2014	5662	199	270	3763	140	601	339	10973	3580	1034	699	539	5851	5116	5	2609
Dec-2014	3128	206	203	4112	144	613	140	8546	3201	1189	764	554	5707	2833	6	5442
Jan-2015	18634	206	206	2702	144	536	259	22687	2744	1683	940	584	5952	16730	6	22172
Feb-2015	14722	186	278	3238	130	459	384	19398	2317	1678	941	528	5464	13928	5	36100
Mar-2015	28090	206	359	4415	144	285	481	33980	3025	2514	1337	609	7484	26489	7	62589
Apr-2015	9908	199	497	3355	140	350	551	15000	3721	2093	1248	561	7623	7368	9	69956
May-2015	430	206	577	1712	144	512	612	4192	4585	1683	1129	556	7953	-3754	-6	66202

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jun-2015	0	199	621	2082	140	545	662	4249	5208	1493	984	533	8219	-3964	-6	62238
Jul-2015	0	206	771	2180	144	597	682	4580	6593	1378	926	549	9446	-4860	-6	57377
Aug-2015	2515	206	706	1797	144	603	717	6688	6674	1342	891	552	9458	-2764	-6	54613
Sep-2015	3976	199	559	1470	140	543	731	7618	5480	1240	856	538	8114	-493	-3	54120
Oct-2015	3740	206	410	2729	144	525	642	8396	4478	1421	911	556	7366	1024	5	55144
Nov-2015	10832	199	273	16103	140	204	-1129	26622	3478	2000	1150	553	7181	19435	5	74579
Dec-2015	11026	206	206	14475	144	272	-439	25890	3109	2458	1388	575	7530	18354	6	92933
Jan-2016	0	206	208	656	144	454	629	2298	2744	1900	1197	555	6396	-4104	5	88829
Feb-2016	0	192	281	1247	135	464	538	2857	2400	1717	1040	516	5674	-2821	5	86007
Mar-2016	0	206	363	1130	144	532	649	3025	3025	1751	1036	550	6362	-3341	3	82667
Apr-2016	0	199	503	984	140	541	687	3054	3721	1563	937	532	6753	-3693	-7	78974
May-2016	0	206	584	960	144	584	747	3225	4585	1474	903	549	7511	-4280	-6	74694
Jun-2016	0	199	628	1000	140	585	734	3285	5208	1302	820	530	7861	-4571	-6	70123
Jul-2016	0	206	780	1146	144	624	766	3665	6593	1182	796	547	9118	-5447	-6	64676
Aug-2016	0	206	714	1369	144	643	708	3784	6674	1094	754	546	9068	-5278	-6	59398
Sep-2016	0	199	565	1093	140	640	714	3351	5480	1052	700	528	7760	-4402	-6	54996
Oct-2016	0	206	415	1171	144	680	685	3300	4478	1154	702	546	6880	-3585	5	51411
Nov-2016	0	199	276	1784	140	674	421	3495	3478	1218	667	529	5892	-2402	5	49008
Dec-2016	0	206	208	1428	144	713	529	3228	3109	1367	678	547	5701	-2478	6	46530
Jan-2017	0	206	210	1307	144	726	511	3105	2819	1410	663	548	5440	-2341	5	44189
Feb-2017	0	186	285	1205	130	665	448	2919	2367	1271	583	495	4716	-1802	5	42387
Mar-2017	0	206	368	1114	144	745	569	3146	3096	1361	623	548	5628	-2481	-1	39906
Apr-2017	0	199	509	1077	140	727	571	3221	3810	1201	577	530	6119	-2891	-7	37016
May-2017	0	206	590	1030	144	757	616	3344	4704	1086	567	547	6903	-3554	-6	33462
Jun-2017	0	199	635	984	140	749	606	3312	5352	913	519	529	7313	-3995	-6	29467
Jul-2017	0	206	789	1070	144	781	639	3629	6773	795	504	546	8618	-4984	-6	24483
Aug-2017	0	206	723	1098	144	788	637	3596	6865	712	479	545	8601	-4999	-6	19484
Sep-2017	0	199	572	1075	140	763	596	3345	5633	692	450	527	7301	-3950	-7	15534
Oct-2017	0	206	420	1252	144	793	574	3388	4611	807	462	544	6425	-3043	5	12491
Nov-2017	0	199	280	1221	140	773	522	3134	3580	884	449	528	5441	-2312	5	10179
Dec-2017	0	206	210	1279	144	805	505	3150	3201	1019	466	546	5232	-2088	6	8092
Jan-2018	5322	206	214	3681	144	696	257	10520	2819	1212	594	557	5182	5331	6	13423
Feb-2018	6060	186	290	2570	130	600	162	9998	2367	1198	587	507	4659	5334	5	18758
Mar-2018	4912	206	374	3125	144	635	347	9743	3096	1332	702	559	5689	4044	10	22802
Apr-2018	802	199	518	2818	140	676	519	5672	3810	1152	638	534	6134	-455	-6	22346
May-2018	0	206	601	1137	144	732	604	3425	4704	1053	608	548	6914	-3483	-6	18863
Jun-2018	0	199	647	1003	140	728	604	3321	5352	874	544	529	7299	-3972	-6	14891
Jul-2018	46	206	804	1174	144	762	628	3763	6773	756	522	546	8598	-4829	-6	10062
Aug-2018	0	206	736	1138	144	771	631	3626	6865	675	490	545	8575	-4943	-6	5120
Sep-2018	1622	199	582	1069	140	747	598	4958	5633	679	469	530	7311	-2348	-6	2772
Oct-2018	620	206	427	4384	144	680	292	6754	4611	787	578	546	6523	225	5	2998

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Entire Aquifer System (Alluvium and Saugus Combined)
 Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
 December 2014



Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo- trans- piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Nov-2018	1412	199	285	4609	140	601	223	7469	3580	888	626	531	5625	1839	5	4836
Dec-2018	219	206	214	5358	144	568	145	6854	3201	1020	690	547	5459	1389	6	6226
Jan-2019	383	206	221	1321	144	641	551	3468	3160	1113	678	548	5500	-2027	-5	4198
Feb-2019	111	186	299	1128	130	600	528	2982	2678	1016	595	495	4784	-1807	4	2392
Mar-2019	309	206	386	1061	144	695	616	3416	3441	1104	630	548	5724	-2303	-5	89
Apr-2019	26	199	534	1531	140	683	588	3701	4147	1028	584	529	6289	-2583	-5	-2494
May-2019	0	206	620	1069	144	741	645	3425	5052	931	569	547	7098	-3667	-6	-6162
Jun-2019	0	199	667	1012	140	745	655	3417	5689	808	520	528	7545	-4123	-6	-10284
Jul-2019	16	206	829	1090	144	788	704	3776	7407	709	505	545	9166	-5384	-6	-15668
Aug-2019	4	206	759	1113	144	805	703	3735	7496	642	479	544	9161	-5421	-6	-21089
Sep-2019	0	199	601	1083	140	795	644	3461	6243	623	447	526	7838	-4372	-5	-25461
Oct-2019	634	206	441	1088	144	833	631	3977	4955	720	457	545	6676	-2705	5	-28166
Nov-2019	701	199	294	1529	140	800	498	4161	3911	814	447	529	5700	-1545	5	-29710
Dec-2019	876	206	221	1870	144	811	441	4569	3541	954	491	548	5534	-970	6	-30681
Jan-2020	1991	206	229	1894	144	776	446	5686	3648	1030	519	550	5748	-56	-5	-30737
Feb-2020	2064	192	310	3944	135	690	180	7516	3212	982	568	516	5277	2237	2	-28500
Mar-2020	706	206	400	3332	144	738	221	5747	3925	995	607	549	6076	-324	-6	-28824
Apr-2020	2424	199	554	1654	140	726	443	6139	4635	896	575	534	6640	-495	-6	-29319
May-2020	55	206	643	2017	144	793	461	4318	5584	794	549	547	7474	-3151	-6	-32470
Jun-2020	0	199	691	1121	140	783	550	3483	6233	661	494	528	7917	-4428	-6	-36898
Jul-2020	0	206	859	1143	144	833	600	3786	8248	511	475	545	9779	-5988	-6	-42886
Aug-2020	0	206	787	1175	144	849	604	3764	8349	417	448	544	9757	-5987	-6	-48873
Sep-2020	61	199	623	1646	140	798	527	3992	7036	382	425	526	8369	-4371	-6	-53244
Oct-2020	0	206	457	1867	144	818	509	4000	6006	430	446	543	7425	-3429	5	-56673
Nov-2020	560	199	305	1409	140	799	504	3915	4413	499	436	528	5875	-1966	5	-58639
Dec-2020	4348	206	229	1081	144	823	553	7384	4046	668	482	554	5751	1628	6	-57011
Jan-2021	0	206	236	1075	144	854	537	3051	3235	718	468	547	4968	-1922	5	-58933
Feb-2021	0	186	319	1030	130	781	467	2914	2728	666	412	494	4299	-1391	5	-60324
Mar-2021	0	206	412	1084	144	874	526	3247	3512	723	441	547	5223	-1981	5	-62305
Apr-2021	0	199	571	1051	140	855	519	3335	4236	624	407	529	5796	-2457	-4	-64762
May-2021	0	206	662	1109	144	898	546	3566	5171	567	402	546	6686	-3114	-6	-67876
Jun-2021	0	199	712	1100	140	882	538	3571	5833	473	371	527	7205	-3628	-6	-71504
Jul-2021	0	206	885	1173	144	917	571	3897	7587	377	361	544	8869	-4967	-6	-76471
Aug-2021	0	206	811	1197	144	924	571	3853	7688	312	344	543	8887	-5028	-6	-81499
Sep-2021	0	199	642	1261	140	886	528	3655	6396	310	328	525	7560	-3899	-6	-85398
Oct-2021	0	206	471	1274	144	918	526	3539	5087	377	339	543	6346	-2813	5	-88211
Nov-2021	0	199	314	1146	140	895	496	3190	4013	440	329	526	5309	-2125	5	-90336
Dec-2021	0	206	236	1120	144	935	502	3143	3633	533	343	545	5054	-1917	6	-92253
Jan-2022	0	206	241	1270	144	937	464	3263	3648	609	347	546	5150	-1883	-5	-94136
Feb-2022	0	186	327	1223	130	846	387	3099	3101	572	312	493	4479	-1383	3	-95519
Mar-2022	0	206	422	1284	144	937	457	3449	3925	623	341	546	5435	-1980	-5	-97498

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014



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Apr-2022	0	199	584	1101	140	908	486	3417	4635	535	320	528	6019	-2596	-6	-100094
May-2022	0	206	677	1176	144	940	515	3659	5584	480	320	545	6929	-3265	-6	-103359
Jun-2022	0	199	729	1129	140	920	512	3628	6233	379	297	527	7436	-3802	-6	-107162
Jul-2022	0	206	905	1209	144	958	546	3968	8248	286	291	543	9369	-5395	-6	-112556
Aug-2022	0	206	829	1250	144	962	548	3940	8349	238	279	542	9408	-5463	-6	-118019
Sep-2022	0	199	656	1219	140	936	514	3663	7036	227	266	524	8054	-4384	-6	-122404
Oct-2022	0	206	481	1268	144	962	511	3572	6006	264	277	542	7090	-3523	5	-125926
Nov-2022	0	199	321	1206	140	933	477	3276	4413	311	276	526	5526	-2255	5	-128181
Dec-2022	0	206	241	1309	144	965	467	3333	4046	394	296	544	5280	-1953	6	-130134
Jan-2023	1158	206	245	3211	144	877	271	6112	4518	459	362	547	5887	224	1	-129911
Feb-2023	5968	186	331	8279	130	591	-672	14814	3887	548	437	504	5377	9430	8	-120481
Mar-2023	11822	206	428	6541	144	545	-281	19405	4795	753	603	570	6722	12686	-3	-107795
Apr-2023	0	199	592	1881	140	664	320	3796	5477	525	530	533	7064	-3263	-6	-111058
May-2023	0	206	687	1513	144	721	558	3830	6454	437	502	547	7940	-4105	-6	-115162
Jun-2023	0	199	739	1313	140	738	575	3704	7075	354	443	528	8400	-4690	-6	-119853
Jul-2023	0	206	919	1462	144	776	606	4112	8847	278	413	544	10082	-5964	-6	-125817
Aug-2023	0	206	842	1292	144	818	620	3922	8947	239	375	543	10103	-6176	-6	-131993
Sep-2023	0	199	666	1300	140	800	579	3684	7615	235	338	525	8714	-5024	-6	-137016
Oct-2023	522	206	489	2310	144	780	489	4939	6857	263	364	543	8028	-3091	3	-140107
Nov-2023	0	199	326	1270	140	815	529	3279	5586	283	341	526	6736	-3462	5	-143569
Dec-2023	6208	206	245	5076	144	688	99	12667	4916	414	490	556	6377	6284	6	-137285
Jan-2024	6082	206	248	20522	144	109	-2465	24846	4518	745	678	560	6501	18339	6	-118946
Feb-2024	30855	192	336	14173	135	-187	-1262	44242	4026	1653	976	572	7227	37009	5	-81937
Mar-2024	18042	206	433	9466	144	-27	-338	27926	4795	1421	1112	593	7921	19999	6	-61938
Apr-2024	278	199	600	2433	140	206	497	4353	5477	840	907	539	7764	-3404	-7	-65342
May-2024	630	206	696	1900	144	314	639	4529	6454	623	811	552	8440	-3905	-6	-69247
Jun-2024	0	199	748	3146	140	297	528	5058	7075	490	728	531	8823	-3759	-6	-73007
Jul-2024	556	206	930	1284	144	426	750	4297	8847	349	687	548	10430	-6128	-6	-79134
Aug-2024	0	206	852	1281	144	493	764	3740	8947	291	627	545	10410	-6664	-6	-85798
Sep-2024	0	199	674	1350	140	517	709	3588	7615	301	569	527	9012	-5418	-6	-91216
Oct-2024	2874	206	495	2960	144	470	554	7703	6857	366	604	550	8377	-680	5	-91896
Nov-2024	0	199	330	3634	140	473	334	5110	5586	384	580	528	7079	-1974	5	-93870
Dec-2024	13443	206	248	5036	144	379	142	19597	4916	722	756	572	6967	12625	6	-81245
Jan-2025	29508	206	251	12483	144	180	-574	42196	2744	2175	1143	608	6670	35520	5	-45725
Feb-2025	20229	186	339	18889	130	122	-566	39330	2317	3751	1297	544	7908	31417	5	-14308
Mar-2025	7364	206	438	10256	144	160	119	18687	3025	3428	1418	573	8444	10237	6	-4071
Apr-2025	0	199	606	4257	140	229	569	5999	3721	1339	1182	537	6780	-786	5	-4856
May-2025	0	206	704	1431	144	368	800	3652	4585	965	1051	551	7151	-3505	5	-8361
Jun-2025	1121	199	757	1301	140	399	827	4744	5208	822	929	534	7493	-2751	2	-11112
Jul-2025	0	206	940	1333	144	462	871	3956	6593	689	877	548	8708	-4746	-6	-15858
Aug-2025	0	206	862	1487	144	506	858	4062	6674	573	815	547	8608	-4540	-6	-20399

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Sep-2025	0	199	682	1923	140	520	782	4245	5480	637	749	528	7394	-3154	5	-23553
Oct-2025	983	206	500	5974	144	425	469	8702	4478	793	827	548	6647	2049	6	-21504
Nov-2025	1293	199	333	5632	140	382	352	8332	3478	902	847	532	5758	2569	5	-18935
Dec-2025	1725	206	251	10904	144	259	-55	13433	3109	1216	971	551	5847	7580	6	-11355
Jan-2026	0	206	253	1540	144	429	539	3111	3160	1186	907	549	5802	-2686	-5	-14041
Feb-2026	0	186	343	1346	130	436	496	2937	2678	1044	783	495	5000	-2071	7	-16112
Mar-2026	0	206	443	1454	144	529	587	3363	3441	1115	822	548	5927	-2559	-5	-18671
Apr-2026	0	199	613	2307	140	546	635	4440	4147	1092	758	530	6528	-2083	-6	-20753
May-2026	0	206	711	1274	144	594	714	3643	5052	989	740	547	7329	-3680	-6	-24434
Jun-2026	0	199	765	1106	140	599	713	3521	5689	810	679	529	7707	-4181	-6	-28614
Jul-2026	0	206	950	1125	144	644	762	3831	7407	677	658	546	9288	-5451	-6	-34066
Aug-2026	0	206	871	1137	144	671	760	3790	7496	598	621	545	9260	-5465	-6	-39531
Sep-2026	0	199	689	1132	140	667	697	3524	6243	591	576	527	7936	-4407	-5	-43937
Oct-2026	0	206	505	1214	144	709	676	3455	4955	681	580	544	6759	-3310	5	-47247
Nov-2026	0	199	337	1232	140	704	601	3213	3911	748	553	528	5738	-2531	5	-49779
Dec-2026	0	206	253	1961	144	745	380	3690	3541	863	563	546	5513	-1829	6	-51608
Jan-2027	38098	206	256	9240	144	234	-136	48043	2819	1995	1095	620	6529	41509	6	-10099
Feb-2027	3345	186	346	12874	130	159	-769	16272	2367	2208	1058	513	6146	10121	5	23
Mar-2027	14387	206	447	6638	144	200	98	22119	3096	2252	1294	581	7223	14891	6	14913
Apr-2027	1248	199	619	2123	140	322	514	5165	3810	1677	1125	539	7152	-1991	4	12922
May-2027	451	206	719	3621	144	341	560	6041	4704	1249	1071	552	7576	-1524	-10	11398
Jun-2027	1317	199	773	1738	140	431	699	5296	5352	1129	955	534	7970	-2667	-6	8731
Jul-2027	0	206	960	1962	144	501	731	4504	6773	948	902	548	9171	-4660	-6	4070
Aug-2027	0	206	880	2061	144	547	710	4547	6865	830	832	547	9074	-4521	-6	-450
Sep-2027	0	199	696	1053	140	566	675	3328	5633	734	753	528	7649	-4312	-9	-4762
Oct-2027	0	206	511	5225	144	486	377	6948	4611	829	824	546	6811	132	5	-4630
Nov-2027	0	199	340	4539	140	456	342	6017	3580	894	824	529	5828	184	5	-4447
Dec-2027	4039	206	256	17482	144	79	-821	21385	3201	1542	1068	555	6366	15013	6	10566
Jan-2028	2861	206	259	7425	144	139	153	11186	2744	1537	1113	555	5949	5231	6	15798
Feb-2028	6482	192	350	1959	135	210	448	9777	2400	1666	1039	526	5631	4141	5	19939
Mar-2028	2003	206	452	1611	144	336	595	5348	3025	1591	1053	555	6224	-884	7	19055
Apr-2028	125	199	626	1927	140	398	681	4095	3721	1386	939	532	6578	-2479	-4	16576
May-2028	655	206	726	1662	144	461	757	4612	4585	1355	905	550	7394	-2776	-6	13800
Jun-2028	0	199	781	1009	140	492	746	3368	5208	1074	813	530	7625	-4252	-6	9548
Jul-2028	0	206	970	1111	144	548	788	3767	6593	920	783	547	8843	-5070	-6	4477
Aug-2028	0	206	889	1072	144	593	785	3689	6674	838	736	546	8794	-5099	-6	-622
Sep-2028	0	199	703	1690	140	552	694	3979	5480	839	685	527	7532	-3547	-6	-4169
Oct-2028	1252	206	516	1196	144	623	689	4626	4478	964	696	548	6687	-2066	5	-6235
Nov-2028	1021	199	344	4932	140	514	423	7572	3478	1053	755	531	5817	1750	5	-4485
Dec-2028	8380	206	259	6909	144	375	222	16495	3109	1471	949	563	6092	10396	6	5912
Jan-2029	2325	206	261	1557	144	488	494	5475	2744	1460	918	555	5677	-207	6	5705

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Feb-2029	80	186	354	2281	130	458	470	3960	2317	1253	803	497	4869	-914	5	4791
Mar-2029	0	206	457	2222	144	547	624	4200	3025	1431	847	549	5852	-1658	6	3132
Apr-2029	0	199	632	1959	140	567	620	4116	3721	1238	771	530	6261	-2139	-6	993
May-2029	0	206	734	1281	144	604	666	3635	4585	1148	754	547	7035	-3393	-6	-2400
Jun-2029	0	199	789	982	140	633	682	3424	5208	991	686	529	7414	-3985	-6	-6385
Jul-2029	17	206	981	1055	144	684	732	3818	6593	889	664	546	8691	-4867	-6	-11252
Aug-2029	0	206	898	1124	144	703	730	3805	6674	838	627	545	8684	-4874	-6	-16126
Sep-2029	185	199	711	1116	140	699	667	3715	5480	825	585	527	7417	-3695	-6	-19821
Oct-2029	0	206	521	1307	144	743	616	3537	4478	922	588	545	6533	-3002	5	-22823
Nov-2029	1300	199	348	1609	140	721	463	4780	3478	1009	574	530	5591	-817	5	-23639
Dec-2029	2342	206	261	2127	144	746	403	6230	3109	1174	607	551	5441	784	6	-22855
Jan-2030	6649	206	264	30367	144	364	-2332	35662	2744	2840	926	561	7070	28585	6	5730
Feb-2030	41911	186	357	11284	130	68	-188	53749	2317	4454	1410	575	8756	44987	5	50717
Mar-2030	7582	206	461	14901	144	205	-252	23247	3025	5042	1653	578	10298	12944	6	63661
Apr-2030	4344	199	639	15593	140	223	-394	20743	3721	6603	1694	547	12565	8174	4	71835
May-2030	10478	206	741	1503	144	280	787	14138	4585	3066	1571	573	9795	4350	-6	76184
Jun-2030	114	199	797	4951	140	276	501	6978	5208	1957	1376	536	9077	-2093	-6	74092
Jul-2030	0	206	990	1313	144	395	824	3872	6593	1477	1227	550	9847	-5969	-6	68123
Aug-2030	0	206	907	1432	144	444	825	3958	6674	1238	1108	548	9568	-5604	-6	62519
Sep-2030	400	199	718	1537	140	457	752	4203	5480	1139	1008	531	8158	-3947	-7	58571
Oct-2030	629	206	527	1351	144	512	735	4104	4478	1260	995	549	7282	-3184	5	55387
Nov-2030	2591	199	351	1660	140	508	681	6129	3478	1375	953	535	6341	-217	5	55171
Dec-2030	2648	206	264	2425	144	505	656	6848	3109	1598	979	554	6240	603	6	55773
Jan-2031	0	206	267	1460	144	580	661	3317	2744	1583	922	550	5799	-2487	6	53286
Feb-2031	0	186	361	1458	130	547	580	3262	2317	1430	793	496	5035	-1778	5	51508
Mar-2031	0	206	466	971	144	629	626	3042	3025	1558	836	549	5968	-2931	5	48577
Apr-2031	0	199	645	2415	140	626	600	4625	3721	1551	776	531	6580	-1948	-6	46629
May-2031	0	206	748	2214	144	664	643	4620	4585	1513	767	548	7413	-2788	-6	43841
Jun-2031	0	199	805	1101	140	657	650	3551	5208	1305	699	530	7742	-4185	-6	39656
Jul-2031	0	206	1000	1017	144	693	716	3776	6593	1159	682	547	8980	-5199	-6	34457
Aug-2031	0	206	916	1028	144	708	722	3724	6674	1052	646	546	8917	-5187	-6	29270
Sep-2031	0	199	725	1013	140	700	665	3441	5480	1008	600	528	7616	-4168	-6	25102
Oct-2031	0	206	532	1029	144	740	651	3301	4478	1102	600	546	6726	-3430	5	21672
Nov-2031	0	199	354	935	140	731	599	2958	3478	1142	566	529	5715	-2761	5	18911
Dec-2031	0	206	267	958	144	769	596	2940	3109	1275	576	547	5507	-2573	6	16338
Jan-2032	321	206	269	1282	144	753	560	3536	2744	1349	597	548	5238	-1708	6	14630
Feb-2032	2505	192	364	2135	135	676	471	6478	2400	1322	607	517	4846	1627	5	16257
Mar-2032	837	206	470	1924	144	737	527	4844	3025	1407	639	550	5621	-783	6	15474
Apr-2032	558	199	651	996	140	724	568	3835	3721	1242	597	532	6092	-2251	-6	13222
May-2032	0	206	755	1455	144	778	585	3923	4585	1216	588	548	6937	-3008	-6	10215
Jun-2032	0	199	812	1401	140	774	587	3913	5208	1095	544	529	7376	-3457	-6	6758

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 Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
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Jul-2032	0	206	1009	1001	144	813	668	3842	6593	946	531	546	8615	-4768	-6	1990
Aug-2032	82	206	925	1045	144	825	678	3905	6674	862	507	545	8588	-4677	-6	-2687
Sep-2032	0	199	731	1020	140	811	625	3527	5480	837	475	527	7319	-3786	-6	-6474
Oct-2032	300	206	537	1043	144	848	613	3691	4478	938	486	545	6447	-2762	5	-9236
Nov-2032	0	199	358	1396	140	805	509	3407	3478	1014	482	528	5502	-2101	5	-11337
Dec-2032	0	206	269	1526	144	843	439	3426	3109	1148	500	546	5304	-1883	6	-13220
Jan-2033	7232	206	272	5141	144	666	86	13747	3235	1389	674	561	5859	7893	-5	-5326
Feb-2033	13336	186	367	4009	130	522	-78	18472	2728	1519	727	522	5495	12969	8	7643
Mar-2033	4189	206	474	3200	144	617	237	9068	3512	1536	787	561	6396	2677	-6	10320
Apr-2033	3173	199	657	1272	140	657	520	6617	4236	1274	727	539	6775	-153	-6	10167
May-2033	0	206	762	1581	144	704	543	3940	5171	1109	685	550	7515	-3569	-6	6599
Jun-2033	0	199	820	1015	140	732	598	3503	5833	901	603	530	7867	-4358	-6	2240
Jul-2033	0	206	1018	1077	144	777	636	3858	7587	756	572	547	9461	-5597	-6	-3357
Aug-2033	0	206	933	1108	144	793	633	3817	7688	652	534	546	9420	-5597	-6	-8954
Sep-2033	0	199	738	1142	140	776	586	3580	6396	613	494	527	8031	-4445	-6	-13399
Oct-2033	273	206	542	1186	144	806	583	3740	5087	713	502	546	6848	-3114	5	-16513
Nov-2033	3941	199	361	8148	140	560	-342	13007	4013	911	630	536	6090	6912	5	-9601
Dec-2033	1611	206	272	13152	144	378	-1296	14467	3633	1082	740	551	6007	8455	6	-1146
Jan-2034	0	206	274	981	144	554	517	2677	2819	1072	688	548	5127	-2456	6	-3602
Feb-2034	0	186	371	954	130	541	550	2732	2367	960	593	495	4415	-1688	5	-5290
Mar-2034	0	206	479	1006	144	641	631	3107	3096	1029	617	548	5289	-2188	5	-7478
Apr-2034	0	199	662	976	140	653	618	3248	3810	892	555	530	5787	-2538	0	-10016
May-2034	0	206	769	1031	144	709	642	3500	4704	820	534	547	6605	-3098	-8	-13114
Jun-2034	0	199	827	1031	140	714	625	3535	5352	706	485	529	7072	-3531	-6	-16645
Jul-2034	0	206	1027	1111	144	758	655	3901	6773	606	470	545	8395	-4488	-6	-21133
Aug-2034	0	206	941	1135	144	776	650	3853	6865	539	447	544	8396	-4537	-6	-25670
Sep-2034	0	199	744	1201	140	755	600	3639	5633	548	422	526	7130	-3483	-8	-29153
Oct-2034	0	206	546	1207	144	793	596	3493	4611	639	429	544	6224	-2736	5	-31890
Nov-2034	0	199	364	1070	140	782	560	3115	3580	701	412	527	5221	-2111	5	-34001
Dec-2034	0	206	274	1031	144	825	564	3044	3201	808	425	546	4980	-1941	6	-35943
Jan-2035	0	206	276	1808	144	819	383	3636	2819	900	432	547	4698	-1067	6	-37010
Feb-2035	5222	186	374	3726	130	628	218	10485	2367	942	515	504	4327	6152	5	-30858
Mar-2035	1376	206	483	1770	144	755	378	5112	3096	1007	551	551	5205	-101	8	-30959
Apr-2035	1359	199	668	2019	140	742	509	5635	3810	983	514	533	5840	-199	-6	-31158
May-2035	983	206	775	1530	144	781	591	5010	4704	917	501	549	6672	-1656	-6	-32813
Jun-2035	0	199	834	1335	140	782	583	3872	5352	738	448	529	7067	-3189	-6	-36002
Jul-2035	12	206	1036	1108	144	821	613	3939	6773	621	430	545	8370	-4425	-6	-40428
Aug-2035	0	206	949	1136	144	832	610	3877	6865	544	408	544	8361	-4478	-6	-44906
Sep-2035	0	199	751	1101	140	816	570	3577	5633	526	384	526	7069	-3486	-7	-48392
Oct-2035	636	206	551	2384	144	782	531	5234	4611	612	466	545	6235	-1006	5	-49398
Nov-2035	364	199	367	1205	140	792	519	3586	3580	679	448	528	5236	-1656	5	-51054

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Dec-2035	1486	206	276	3268	144	739	476	6597	3201	817	548	549	5114	1477	6	-49577