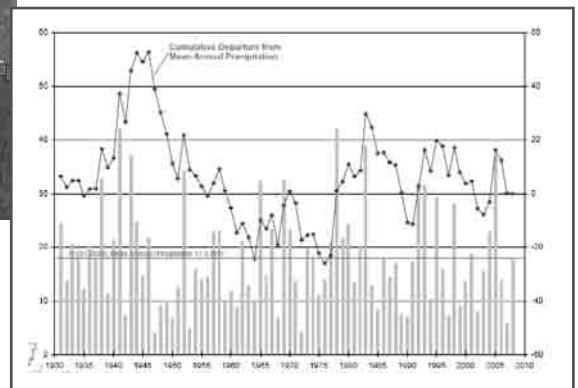




# 2008 Santa Clarita Valley Water Report

Castaic Lake Water Agency (CLWA)  
CLWA Santa Clarita Water Division  
Los Angeles County Waterworks District 36  
Newhall County Water District  
Valencia Water Company

April 2009



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## **Executive Summary**

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This annual report, which is the eleventh in a series that began to describe water supply conditions in 1998, provides current information about the water requirements and water supplies of the Santa Clarita Valley. The report was prepared for the imported water wholesaler, Castaic Lake Water Agency (CLWA), and for the four local retail water Purveyors that serve the Valley: CLWA Santa Clarita Water Division, Los Angeles County Waterworks District 36, Newhall County Water District, and Valencia Water Company. These entities and representatives from the City of Santa Clarita and the County of Los Angeles Department of Regional Planning meet as required to coordinate the management of imported water with local groundwater and recycled water to meet water requirements in the Valley.

This report provides information about local groundwater resources, State Water Project (SWP) and other imported water supplies, water conservation, and recycled water. The report reviews the sufficiency and reliability of supplies in the context of existing water demand, with focus on actual conditions in 2008, and it provides a short-term outlook of water supply and demand for 2009.

### **ES.1 2008 Water Requirements and Supplies**

In 2008, total water requirements in the Santa Clarita Valley were about 90,700 acre-feet (af), of which about 75,900 af (84 percent) were for municipal use and the remainder (14,800 af) was for agricultural and other (miscellaneous) uses, including individual domestic uses. Total demand in 2008 was about two percent lower than in 2007, less than what was estimated in the 2007 Water Report, and water requirements in 2008 were also lower than the average projection in the 2005 Urban Water Management Plan (UWMP). Total water requirements in 2008 were met by a combination of about 48,700 af from local groundwater resources (about 33,900 af for municipal and about 14,800 af for agricultural and other uses), about 41,700 af of SWP and other imported water, and about 300 af of recycled water.

Of the 48,700 af of total groundwater pumping in the Valley in 2008, about 41,750 af were pumped from the Alluvium and about 6,950 af were pumped from the underlying, deeper Saugus Formation. Alluvial pumping represented about a 2,950 af increase from 2007, and Saugus pumping was slightly lower than in 2007, by about 750 af. Neither pumping volume resulted in any notable overall change in groundwater conditions (water levels, water quality, etc.) in either

aquifer system. Imported water deliveries to the Purveyors decreased by about 3,600 af from the previous year. Water uses and supplies in 2008 are summarized in the following Table ES-1.

**Table ES-1**  
**Santa Clarita Valley**  
**Summary of 2008 Water Supplies and Uses**  
**(acre-feet)**

<b><i>Municipal</i></b>		
SWP and other Imported		41,705
Groundwater (Total)		33,884
<i>Alluvium</i>	27,919	
<i>Saugus</i>	5,965	
Recycled Water		311
<b>Subtotal</b>		<b>75,900</b>
<b><i>Agriculture/Miscellaneous</i></b>		
SWP and other Imported		-
Groundwater (Total)		14,750
<i>Alluvium</i>	13,797	
<i>Saugus</i>	953	
<b>Subtotal</b>		<b>14,750</b>
<b>Total</b>		<b>90,650</b>

In accordance with the California Urban Water Management Planning Act, the Valley-wide UWMP was updated in 2005 to extend projected water demands through 2030, and to describe the combination of local groundwater, imported water supplies from the State Water Project and other sources, local recycled water supplies, and other water supplies planned to meet those existing and projected water demands in the Valley. The 2005 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet groundwater demand, including consideration of the impacts of perchlorate contamination on several municipal water supply wells. The 2005 UWMP also describes the plans and ongoing work for integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.

Notable details about each component of water supply in the Valley, and about the water supply outlook for 2009, include the following.



## **ES.2 Alluvial Aquifer**

The groundwater operating plan in the 2005 UWMP includes Alluvial pumping in the range of 30,000 to 40,000 acre-feet per year (afy) following average/normal years, and slightly reduced pumping (30,000 to 35,000 afy) following dry years. Pumping from the Alluvium in 2008 was 41,750 af, which is slightly above the operating plan range for the Alluvium but did not adversely affect groundwater levels and storage in the basin. On average, pumping from the Alluvium has been about 32,000 afy since supplemental imported water became available in 1980. That average rate remains near the lower end of the range of operational yield.

On a long-term basis, continuing through 2008, there is no evidence of any historic or recent trend toward permanent water level or storage decline. In general, throughout a large part of the basin, Alluvial groundwater levels have generally remained near historic highs during the last 30 years. Above average precipitation in late 2004 and 2005 resulted in significant water level recovery in the eastern part of the basin, continuing the overall trend of fluctuating groundwater levels within a generally constant range over the last 30 years. These ongoing data indicate that the Alluvium remains in good operating condition and can continue to support pumping in the operating range included in the 2005 UWMP, or slightly higher, without adverse results (e.g., long-term water level decline or degradation of groundwater quality.)

Based on an integration of water quality records from multiple wells completed in the Alluvium, there have been historical fluctuations in groundwater quality, typically associated with variations in precipitation and streamflow. However, like groundwater levels, there has been no long-term trend toward groundwater quality degradation; groundwater produced from the Alluvial aquifer remains a viable municipal and agricultural water supply.

In 2002, as part of ongoing monitoring of wells for perchlorate contamination, perchlorate was detected in one Alluvial well (the SCWD Stadium Well) located near the former Whittaker-Bermite facility. The detected concentration was slightly below the then-applicable Notification Level for perchlorate (6 µg/l, which was subsequently established as the Maximum Contaminant Level for perchlorate in October 2007), and the well has been inactivated for municipal water supply since the detection of perchlorate. In early 2005, perchlorate was detected in a second Alluvial well, VWC's Well Q2. After an interim period of wellhead treatment, that well has now been returned to regular water supply service. All other Alluvial wells operated by the Purveyors continue to be used for municipal water supply service; those wells near the Whittaker-Bermite property are sampled in accordance with drinking water regulations and perchlorate has not been detected. As detailed in the 2005 UWMP, the ongoing inactivation of one Alluvial well due to

perchlorate contamination does not limit the Purveyors' ability to produce groundwater from the Alluvium in accordance with the groundwater operating plan in the 2005 UWMP.

The ongoing characterization and plan for control and cleanup of perchlorate in the Valley has focused on the Saugus Formation. In addition, however, on-site cleanup and control activities that began in 2006, and continued through 2008, include continuation of soil cleanup on the Whittaker-Bermite site, and continuation of pumping and treatment in the Northern Alluvium on the Whittaker-Bermite site. Expanded pumping and treatment, intended to effect perchlorate containment in the Northern Alluvium, became operational in October 2007.

### **ES.3 Saugus Formation**

The groundwater operating plan in the 2005 UWMP includes pumping from the Saugus in the range of 7,500 to 15,000 afy in average/normal years; it also includes planned dry-year pumping from the Saugus of 21,000 to 35,000 afy for one to three consecutive dry years. The 2005 UWMP recognizes the results of basin yield analyses in 2004 and 2005 which found that such short-term pumping can be recharged during subsequent wet/normal years to allow groundwater levels and storage to recover, as it has in historical periods.

Pumping from the Saugus Formation was about 6,950 af in 2008; on average, Saugus pumping has been about 6,800 afy since 1980. Both rates remain near the lower end of the range included in the UWMP. As a result of long-term relatively low pumping from the Saugus Formation, groundwater levels in that aquifer have remained generally constant to slightly increasing over the last 35 to 40 years; those trends continued in 2008.

In 1997, ammonium perchlorate was discovered in four wells completed in the Saugus Formation in the vicinity of the former Whittaker-Bermite facility located generally toward the east, on the south side of the basin. All four of those impacted wells remain out of active supply service; one of them has been permanently sealed and destroyed. In 2006, a very low level of perchlorate was detected in another Saugus municipal well (NCWD's Well NC-13). That low level detection has been interpreted to not indicate anything new about the migration of perchlorate; however, it has also prompted additional monitoring well installation and a focused study of the Saugus Formation in that area. Results are being integrated with other groundwater remediation efforts and reviewed by the State Department of Toxic Substances Control (DTSC). All other Saugus wells owned and operated by the Purveyors are available for municipal water supply service. As part of regular operation, those wells are sampled in accordance with drinking water regulations and perchlorate has not been detected. Despite the inactivated Saugus

wells, the Purveyors still have sufficient pumping capacity in other wells to meet the planned normal range of Saugus pumping in the 2005 UWMP.

Work toward the ultimate remediation of perchlorate contamination, including the restoration of impacted groundwater supply continued to progress in 2008, with focus on construction of facilities to implement a jointly developed plan to “pump and treat” contaminated water from two of the originally impacted wells to stop migration of the contaminant plume, and to deliver treated water to partially replace impacted well capacity. Environmental review of the project was completed with adoption of a Mitigated Negative Declaration in September 2005. The Final Interim Remedial Action Plan was completed and approved by DTSC in January 2006.

Construction of facilities and pipelines necessary to implement the pump and treat program and to also restore inactivated well capacity began in November 2007. Construction is scheduled to be completed in summer 2009, followed by operational start-up.

#### **ES.4 Imported Water**

Historically comprised of only its SWP Table A Amount, CLWA’s imported water supplies now consist of a combination of SWP water and water acquired from the Buena Vista Water Storage District in Kern County. CLWA’s contractual Table A Amount is 95,200 af of water from the SWP. Under the 2007 Water Acquisition Agreement with the Buena Vista Water Storage District (Buena Vista) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo), Buena Vista’s high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within the Rosedale-Rio Bravo’s service area on an ongoing basis. CLWA will receive 11,000 af of these supplies annually through either exchange of Buena Vista’s and Rosedale-Rio Bravo’s SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal.

CLWA’s final allocation of SWP water for 2008 was 35 percent of its Table A Amount, or 33,320 af. The total available imported water supply in 2008 was 57,488 af, comprised of the 33,320 af of Table A supply, 11,000 af purchased from Buena Vista/Rosedale Rio Bravo, 12,146 af of 2007 carryover delivered in early 2008, and 1,022 af through the Yuba Accord. CLWA deliveries were 41,705 af to the Purveyors; the remaining 14,610 af of 2008 Table A Amount represent carryover available for 2009 water supply. No additional banking of imported water occurred in 2008.

CLWA has two groundwater banking agreements with the Semitropic Water Storage District in Kern County. In accordance with those agreements, over a ten-year period (until 2012/13),

CLWA can withdraw up to 50,870 af of its Table A water that was stored in 2002 and 2003 to meet future Valley demands when needed. Following the planned utilization of 4,950 af of banked water in 2009 from the Semitropic Account, that balance will be 45,920 af. In addition to the banking in Semitropic, CLWA finalized an agreement with the Rosedale-Rio Bravo Water Storage District in 2005 and can now bank up to 20,000 af of surplus Table A Amount in that District's Water Banking and Exchange Program. In addition to 20,000 af previously banked in both 2005 and 2006, CLWA banked 8,200 af of water in 2007. In accordance with the provisions of that agreement, CLWA can withdraw up to a total of 42,900 af of that water, at a rate up to 20,000 af, to meet Valley water demands when needed. Additionally, as part of the Buena Vista Water Acquisition Agreement, CLWA is entitled to 22,000 af of water that was stored in the Rosedale Rio-Bravo Water Banking and Exchange Program in 2005 and 2006 on CLWA's behalf. As of 2009, CLWA maintains a recoverable total of 64,900 af in the Rosedale Rio-Bravo Water Banking and Exchange Program.

Since SWP water deliveries are subject to reduction when dry conditions occur in Northern California, the UWMP includes programs, like the Semitropic and Rosedale-Rio Bravo programs, for enhancing water supply reliability during such occurrences. A capital improvement program funded by CLWA has been established to provide facilities and additional water supplies needed to firm up SWP water supplies during times of drought.

## **ES.5 Recycled Water**

Recycled water service was initiated in July 2003 in accordance with CLWA's Draft Reclaimed Water System Master Plan (2002). The amount of recycled water used for irrigation purposes, at a golf course and in roadway median strips, was approximately 310 af in 2008. CLWA completed programmatic CEQA analysis in early 2007 for full implementation of the recycled water system as outlined in the Master Plan. CLWA is preparing the design of the second phase of the Recycled Water Master Plan that will take water from the Saugus Water Reclamation plant and distribute it to identified users to the north, across the Santa Clara River and then to the west and the east, which will include service to Santa Clarita Central Park.

## **ES.6 2009 Water Supply Outlook**

In 2009, total water demands are expected to be about 91,000 af, comparable to actual water use over the last two years, and below the water demand projections in the 2005 UWMP. It is expected that water demands in 2009 will continue to be met with a generally similar mix of

water supplies comprised of local groundwater, supplemental SWP and other imported water, and recycled water.

As of April 15, 2009, the allocation of water from the SWP is 30 percent of CLWA's Table A Amount, or 28,560 af. Combined with local groundwater from the two aquifer systems (48,000 af), total Flexible Storage Account (6,060 af), net carryover of SWP Table A allocation from 2008 (14,610 af), annual acquisition through the Buena Vista Water/Rosedale Rio-Bravo Water Acquisition Agreement (11,000 af), acquisition of water through the Yuba Accord (800 af), recovery and delivery of some water previously stored in the Semitropic Groundwater Storage Bank (4,950 af), and recycled water (500 af), the total available water supplies for 2009 are nearly 115,000 af. As a result, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2009.

In August 2007, a federal court ruled that certain operational changes were required of the SWP in order to protect the endangered Delta smelt. Thereafter, DWR prepared an update to its 2005 SWP Delivery Reliability Report, which is issued biennially to indicate how much SWP water is available during varying hydrologic scenarios (i.e., normal and dry years). The SWP Delivery Reliability Report 2007, issued in August 2008, by DWR, reduced the long-term reliability of SWP supply from 77 percent to a range of 66 to 69 percent. The discussion of SWP supply should be tempered, though, by noting that while the Draft SWP Delivery Reliability Report 2007 represents a reasonable scenario with respect to long-term reliability, recent reductions in supply close the gap between the available supply and demand in the future, thereby making the CLWA service area more subject to shortages in certain dry years. Accordingly, the reduction in SWP supply reinforces the need to continue diligent efforts to conserve potable water and increase the use of recycled water, both to meet the goals in the 2005 UWMP and to maximize utilization of potable water supplies. Additionally, as part of the court order, the US Fish and Wildlife Service (USFWS) was required to issue a Biological Opinion (BO) with mitigation measures to protect the Delta smelt. The USFWS issued the BO in December 2008 and the mitigation requirements may force additional pumping restrictions of the operation of the State Water Project.

CLWA and the retail water Purveyors are working with Los Angeles County and the City of Santa Clarita in preparing a water conservation ordinance and the enforcement mechanisms to aggressively implement water use efficiency in the CLWA service area. In terms of short-term water supply availability, CLWA has determined that, while current operational changes of the SWP are in effect, there are sufficient supplemental water supplies, including SWP water, to augment local groundwater and other water supplies such that overall water supplies will be

sufficient to meet projected 2009 water requirements as reflected herein, without the need for mandatory rationing through the summer of 2009. CLWA, the Purveyors, the City of Santa Clarita and Los Angeles County have reconvened the Santa Clarita Valley Drought Committee to determine, in part, if measures greater than voluntary conservation will be required later in the year if dry conditions persist

In any given year, SWP supplies may be reduced due to dry weather conditions or regulatory factors. During such an occurrence, the remaining water demands are planned to be met by a combination of alternate supplies such as returning water from CLWA's accounts in the Semitropic Groundwater Storage Program and the Rosedale-Rio Bravo Water Banking and Exchange Program, deliveries from CLWA's flexible storage account in Castaic Lake Reservoir, local groundwater pumping, short-term water exchanges, and participation in DWR dry-year water purchase programs in accordance with the 2005 Urban Water Management Plan. The banked excess 2002 and 2003 SWP Table A water in Semitropic represents nearly 51,000 af of recoverable water for drought water supply; as noted above, recovery of 4,950 af of that stored water is planned as part of 2009 imported water supplies. The banked excess SWP Table A water in 2005 and 2006, augmented by banked water acquired through the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement in 2005, 2006 and 2007, represent a total of 64,900 af of recoverable water for drought water supply from the Rosedale-Rio Bravo Banking and Exchange Program.

Drought periods may affect available water supplies in any single year and for a duration usually not longer than three consecutive years. It is important to note that hydrologic conditions vary from region to region throughout the state. Dry conditions in Northern California affecting SWP supply may not affect local groundwater and other supplies in Southern California, and the reverse situation can also occur (as it did in 2002 and 2003). For this reason, CLWA and the Purveyors have emphasized developing a water supply portfolio that is diverse, especially in dry years. Diversity of supply is considered a key element of reliability, giving Valley water Purveyors the ability to draw on multiple sources of supply to ensure reliable service during dry years, as well as during normal and wet years.

# 1. Introduction

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## 1.1 Background

For most residents of the Santa Clarita Valley (Valley), domestic water service is provided by four retail water Purveyors: Castaic Lake Water Agency's Santa Clarita Water Division (SCWD), Los Angeles County Waterworks District 36 (LAWWD36), Newhall County Water District (NCWD), and Valencia Water Company (VWC). Together, the Purveyors provide water to nearly 70,000 service connections. Castaic Lake Water Agency (CLWA) contracts for State Water Project water delivered from Castaic Lake where it is treated, filtered, and disinfected at two treatment plants before distribution to the Purveyors. Staff of these entities meet regularly to coordinate the supply of water in the Valley. Their respective service areas are shown in Figure 1-1.

While municipal water supply has grown to become the largest category of water use in the Valley, there remains an agricultural and other small private water demand that is predominately dependent on local groundwater for its water supply. Accordingly, ongoing agricultural water requirements and the use of local groundwater to meet those requirements are considered in analyses of water requirements and supplies such as reported herein. In addition to municipal and agricultural water uses in the Valley, water supply for a small fraction of Valley residents is provided by individual private water supply wells. The locations, construction details, annual pumping and other information about these private wells are not currently available. CLWA has been working with private well owners to receive information about their wells for incorporation in future reports and for planning purposes. Pumping as reported herein includes an estimate of groundwater pumped from private wells; it is expected that this estimate will be refined in the future as more information about the private wells is obtained.

For more than 20 years, CLWA and the Purveyors have reviewed and reported on the availability of water supplies to meet all water requirements in the Valley. Those reports have also addressed local water resources, most notably groundwater, in the region. Past studies have assessed the condition of local groundwater aquifers, their hydrogeologic characteristics, aquifer storage capacity, operational yield and recharge rate, groundwater quality and contamination, and the ongoing conjunctive use of groundwater and imported water resources.

Other efforts have included developing drought contingency plans, coordinating emergency response procedures and implementing Valley-wide conservation programs. In 1985, the

Purveyors prepared the area's first Urban Water Management Plan (UWMP.) Information in the plan was coordinated among CLWA and the Purveyors to provide accurate, comprehensive and consistent water supply and demand information for long term planning purposes. In accordance with the California Urban Water Management Planning Act, the Valley-wide UWMP was most recently updated in 2005 to extend water demand projections through 2030, and to describe the combination of local groundwater, imported water supplies from the State Water Project, local recycled water supplies, and planned other water supplies to meet the existing and projected water demands in the Valley. The 2005 UWMP also describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet that component of overall water supply; and it also describes the impacts of perchlorate contamination on several municipal water supply wells, and the plans and ongoing work for integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.

## **1.2 Purpose and Scope of the Report**

The purpose of this report, which is the eleventh in a series of annual water reports that began to describe water supply conditions in 1998, is to provide current information about the available water supplies and demands of the Santa Clarita Valley. CLWA and the Purveyors began preparation of this series of reports in response to a request made by the Los Angeles County Board of Supervisors in 1998. Over the last few years, this series of reports has also served as an annual summary of groundwater conditions in the Valley in fulfillment of the commitment in the Santa Clarita Valley Groundwater Management Plan, adopted in 2003, to regularly report on implementation of that Plan. This report was prepared for Castaic Lake Water Agency, for CLWA's Santa Clarita Water Division, for Los Angeles County Waterworks District 36, for Newhall County Water District, and for Valencia Water Company. It continues a format for providing information regarding water uses and the availability of water supplies on an annual basis. It is intended to be a helpful resource for use by water planners and local land use planning agencies. This report is complemented by the more detailed Urban Water Management Plan for the area, which provides longer-term water supply planning over a 25-year period, and by a number of other technical reports, some of which are specifically referenced herein.

## **1.3 Santa Clarita Valley Water Purveyors**

As introduced above, four retail water Purveyors provide water service to most residents of the Santa Clarita Valley. Brief summary descriptions of those four Purveyors are as follows.



**Castaic Lake Water Agency Santa Clarita Water Division** has a service area that includes a portion of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Saugus, Canyon Country, and Newhall. Water is supplied from both groundwater and CLWA turnouts to about 28,500 service connections.

**Los Angeles County Waterworks District 36** has a service area that encompasses approximately 7,635 acres in the Hasley Canyon area and the unincorporated community of Val Verde. LAWWD 36 has nearly 1,400 service connections. The District has traditionally obtained its full water supply from a connection to the CLWA's Castaic Conduit and continued to do so in 2008.

**Newhall County Water District's** service area includes portions of the City of Santa Clarita and unincorporated portions of Los Angeles County in the communities of Newhall, Canyon Country, Valencia, and Castaic. NCWD supplies water from both groundwater and CLWA turnouts to approximately 9,500 service connections.

**Valencia Water Company's** service area serves nearly 30,000 service connections in a portion of the City of Santa Clarita and in the unincorporated communities of Castaic, Newhall, Saugus, Stevenson Ranch, and Valencia. VWC supplies water from both groundwater and CLWA turnouts; VWC also delivers recycled water for a small amount of non-potable use.

#### **1.4 The Upper Santa Clara River Hydrologic Area and East Groundwater Subbasin**

The Upper Santa Clara River Hydrologic Area (HA), as defined by the California Department of Water Resources (DWR), is located almost entirely in northwestern Los Angeles County. The area encompasses about 654 square miles comprised of flat valley land (about 6 percent of the total area) and hills and mountains (about 94 percent of the total area) that border the valley area. The mountains 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 divide separating this hydrologic area from the Mojave Desert.

The Santa Clara River and its tributaries flow intermittently from Lang Station westward about 35 miles to Blue Cut, just west of the Los Angeles-Ventura County line, where it forms the outlet for the Upper Santa Clara River Hydrologic Area. The principal tributaries of the River in the

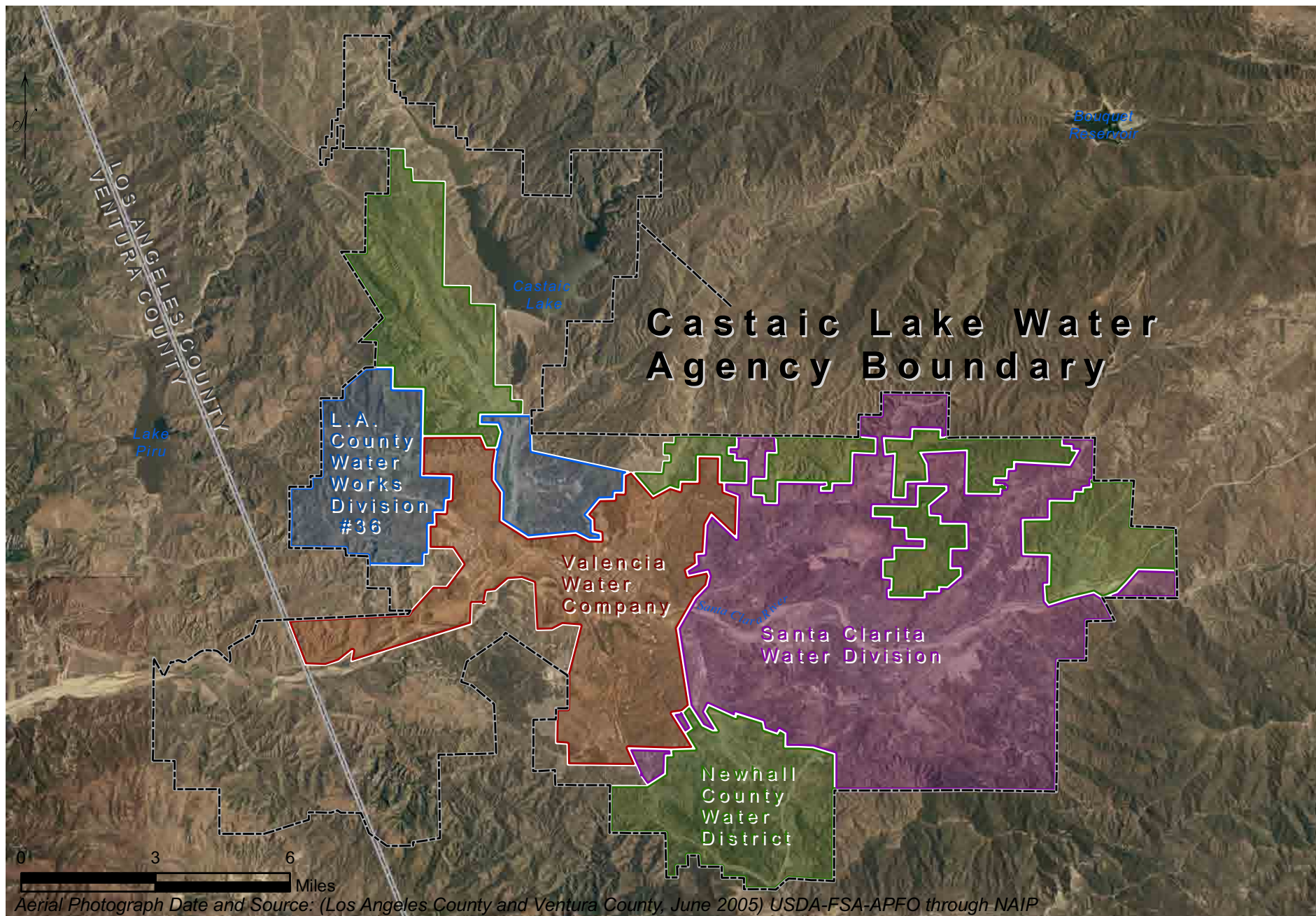
Santa Clarita Valley are Castaic Creek, San Francisquito Creek, Bouquet Creek, and the South Fork of the Santa Clara River. In the Santa Clarita Valley, the Santa Clara River receives treated wastewater discharge from the Saugus and Valencia Water Reclamation Plants, which are operated by the Sanitation Districts of Los Angeles County.

The Santa Clara River Valley East Groundwater Subbasin, beneath the Santa Clarita Valley in the Upper Santa Clara River HA, is the source of essentially all local groundwater used for water supply in the Santa Clarita Valley. Below Blue Cut, the Santa Clara River continues westward through Ventura County to its mouth near Oxnard. Along that route, the River traverses all or parts of six groundwater basins in Ventura County (Piru, Fillmore, Santa Paula, Oxnard Forebay, Oxnard Plain and Mound) as shown in Figure 1-2.

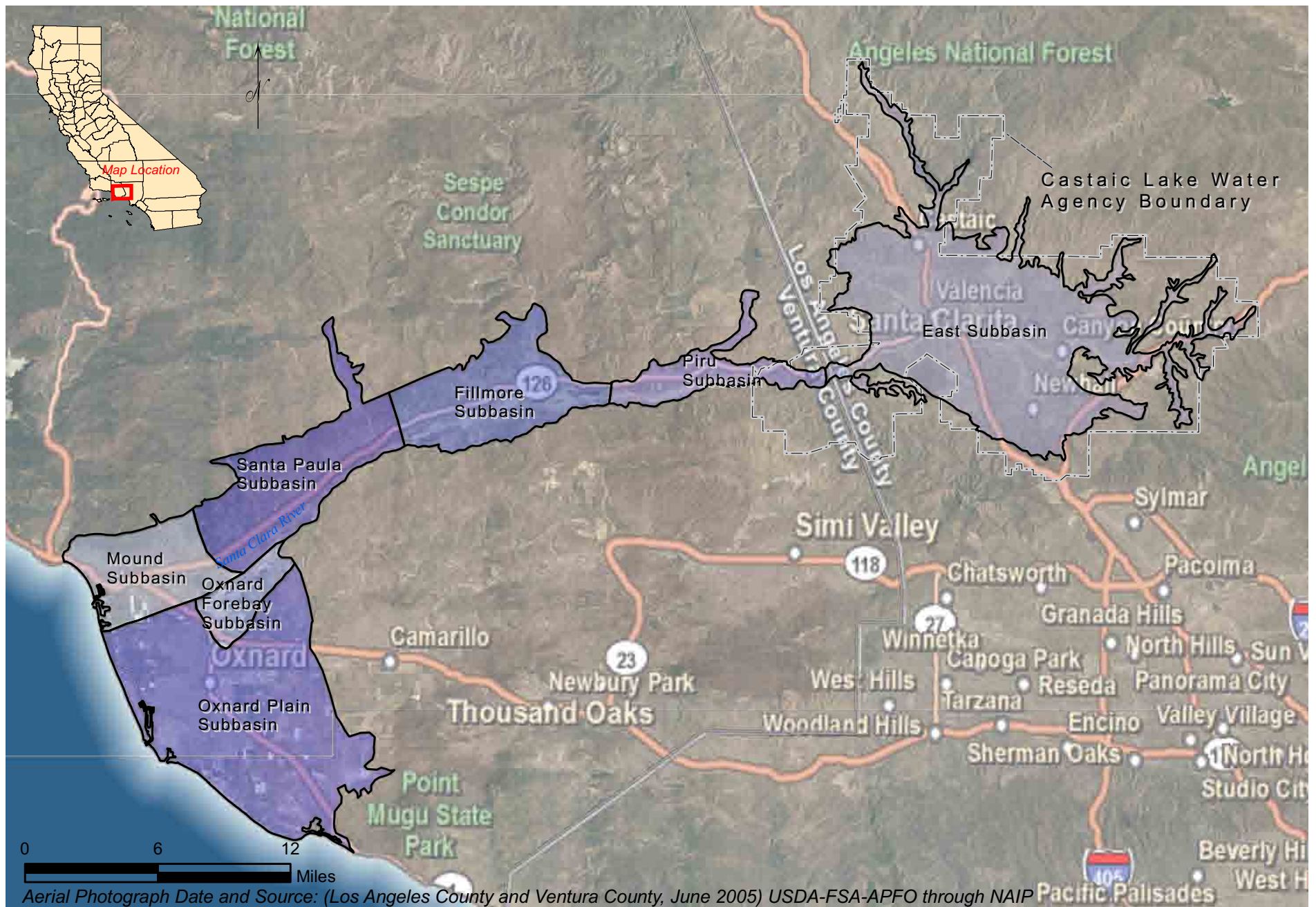
There are two primary precipitation gages in the Santa Clarita Valley, the Newhall-Soledad 32c gage and the Newhall County Water District gage (Figure 1-3). The National Climatic Data Center (NCDC) and Los Angeles County Department of Public Works (LADPW) have maintained records for the Newhall-Soledad 32c gage since 1931. Newhall County Water District has maintained records for the NCWD gage since 1979. The cumulative records from these two gages correlate very closely, with the NCWD gage recording approximately 25 percent more precipitation than the Newhall-Soledad 32c gage. This is likely due to the location of the NCWD gage, which is at the base of the mountains rimming the southern edge of the Santa Clarita Valley.

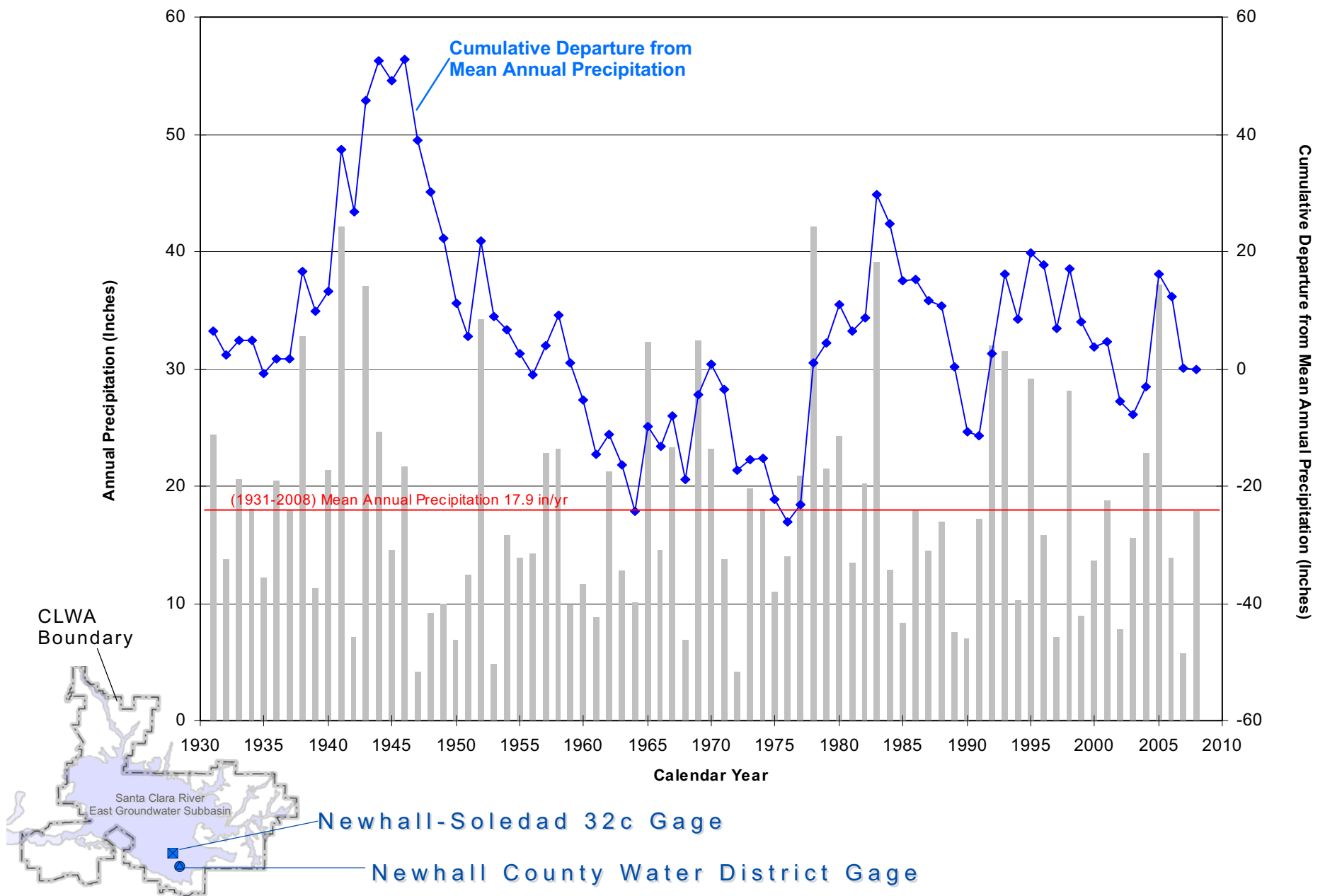
The Santa Clarita Valley is characterized as having an arid climate. Historically, intermittent periods of less-than-average precipitation have typically been followed by periods of greater-than-average precipitation in a cyclical pattern, with each wetter or drier period typically lasting from one to five years. The longer-term precipitation records for the Newhall-Soledad 32c gage are illustrated in Figure 1-3. Long-term average precipitation at that gage is 17.9 inches (1931-2008). Figure 1-3 also shows the cumulative departure from mean annual precipitation. In general, periods of less-than-average precipitation have been longer and more moderate than periods of greater-than-average precipitation. Recently, the periods from 1971 to 1976, 1984 to 1991 and 1999 to 2003 have been drier than average; the periods from 1977 to 1983 and 1992 to 1996 have been wetter than average. More recently, wet conditions that began in late 2004, continued into early 2005, ultimately resulting in about 37 inches of measured precipitation, or slightly more than 200 percent of long-term average precipitation, in that year. Those significantly wet conditions contributed to substantial groundwater recharge and decreased water demand that year. Subsequently, total precipitation in 2006 and 2007 was slightly to significantly lower, 14 inches and 6 inches, respectively, but water requirements were still close

to those projected in the 2005 UWMP in both of those years, and there were no dramatic changes in groundwater conditions. 2008 was an average year, with 17.9 inches of precipitation. Water demand in 2008 was below that estimated for average conditions in the 2005 UWMP, and below the short-term projection in the 2007 Water Report. Early year precipitation in 2009 has been approximately 5.8 inches, or about 50 percent of the normal January through March period. Combined with other water supply considerations, discussed in Chapter 4, those conditions are expected to result in 2009 water requirements being comparable to water use in 2008.









## **2. 2008 Water Requirements and Supplies**

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In 2008, total water use in the Santa Clarita Valley was 90,700 af, a decrease of 1,600 af from the previous year. Of the total water demand, 75,900 af (84 percent) were for municipal use and the remaining 14,800 af (16 percent) were for agricultural and other (miscellaneous) uses, including estimated individual domestic uses. These total water demands were met by a combination of about 48,700 af from local groundwater resources (about 33,900 af for municipal supply and about 14,800 af for agricultural and other uses), about 41,700 af of SWP and other imported water, and about 300 af of recycled water.

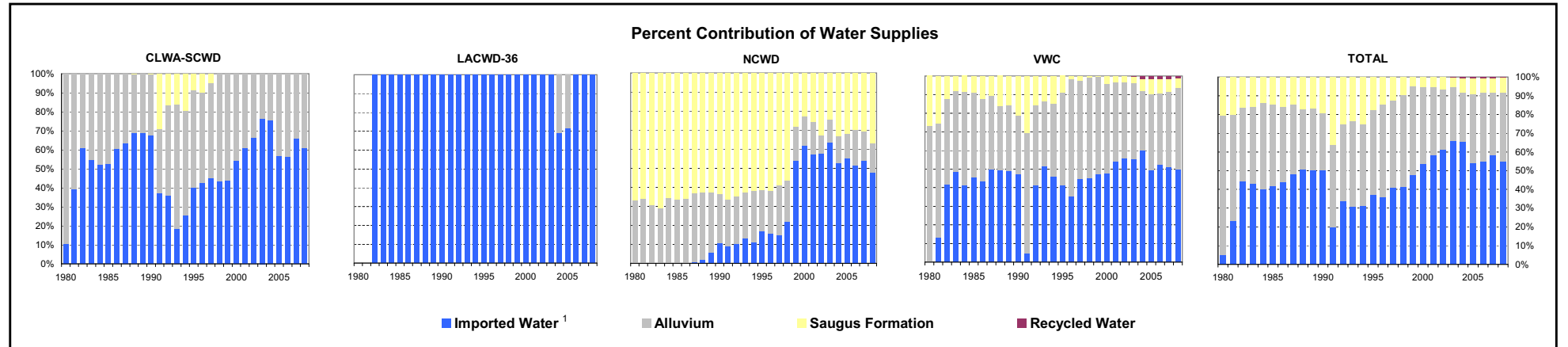
Compared to the previous year, total water demand in the Santa Clarita Valley decreased by almost two percent in 2008. Actual water use in 2008 was less than the short-term projected water requirement presented in last year's Water Report. The decrease in water use in 2008 is attributed to slowed growth in the number of new service connections and continued water conservation awareness. Recently, water usage is less consistently following weather-related trends and more consistently following the recent economic conditions of slowing growth. As reflected by the numbers of service connections in each Purveyor service area, growth in 2008 remained comparable to each of the preceding two years, with additions of about 1,000 new services connections each year, but in notable contrast to the predominant growth rate nearly three times higher from the late 1990's through 2004. In addition, the Purveyors and the local community were aware of the Governor's Alert in June 2008 with regard to drought conditions and potential water supply shortages. The widespread awareness of dry conditions throughout the state and the decrease in local growth are prime factors causing total water demand in 2008 to be slightly less than each of the preceding two years, and well below the demand projections in the 2005 UWMP.

The uses of local and imported water supplies to meet municipal water requirements since 1980, when the importation of SWP water began, are summarized in Table 2-1. Notable with regard to municipal water requirements is that, through 2008, total municipal demand (75,900 af) continues to be below (by about 5,000 af in 2008) the projections in the 2005 UWMP.

Water supply utilization for all agricultural and other non-municipal uses is summarized in Table 2-2. The category of Small Private Domestic, Irrigation and Golf Course Uses in Table 2-2 includes an estimated 500 af of small private pumping from the Alluvium.

**Table 2-1**  
**Water Supply Utilization by Municipal Purveyors**  
**(Acre-Feet)**

Year	CLWA Santa Clarita Water Division				Los Angeles County Waterworks District 36				Newhall County Water District				Valencia Water Company					All Municipal Purveyors				
	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Total	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Total	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Total	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Recycled Water	Total	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Recycled Water	Total
1980	1,125	9,460	0	10,585	0	-	-	0	0	1,170	2,363	3,533	0	5,995	2,206	-	8,201	1,125	16,625	4,569	-	22,319
1981	4,602	7,109	0	11,711	0	-	-	0	0	1,350	2,621	3,971	1,214	5,597	2,329	-	9,140	5,816	14,056	4,950	-	24,822
1982	6,454	4,091	0	10,545	145	-	-	145	0	1,178	2,672	3,850	3,060	3,415	897	-	7,372	9,659	8,684	3,569	-	21,912
1983	5,214	4,269	0	9,483	207	-	-	207	0	1,147	2,787	3,934	3,764	3,387	611	-	7,762	9,185	8,803	3,398	-	21,386
1984	6,616	6,057	0	12,673	240	-	-	240	0	1,549	2,955	4,504	4,140	4,975	854	-	9,969	10,996	12,581	3,809	-	27,386
1985	6,910	6,242	0	13,152	272	-	-	272	0	1,644	3,255	4,899	4,641	4,633	885	-	10,159	11,823	12,519	4,140	-	28,482
1986	8,366	5,409	0	13,775	342	-	-	342	0	1,842	3,548	5,390	5,051	5,167	1,427	-	11,645	13,759	12,418	4,975	-	31,152
1987	9,712	5,582	0	15,294	361	-	-	361	22	2,127	3,657	5,806	6,190	4,921	1,305	-	12,416	16,285	12,630	4,962	-	33,877
1988	11,430	5,079	63	16,572	434	-	-	434	142	2,283	4,041	6,466	7,027	4,835	2,300	-	14,162	19,033	12,197	6,404	-	37,634
1989	12,790	5,785	0	18,575	457	-	-	457	428	2,367	4,688	7,483	7,943	5,826	2,529	-	16,298	21,618	13,978	7,217	-	42,813
1990	12,480	5,983	40	18,503	513	-	-	513	796	1,936	4,746	7,478	7,824	5,232	3,516	-	16,572	21,613	13,151	8,302	-	43,066
1991	6,158	5,593	4,781	16,532	435	-	-	435	675	1,864	4,994	7,533	700	9,951	4,642	-	15,293	7,968	17,408	14,417	-	39,793
1992	6,350	8,288	2,913	17,551	421	-	-	421	802	1,994	5,160	7,956	6,338	6,615	2,385	-	15,338	13,911	16,897	10,458	-	41,266
1993	3,429	12,016	2,901	18,346	465	-	-	465	1,075	1,977	5,068	8,120	8,424	5,815	2,182	-	16,421	13,393	19,808	10,151	-	43,352
1994	5,052	10,996	3,863	19,911	453	-	-	453	906	2,225	5,103	8,234	7,978	6,847	2,565	-	17,390	14,389	20,068	11,531	-	45,988
1995	7,955	10,217	1,726	19,898	477	-	-	477	1,305	1,675	4,775	7,755	7,259	8,698	1,586	-	17,543	16,996	20,590	8,087	-	45,673
1996	9,385	10,445	2,176	22,006	533	-	-	533	1,213	1,803	4,871	7,887	6,962	12,433	326	-	19,721	18,093	24,681	7,373	-	50,147
1997	10,120	11,268	1,068	22,456	785	-	-	785	1,324	2,309	5,168	8,801	9,919	11,696	516	-	22,131	22,148	25,273	6,752	-	54,173
1998	8,893	11,426	0	20,319	578	-	-	578	1,769	1,761	4,557	8,087	9,014	10,711	149	-	19,874	20,254	23,898	4,706	-	48,858
1999	10,772	13,741	0	24,513	654	-	-	654	5,050	1,676	2,622	9,348	10,806	11,823	106	-	22,735	27,282	27,240	2,728	-	57,250
2000	13,751	11,529	0	25,280	800	-	-	800	6,024	1,508	2,186	9,718	12,004	12,179	1,007	-	25,190	32,579	25,216	3,193	-	60,988
2001	15,648	9,896	0	25,544	907	-	-	907	5,452	1,641	2,432	9,525	13,362	10,518	835	-	24,715	35,369	22,055	3,267	-	60,691
2002	18,921	9,513	0	28,434	1,069	-	-	1,069	5,986	981	3,395	10,362	15,792	11,603	965	-	28,360	41,768	22,097	4,360	-	68,225
2003	20,668	6,424	0	27,092	1,175	-	-	1,175	6,572	1,266	2,513	10,351	16,004	11,707	1,068	50	28,829	44,419	19,397	3,581	50	67,447
2004	22,045	7,146	0	29,191	854	380	-	1,234	5,896	1,582	3,739	11,217	18,410	9,862	1,962	420	30,654	47,205	18,590	5,701	420	71,916
2005	16,513	12,408	0	28,921	857	343	-	1,200	5,932	1,389	3,435	10,756	14,732	12,228	2,513	418	29,891	38,034	26,025	5,948	418	70,425
2006	17,146	13,156	0	30,302	1,289	-	-	1,289	5,898	2,149	3,423	11,470	16,313	11,884	2,449	419	31,065	40,646	27,189	5,872	419	74,126
2007	20,669	10,686	0	31,355	1,406	-	-	1,406	6,478	1,806	3,691	11,975	16,779	13,140	2,367	470	32,756	45,332	25,632	6,058	470	77,492
2008	18,598	11,878	0	30,476	1,354	-	-	1,354	5,428	1,717	4,195	11,340	16,325	14,324	1,770	311	32,730	41,705	27,919	5,965	311	75,900

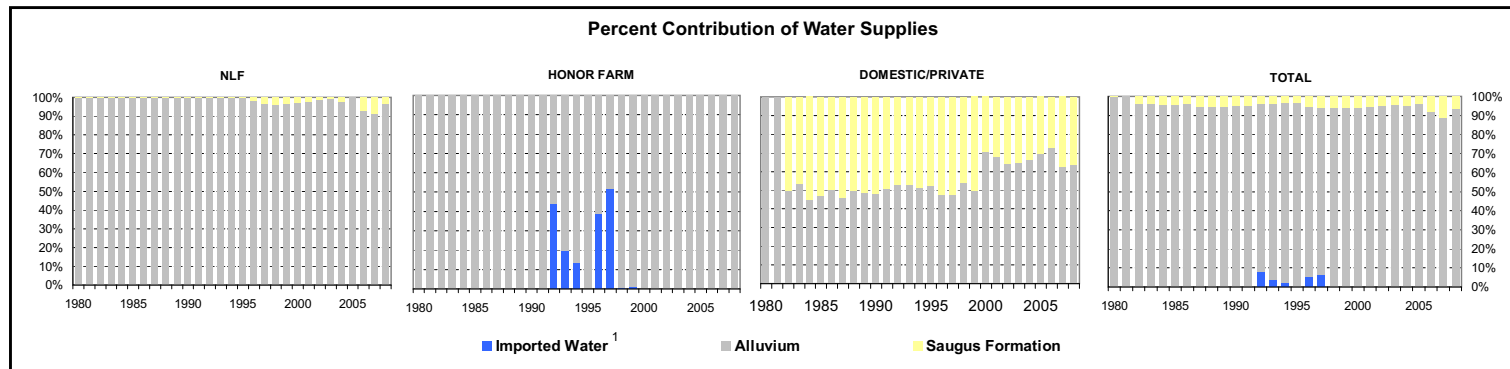


1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.



**Table 2-2**  
**Individual Water Supply Utilization by Agricultural and Other Users**  
**(Acre-Feet)**

Year	Newhall Land and Farming			Los Angeles County Honor Farm			Small Private Domestic, Irrigation and Golf Courses Uses			All Agricultural and Other Users			
	Alluvium	Saugus Formation	Total	Alluvium	Imported Water <sup>1</sup>	Total	Alluvium <sup>2</sup>	Saugus Formation <sup>3</sup>	Total	Imported Water <sup>1</sup>	Alluvium	Saugus Formation	Total
1980	11,331	20	11,351	3,000	0	3,000	500	0	500	0	14,831	20	14,851
1981	13,237	20	13,257	3,000	0	3,000	500	0	500	0	16,737	20	16,757
1982	9,684	20	9,704	3,000	0	3,000	500	501	1,001	0	13,184	521	13,705
1983	7,983	20	8,003	3,000	0	3,000	500	434	934	0	11,483	454	11,937
1984	11,237	20	11,257	3,000	0	3,000	500	620	1,120	0	14,737	640	15,377
1985	9,328	20	9,348	3,000	0	3,000	500	555	1,055	0	12,828	575	13,403
1986	8,287	20	8,307	3,000	0	3,000	500	490	990	0	11,787	510	12,297
1987	6,512	20	6,532	3,000	0	3,000	500	579	1,079	0	10,012	599	10,611
1988	5,951	20	5,971	3,000	0	3,000	500	504	1,004	0	9,451	524	9,975
1989	6,243	20	6,263	3,000	0	3,000	500	522	1,022	0	9,743	542	10,285
1990	8,225	20	8,245	2,000	0	2,000	500	539	1,039	0	10,725	559	11,284
1991	7,039	20	7,059	2,240	0	2,240	500	480	980	0	9,779	500	10,279
1992	8,938	20	8,958	1,256	987	2,243	500	446	946	987	10,694	466	12,147
1993	8,020	20	8,040	1,798	443	2,241	500	439	939	443	10,318	459	11,220
1994	10,606	20	10,626	1,959	311	2,270	500	474	974	311	13,065	494	13,870
1995	11,174	20	11,194	2,200	6	2,206	500	453	953	6	13,874	473	14,353
1996	12,020	266	12,286	1,237	780	2,017	500	547	1,047	780	13,757	813	15,350
1997	12,826	445	13,271	1,000	1,067	2,067	500	548	1,048	1,067	14,326	993	16,386
1998	10,250	426	10,676	2,000	12	2,012	500	423	923	12	12,750	849	13,611
1999	13,824	479	14,303	1,842	20	1,862	500	509	1,009	20	16,166	988	17,174
2000	11,857	374	12,231	1,644	3	1,647	1,220	513	1,733	3	14,721	887	15,611
2001	12,661	300	12,961	1,604	0	1,604	1,224	573	1,797	0	15,489	873	16,362
2002	13,514	211	13,725	1,602	0	1,602	1,063	589	1,652	0	16,179	800	16,979
2003	10,999	122	11,121	2,273	0	2,273	931	504	1,435	0	14,203	626	14,829
2004	10,991	268	11,259	2,725	0	2,725	1,071	535	1,606	0	14,787	803	15,590
2005	8,648	6	8,654	2,499	0	2,499	1,133	499	1,632	0	12,280	505	12,785
2006	11,477	934	12,411	3,026	0	3,026	1,369	506	1,875	0	15,872	1,440	17,312
2007	9,968	971	10,939	2,085	0	2,085	1,088	656	1,744	0	13,141	1,627	14,768
2008	9,191	330	9,521	3,506	0	3,506	1,100	623	1,723	0	13,797	953	14,750

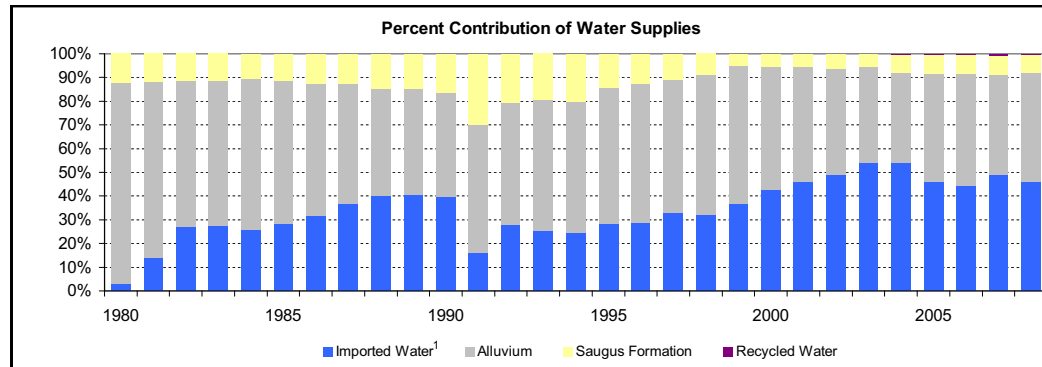


1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.
2. Robinson Ranch Golf Course irrigation and estimated private pumping.
3. Valencia Country Club and Vista Valencia Golf Course irrigation.

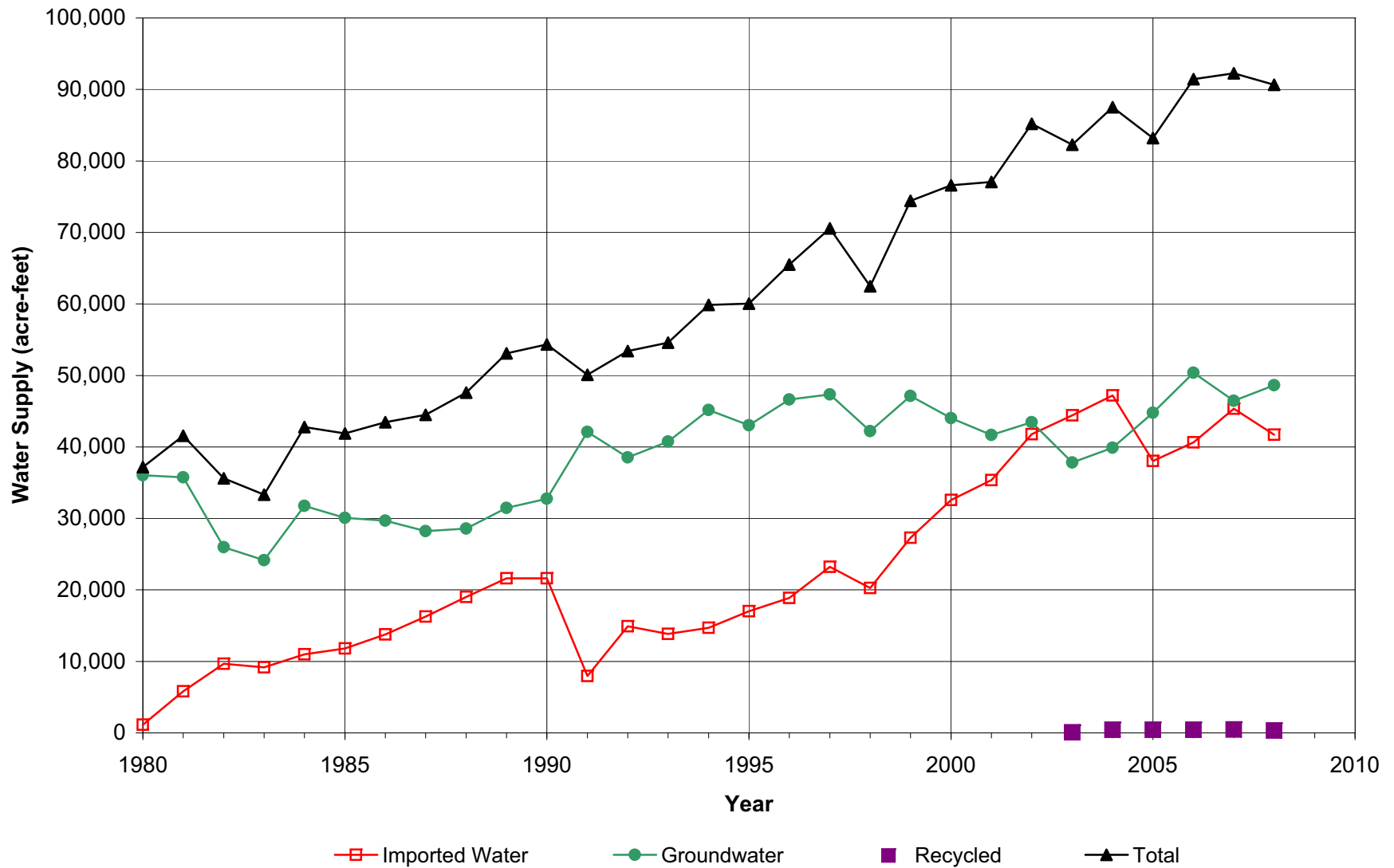
Water supply utilization for all uses in the Santa Clarita Valley, again for the period 1980 to present, is summarized in Table 2-3. The trends in utilization of local groundwater and imported water, complemented by the recent addition of recycled water, are graphically illustrated in Figure 2-1. As can be seen by inspection of Table 2-2 and Figure 2-1, total water use in the Valley has nearly linearly increased since the early 1980's, with some weather-related fluctuations in certain years. The resultant increase in total water demand, since the inception of supplemental SWP importation, has been from about 37,000 acre-feet in 1980 to the mid-80,000 acre-feet per year range through 2000-2005, to a recent leveling off at the low-90,000 acre-feet per year range in 2006 through 2008. As can also be seen by inspection of Table 2-2 and Figure 2-1, most of that increase in water demand has been met with generally increasing importation of SWP water, most recently complemented by other imported water as discussed herein. Since the early 1990's, following a decade of decreased groundwater use during the initial period of SWP importation, total groundwater pumping has fluctuated from year to year, but has remained within a range between about 38,000 and 50,000 acre-feet per year through 2008.

**Table 2-3**  
**Total Water Supply Utilization for Municipal, Agricultural and Other Uses**  
**(Acre-Feet)**

Year	<i>Imported Water<sup>1</sup></i>	<i>Alluvium</i>	<i>Saugus Formation</i>	<i>Recycled Water</i>	<b>Total</b>
1980	1,125	31,456	4,589	-	37,170
1981	5,816	30,793	4,970	-	41,579
1982	9,659	21,868	4,090	-	35,617
1983	9,185	20,286	3,852	-	33,323
1984	10,996	27,318	4,449	-	42,763
1985	11,823	25,347	4,715	-	41,885
1986	13,759	24,205	5,485	-	43,449
1987	16,285	22,642	5,561	-	44,488
1988	19,033	21,648	6,928	-	47,609
1989	21,618	23,721	7,759	-	53,098
1990	21,613	23,876	8,861	-	54,350
1991	7,968	27,187	14,917	-	50,072
1992	14,898	27,591	10,924	-	53,413
1993	13,836	30,126	10,610	-	54,572
1994	14,700	33,133	12,025	-	59,858
1995	17,002	34,464	8,560	-	60,026
1996	18,873	38,438	8,186	-	65,497
1997	23,215	39,599	7,745	-	70,559
1998	20,266	36,648	5,555	-	62,469
1999	27,302	43,406	3,716	-	74,424
2000	32,582	39,937	4,080	-	76,599
2001	35,369	37,544	4,140	-	77,053
2002	41,768	38,276	5,160	-	85,204
2003	44,419	33,599	4,207	50	82,276
2004	47,205	33,377	6,503	420	87,505
2005	38,034	38,305	6,453	418	83,210
2006	40,646	43,061	7,312	419	91,438
2007	45,332	38,773	7,684	470	92,260
2008	41,705	41,716	6,918	311	90,650



1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.



### **3. Water Supplies**

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Prior to 1980, local groundwater extracted from the Alluvium and the Saugus Formation was the sole source of water supply in the Santa Clarita Valley. Since 1980, local groundwater supplies have been supplemented with imported SWP water supplies, augmented in 2007 by acquisition of additional supplemental water from the Buena Vista Water Storage District. Those water supplies have also been slightly augmented by deliveries from CLWA's recycled water program since 2003. This section describes the groundwater resources of the Santa Clarita Valley, SWP and other imported water supplies, and CLWA's recycled water program.

#### **3.1 Groundwater Basin Yield**

The groundwater basin generally beneath the Santa Clarita Valley, identified in the State Department of Water Resources' Bulletin 118 as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin No. 4-4.07), is comprised of two aquifer systems. The Alluvium generally underlies the Santa Clara River and its several tributaries, and the Saugus Formation underlies practically the entire Upper Santa Clara River area. The mapped extent of the Santa Clara River Valley East Subbasin in DWR Bulletin 118 and its relationship to the extent of the CLWA service area are illustrated in Figure 3-1. The subbasin boundary approximately coincides with the outer extent of the Alluvium and Saugus Formation.

A 2001 Update Report on both the Alluvium and Saugus Formation Aquifers (Slade, 2002), which updated analyses and interpretation of hydrogeologic conditions from earlier reports (Slade, 1986 and 1988), included extensive detail on major aspects of the groundwater basin. Notable parts of the Update Report relative to groundwater supply included findings that:

- Analysis of historical groundwater levels and production indicates that there have been no conditions that would be illustrative of groundwater overdraft.
- Utilization of operational yield (as opposed to perennial yield) as a basis for managing groundwater production would be more applicable in this basin to reflect fluctuating utilization of groundwater in conjunction with imported SWP water.
- Operational yield of the Alluvium would typically be 30,000 to 40,000 afy for wet and normal rainfall years, with an expected reduction into the range of 30,000 to 35,000 afy in dry years.

- Operational yield of the Saugus Formation would typically be in the range of 7,500 to 15,000 afy on a long-term basis, with possible short-term increases during dry periods into a range of 15,000 to 25,000 afy, and to 35,000 afy if dry conditions continue.

Following on the 2001 Update Report, the groundwater component of overall water supply in the Valley derives from a groundwater operating plan to meet water requirements (municipal, agricultural, small domestic) while maintaining the basin in a sustainable condition (i.e., no long-term depletion of groundwater or interrelated surface water). This operating plan also addresses groundwater contamination issues in the basin, all consistent with the adopted Groundwater Management Plan. The groundwater operating plan is based on the concept that pumping can vary from year to year to generally rely on increased groundwater use in dry periods and increased recharge during wet periods, and to collectively assure that the groundwater basin is adequately replenished through various wet/dry cycles.

The groundwater operating plan, summarized in Table 3-1, is as follows:

**Alluvium** – Pumping from the Alluvial Aquifer in a given year is related to local hydrologic conditions in the eastern Santa Clara River watershed. Pumping is expected to typically range between 30,000 and 40,000 afy following normal and above-normal rainfall years. Due to hydrogeologic constraints in the eastern part of the basin, pumping is expected to be typically reduced to between 30,000 and 35,000 afy following locally dry years.

**Saugus Formation** – Pumping from the Saugus Formation in a given year is related to the availability of other water supplies, particularly from the SWP. During average-year conditions within the SWP system, Saugus pumping is expected to typically range between 7,500 and 15,000 afy. Planned dry-year pumping from the Saugus Formation is expected to range between 15,000 and 25,000 afy during a drought year and can increase to between 21,000 and 25,000 afy if SWP deliveries are reduced for two consecutive years, and between 21,000 and 35,000 afy if SWP deliveries are reduced for three consecutive years. Such high pumping is expected to typically be followed by periods of reduced (average-year) pumping, at rates between 7,500 and 15,000 afy, to further enhance the effectiveness of natural recharge processes that would recover water levels and groundwater storage volumes after the higher pumping during dry years.

**Table 3-1**  
**Groundwater Operating Plan for the Santa Clarita Valley**

<b>Aquifer</b>	<b>Groundwater Production (af)</b>			
	<b>Normal Years</b>	<b>Dry Year 1</b>	<b>Dry Year 2</b>	<b>Dry Year 3</b>
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus	7,500 to 15,000	15,000 to 25,000	21,000 to 25,000	21,000 to 35,000
<b>Total</b>	<b>37,500 to 55,000</b>	<b>45,000 to 60,000</b>	<b>51,000 to 60,000</b>	<b>51,000 to 70,000</b>

In 2004, as part of analyzing the restoration of perchlorate-impacted groundwater supply in the Valley, a numerical groundwater flow model was developed and calibrated for use in analyzing the response of the groundwater basin to long-term operation at the operational yields noted above, with focus on perchlorate extraction and the control of perchlorate migration in the basin. That groundwater flow model was then utilized in 2005 to specifically analyze the sustainability of groundwater supplies in both the Alluvium and the Saugus Formation through a long-term (78 year) hydrologic period that was selected to examine groundwater basin response to variations in pumping in accordance with the operating plan. Resultant projections of groundwater levels, groundwater storage, and surface water flows showed the basin to respond in a long-term sustainable manner, with no chronic depletion of groundwater levels, storage, or stream flows. The analysis of groundwater sustainability was summarized in a Basin Yield Report (CH2M Hill and LSCE, 2005), which included the following findings:

- The groundwater basin has historically been, and continues to be, in good operating condition and not in overdraft conditions, as indicated by historical data.
- The groundwater plan 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.
- The groundwater operating plan for the Alluvium and the Saugus Formation can be used for long-term water supply planning purposes. In particular, although increased pumping from the Saugus Formation during dry periods can be expected to cause short-term declines in groundwater levels, it is not projected to cause permanent declines in groundwater discharges or streamflow. Saugus groundwater levels can be expected to recover to pre-drought conditions when pumping is reduced in subsequent wet to normal years.

- The strategy around which the groundwater operating plan was designed (maximizing the use of Alluvial Aquifer and imported water during years of normal or above-normal availability of these supplies, while limiting the use of the Saugus Formation during these periods, then temporarily increasing Saugus pumping during years when SWP supplies are significantly reduced because of drought conditions) is viable on a long-term basis.
- The historical observations of basin conditions and the model simulations together support the historical and ongoing confidence that groundwater can continue to be a sustainable source of water supply under the groundwater operating plan.

In 2008, partly in preparation for the next UWMP in 2010, and in part because of recent events that can be expected to impact the future reliability of the supplemental water supply from the State Water Project, the Purveyors initiated an updated analysis to further assess groundwater development potential and possible augmentation of the groundwater operating plan. A further consideration in conducting an updated analysis of the basin is that global climate change could alter local rainfall and associated recharge patterns, thus affecting local groundwater supplies, i.e. the yield of the basin. Finally, the Los Angeles County Flood Control District (LACFCD) is planning a number of small flood control projects in the Santa Clarita Valley; estimated amounts of conservation/groundwater recharge potential are being included for each of the individual projects in the overall LACFCD planning, and the Purveyors have interest in whether that potential could appreciably augment the yield of the basin.

In light of the above, the scope of the updated basin yield analysis includes the following:

- Consider the potential increased utilization of groundwater for regular (wet/normal) and/or dry-year water supply, including distribution of the yield by reach of the Santa Clara River alluvium and its various tributaries.
- Consider potential augmentation of basin yield via initiation of artificial groundwater recharge using stormwater runoff in selected areas of the basin.
- Quantitatively or qualitatively, depending on the availability of technical reference material, describe general impacts of climate change on the groundwater basin and its yield.

The results of the updated basin yield analysis are scheduled to be completed in early 2009.

### **3.2 Alluvium – General**



The spatial extent of the aquifers used for groundwater supply in the Valley, the Alluvium and the Saugus Formation, are illustrated in Figure 3-1. Geologic descriptions and hydrogeologic details related to both aquifers are included in several technical reports including Slade (1986, 1988 & 2002), CH2M Hill (2005) and LSCE (2005), and in the 2005 Urban Water Management Plan.

Consistent with the 2001 Update Report (Slade), the 2005 Basin Yield Report (CH2M Hill and LSCE), and the 2005 UWMP, the management practice of the Purveyors continues to be to rely on groundwater from the Alluvium for part of the overall municipal water supply, whereby total pumping from the Alluvium (by municipal, agricultural, and small private pumpers) is in accordance with the groundwater operating plan, 30,000 to 40,000 afy following wet and normal years, with possible reduction to 30,000 to 35,000 afy following dry years. Such operation will maximize use of the Alluvium because of the aquifer's ability to store and produce good quality water on a sustainable basis, and because the Alluvium is capable of rapid recovery of groundwater storage in wet periods. As with many groundwater basins, it is possible to intermittently exceed a long-term average yield for one or more years without long-term adverse effects. Higher pumping for short periods may temporarily lower groundwater storage and related water levels, as has been the case in the Alluvium several times since the 1930's. However, subsequent decreases in pumping limit the amount of water level decline. Normal to wet-period recharge results in a rapid return of groundwater levels to historic highs. Historical groundwater data collected from the Alluvium over numerous hydrologic cycles continue to provide assurance that groundwater elevations, if locally lowered during dry periods, recover in subsequent average or wet years. Such water level response to rainfall is a significant characteristic of permeable, porous, alluvial aquifer systems that occur within large watersheds. In light of these historical observations, complemented by the long-term sustainability analysis using the numerical groundwater flow model, there is ongoing confidence that groundwater will continue to be a sustainable source of water supply at the rates of pumping described in the Basin Yield Report, now incorporated in the 2005 UWMP.

Long-term adverse impacts to the Alluvium could occur if the amount of water extracted from the aquifer were to exceed the amount of water that recharges the aquifer over an extended period. However, the quantity and quality of water in the Alluvium and all significant pumping from the Alluvium are routinely monitored, and no long-term adverse impacts have ever been evident. Ultimately, the Purveyors have identified cooperative measures to be taken, if needed, to ensure sustained use of the aquifer. Such measures include but are not limited to the continuation of conjunctive use of SWP and other imported surface water with local groundwater, artificial recharge of the aquifer with local runoff or other surface water supplies,

financial incentives discouraging extractions above a selected limit, expanded use of other water supplies such as recycled water, and expanded implementation of demand-side management, including conservation.

### **3.2.1 Alluvium – Historical and Current Conditions**

Total pumping from the Alluvium in 2008 was about 41,750 af, an increase of 2,950 af from the preceding year. Total Alluvium pumping was slightly above the groundwater operating plan range. Of the total Alluvial pumping in 2008, about 27,950 af (67 percent) was for municipal water supply, and the balance, about 13,800 af (33 percent), was for agriculture and other smaller uses, including individual domestic uses. In a longer-term context, there has been a change in municipal/agricultural pumping distribution since SWP deliveries began in 1980, toward a higher fraction for municipal water supply (from about 50 percent to more than 65 percent of Alluvial pumpage), which reflects the general land use changes in the area. Ultimately, on a long-term average basis since the beginning of imported water deliveries from the SWP, total Alluvial pumping has been about 32,000 afy, which is at the lower end of the range of operational yield of the Alluvium. That average has been higher over the last decade, about 38,800 afy, which remains within the range of operational yield of the Alluvium. The overall historic record of Alluvial pumping is illustrated in Figure 3-2.

Groundwater levels in various parts of the basin have historically exhibited different responses to both pumpage and climatic fluctuations. During the last 20 to 30 years, depending on location, Alluvial groundwater levels have remained nearly constant (generally toward the western end of the basin), or have fluctuated from near the ground surface when the basin is full, to as much as 100 feet lower during intermittent dry periods of reduced recharge (generally toward the eastern end of the basin). For illustration of the various groundwater level conditions in the basin, the Alluvial wells have been grouped into areas with similar groundwater level patterns, as shown in Figure 3-3. The groundwater level records have been organized into hydrograph form (groundwater elevation vs. time) as illustrated in Figures 3-4 and 3-5. Also shown on these plots is an annual marker indicating whether the year had a below average amount of rainfall. The wells shown on these plots are representative of the areas, showing the range of values (highest to lowest elevation) through the area, and containing a sufficiently long-term record to illustrate trends over time.

Situated along the eastern upstream end of the Santa Clara River Channel, the ‘Mint Canyon’ area, located at the far eastern end of the groundwater basin, and the nearby ‘Above Saugus WRP’ areas generally exhibit similar groundwater level responses (Figure 3-4) to hydrologic and pumping conditions. As shown in Figure 3-6, the Purveyors decreased total Alluvial pumping

from the 'Mint Canyon' area steadily from 2000 through 2003, and correspondingly increased pumping in the 'Below Saugus WRP', and 'Below Valencia WRP' areas. In spite of a continued period of below-average precipitation from 1999 to 2003, that progressive decrease in pumping resulted in a cessation of groundwater level decline in the 'Mint Canyon Area'. Subsequent wet conditions in late 2004, continuing into 2005, resulted in full recovery of groundwater storage. With such high groundwater levels, pumping in the 'Mint Canyon' area was increased in 2005 and 2006, with no significant change in groundwater levels in 2005 and a slight decrease in 2006. Partly in response to decreased pumping in 'Mint Canyon' and 'Above Saugus WRP' areas in 2007 and 2008, groundwater levels slowed their decrease, leveled off, or increased in late 2008 with the onset of seasonal precipitation. These parts of the Valley have historically experienced a number of alternating wet and dry hydrologic conditions (Figure 3-4) during which groundwater level declines have been followed by returns to high or mid-range historic levels. This trend has continued over the last 3 years where average hydrologic conditions in 2008 followed two dry years, and groundwater levels remain within mid-range levels.

In the 'Bouquet Canyon' area, pumping has remained relatively constant for the last ten years, and water levels have fluctuated with consecutive wet or dry years. During and since the most recent wet conditions of 2004 and 2005, water levels returned to within historic mid-range levels. This groundwater level response to wet/dry years and pumping is typical for these areas of the basin. When water levels are low, well yields and pumping capacities in these areas can be impacted. The affected Purveyors typically respond by increasing use of Saugus Formation and imported (SWP) supplies, as shown in Table 2-3. The Purveyors also shift a fraction of the Alluvial pumping that would normally be supplied by these eastern areas to areas further west, where well yields and pumping capacities remain fairly constant because of smaller groundwater level fluctuations.

In the western parts and lower elevations of the Alluvium, groundwater levels respond to pumping and precipitation in a similar manner, but to an attenuated or limited extent of those situated in the eastern, higher elevations areas. As shown in the western group of hydrographs in Figure 3-5, groundwater level fluctuations become more subtle moving westward and lower in the Valley. The 'Below Saugus WRP' area, along the Santa Clara River immediately downstream of the Saugus Water Reclamation Plant, and the 'San Francisquito Canyon' area generally exhibit similar groundwater level trends. In this middle part of the basin, historical groundwater levels were lower in the 1950's and 60's than current levels. Groundwater levels in this area notably recovered as pumping declined through the 1960's and 1970's. They have subsequently sustained generally high levels for much of the last 30 years, with three dry-period exceptions: mid-1970's, late 1980's to early 1990's, and the late 1990's to early 2000's. Recoveries to previous high groundwater levels followed both of the short dry-period declines in

the 1970's and 1990's. More recently, groundwater levels recovered significantly in both areas, to historic highs, following a wetter-than-average year in 2004 and significantly wet 2005. Since 2005, pumping has been increasing in the 'Below Saugus WRP' area, while 'San Francisquito Canyon' area pumping approximately doubled in 2005, but has since progressively declined. Coupled with the dry 2006-2007 period, water levels had seen varying degrees of decline until they leveled off with the onset of a 'near-normal' amount of seasonal precipitation in 2008. By the end of 2008, water levels remained in mid-range to high historical range.

The 'Castaic Valley' area is located along Castaic Creek below Castaic Lake. Below that and along the Santa Clara River, downstream of the Valencia Water Reclamation Plant, is the 'Below Valencia WRP' area, where discharges of treated effluent from the Valencia WRP to the Santa Clara River contribute to groundwater recharge. In the 'Castaic Valley' area, groundwater levels continue to remain fairly constant, with slight responses to climatic and other fluctuations, since the 1950's (Figure 3-5). Small changes in groundwater levels in 2007 and 2008 were consistent with other short-term historical fluctuations. The long-term, generally constant trend remained through 2008. The 'Below Valencia WRP' area groundwater levels exhibit slight, if any, response to climatic fluctuations, and have remained fairly constant since the 1950's despite, over the last 20 years, a notable increase in pumping that continued through 2008 in that area (Figure 3-5 and 3-6).

In summary, depending on the period of available data, all the history of groundwater levels in the Alluvium shows the same general picture: recent (last 30 years) groundwater levels have exhibited historic highs; in some locations, there are intermittent dry-period declines (resulting from use of some groundwater from storage) followed by wet-period recoveries (and associated refilling of storage space). On a long-term basis, whether over the last 28 years since importation of supplemental SWP water, or over the last 40 to 50 years (since the 1950's - 60's), the Alluvium shows no signs of water level-related overdraft, i.e., no trend toward decreasing water levels and storage. Consequently, pumping from the Alluvium has been and continues to be sustainable, well within the operational yield of that aquifer on a long-term average basis, and also within the operating yield in almost every individual year.

### **3.3 Saugus Formation – General**

Saugus wells operated by the Purveyors are located in the southern portion of the basin south of the Santa Clara River (Figure 3-7). Consistent with the 2001 Update Report (Slade) and the 2005 Basin Yield Report (CH2M Hill and LSCE), the Purveyors utilize the Saugus in accordance with the groundwater operating plan, in the range of 7,500 to 15,000 afy in average/normal years, with planned dry-year pumping of 15,000 to 35,000 afy for one to three

consecutive dry years, when shortages to CLWA's SWP water supplies could occur. Such high pumping would be followed by periods of lower pumping (7,500 to 15,000 afy in average/normal years as noted above) in order to allow recharge to recover water levels and storage in the Saugus. Maintaining the substantial volume of water in the Saugus Formation is an important strategy to help maintain water supplies in the Santa Clarita Valley during drought periods.

### **3.3.1 Saugus Formation – Historical and Current Conditions**

Total pumping from the Saugus in 2008 was about 6,950 af, or about 750 af less than in the preceding year. Of the total Saugus pumping in 2008, most (about 5,950 af) was for municipal water supply, and the balance (1,000 af) was for agricultural and other irrigation uses. Historically, groundwater pumping from the Saugus peaked in the early 1990's and then steadily declined through the remainder of that decade. Since then, Saugus pumping had been in the range of about 4,000 to 6,500 afy, with the increase to almost 7,700 af in 2007. Over the last five years, the municipal use of Saugus water has been relatively unchanged; almost all of the relatively small fluctuations from year to year have been related to non-municipal usage. On a long-term average basis since the importation of SWP water, total pumping from the Saugus Formation has ranged between a low of about 3,700 afy (in 1999) and a high of nearly 15,000 afy (in 1991); average pumping from 1980 to present has been about 6,800 afy. These pumping rates remain well within, and generally at the lower end of the range of operational yield of the Saugus Formation. The overall historic record of Saugus pumping is illustrated in Figure 3-8.

Unlike the Alluvium, which has an abundance of wells with extensive water level records, the water level data for the Saugus Formation are limited by both the distribution of the wells in that Formation and the periods of water level records. The wells that do have water level records extending back to the mid-1960's indicate that groundwater levels in the Saugus Formation were highest in the mid-1980's and are currently higher than they were in the mid-1960's (Figure 3-9). Based on these data, there is no evidence of any historic or recent trend toward permanent water level or storage decline. There continue to be seasonal fluctuations in groundwater levels but the prevalent longer-term trend is one of general stability.

Consistent with the 2001 Update Report (Slade), the 2005 Basin Yield Report (CH2M Hill and LSCE), and the 2005 UWMP, the Purveyors continue to maintain groundwater storage and associated water levels in the Saugus Formation so that supply is available during drought periods, when Alluvial pumping might be reduced and/or SWP supplies also decreased. The period of increased pumping during the early 1990's is a good example of this management strategy. Most notably, in 1991, when SWP deliveries were substantially reduced, increased

pumping from the Saugus made up almost half of the decrease in SWP deliveries. The increased Saugus pumping over several consecutive dry years (1991-1994) resulted in short-term declining groundwater levels, reflecting the use of water from storage. However, groundwater levels subsequently recovered when pumping declined, reflecting recovery of groundwater storage in the Saugus Formation.

### **3.4 Imported Water**

CLWA obtains water supplies from the State Water Project (SWP), which is owned and operated by the California Department of Water Resources (DWR). CLWA is one of 29 contractors holding long-term SWP contracts with DWR. SWP water originates as rainfall and snowmelt in northern and central California. Runoff is stored in Lake Oroville, which is the project's largest storage facility. The water is then released from Lake Oroville down the Feather River to the Sacramento River and through the Sacramento-San Joaquin Delta. Water is diverted from the Delta into the Clifton Court Forebay, and then pumped into the 444-mile long California Aqueduct. SWP water is temporarily stored in San Luis Reservoir, which is jointly operated by DWR and the U.S. Bureau of Reclamation. Prior to delivery to CLWA, SWP supplies are stored in Castaic Lake, located at the end of the West Branch of the California Aqueduct.

CLWA's service area covers approximately 195 square miles (124,800 acres), including the City of Santa Clarita and surrounding unincorporated communities. CLWA obtains SWP water from a SWP terminal reservoir, Castaic Lake. The water is treated, filtered and disinfected at CLWA's Earl Schmidt Filtration Plant and Rio Vista Water Treatment Plant, which have a combined treatment capacity of 86 million gallons per day. Treated water is delivered from the treatment plants by gravity flow to each of the four Purveyors through a distribution network of pipelines and turnouts. At present, CLWA delivers water to the four Purveyors through 25 potable turnouts as schematically illustrated in Figure 3-10.

In 2008, CLWA fulfilled the following major accomplishments in order to enhance, preserve, and strengthen the quality and reliability of existing and future supplies:

- continued participation in a long-term water banking programs with Rosedale-Rio Bravo Water Storage District and the Semitropic Water Storage District, although water was not withdrawn despite a second year of drought,
- continued implementation of the AB 3030 Groundwater Management Plan,
- continued implementation of the water conservation Best Management Practices,
- reconvened the Santa Clarita Valley Drought Committee,

- continued construction of treatment and distribution facilities for restoration of municipal well capacity impacted by perchlorate contamination,
- continued cooperative effort with the U.S. Army Corps of Engineers for characterization studies of the former Whittaker-Bermite site and in a task force effort with the City of Santa Clarita, local legislators, and state agencies to effect the cleanup and remediation of all aspects of the former Whittaker-Bermite site, including perchlorate contamination of local groundwater,
- completed final design of the expansion of the Rio Vista Water Treatment Plant from 30 mgd to 60 mgd, and
- continued recycled water service.

### **3.4.1 State Water Project Table A Supplies**

Each SWP contractor has a specified water supply amount shown in Table A of its contract that currently totals approximately 4.1 million af. The term of the CLWA contract is through 2038 and is renewable after that year. Although the SWP has not been fully completed, the SWP can deliver all 4.1 million af of Table A Amounts during certain wet years.

CLWA has a contractual Table A Amount of 95,200 af per year of water from SWP.<sup>1</sup> On November 21, 2007, the initial allocation for 2008 was announced as 25 percent; the allocation was increased to 35 percent on January 31, 2008; the allocation was not subsequently changed. CLWA's final allocation of Table A Amount for 2008 was thus 35 percent, or 33,320 af.

In addition to its Table A Amount, CLWA has access to 4,684 af of "flexible storage" in Castaic Lake. In 2005, CLWA negotiated an agreement with the Ventura County SWP contractors to allow CLWA to utilize their flexible storage account of 1,376 af. In combination, this provides

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<sup>1</sup> Of CLWA's 95,200 af annual Table A Amount, 41,000 afy was permanently transferred to CLWA in 1999 by Wheeler Ridge-Maricopa Water Storage District, a member unit of the Kern County Water Agency. CLWA's EIR prepared in connection with the 41,000 afy water transfer was challenged in *Friends of the Santa Clara River v. Castaic Lake Water Agency* (Los Angeles County Superior Court) ("Friends"). On appeal, the Court of Appeal held that since the 41,000 afy EIR tiered off the Monterey Agreement EIR that was later decertified, CLWA would also have to decertify its EIR as well and prepare a revised EIR. CLWA was not prevented from using any water that is part of the 41,000 afy transfer. Under the jurisdiction of the Los Angeles County Superior Court, CLWA prepared and circulated a revised Draft EIR for the transfer. CLWA approved the revised EIR in late 2004 ("2004 EIR") and lodged the EIR with the Los Angeles Superior Court. Thereafter, the case was dismissed with prejudice (i.e., permanently).

In January 2005, two new challenges to CLWA's 2004 EIR were filed in the Ventura County Superior Court by the Planning and Conservation League ("PCL") and by the California Water Impact Network ("CWIN"); these cases were consolidated and transferred to Los Angeles County Superior Court, *Planning and Conservation League v. Castaic Lake Water Agency* (Los Angeles County Superior Court,) ("PCL Action"). In May 2007, a final Statement of Decision was filed by the trial court in the PCL Action. It included a determination that the transfer is valid and cannot be terminated or unwound. The trial court did find one defect in the 2004 EIR, requiring Judgment to be entered against CLWA. The defect, however, did not relate to the environmental conclusions reached in the 2004 EIR. CLWA has been ordered to set aside its certification of the 2004 EIR, correct the defect and report back to the Court. The Writ issued by the Court as part of the Judgment specifically states that the Judgment does not call for CLWA to set aside the transfer. In July 2007, Petitioners filed a Partial Notice of Appeal and CLWA subsequently filed a Notice of Cross Appeal. The matter is currently pending before the Second District Court of Appeal, Division Four. All briefing is completed and oral argument is expected to be set by the appellate court in the spring of 2009.

total flexible storage of 6,060 af, which is maintained in Castaic Lake for use in a future dry period or an emergency. This amount was available in 2008, but was not utilized due to other available supplies.

Also in 2005, CLWA completed an agreement to participate in a long-term water banking program with Rosedale-Rio Bravo Water Storage District in Kern County. CLWA delivered 20,000 af of its excess Table A water into storage in both 2005 and 2006. CLWA delivered another 8,200 af into that storage account in 2007 but did not contribute to or withdraw SWP water from the bank in 2008. This long-term program will allow the storage of 100,000 af at any one time, and will provide significant dry year reliability for the Santa Clarita Valley.

As delineated in Table 3-2, with the 35 percent Table A allocation and other imported water supplies, including 12,146 af of carryover from 2007, CLWA had total available supply of 57,488 af in 2008, most of which was delivered to the Purveyors (41,705 af), leaving 14,610 af of Table A Amount available for carryover to 2009.

### **3.4.2 Other Imported Water Supplies**

In early 2007, CLWA finalized a Water Acquisition Agreement with the Buena Vista Water Storage District (Buena Vista) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo) in Kern County. Under this Program, Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within Rosedale-Rio Bravo's service area on an ongoing basis.<sup>2</sup> CLWA will receive 11,000 af of these supplies annually through either exchange of Buena Vista's and Rosedale-Rio Bravo's SWP supplies or through direct delivery of water to the California Aqueduct via the Cross Valley Canal.

In 2008, CLWA entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through the Department of Water Resources to 21 State Water Project contractors (including CLWA) and the San Luis and Delta-Mendota Water Authority. CLWA may purchase up to approximately 1,000 af per year and in 2008 received 1,022 af as part of the Agreement.

### **3.4.3 Imported Water Supply Reliability**

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<sup>2</sup> A CEQA action was filed by California Water Impact Network (CWIN) in November 2006 challenging the adequacy of CLWA's EIR on the acquisition of 11,000 af from the Buena Vista Water Storage District and Rosedale-Rio Bravo Water Storage District. In November 2007, a Los Angeles Superior Court ruled in favor of CLWA on all points. In January 2008, CWIN filed a notice of appeal. The case was argued before the appellate court March 2, 2009. On April 20, 2009, the Court of Appeal issued an opinion affirming the Superior Court's judgement.



**Table 3-2**  
**2008 CLWA Imported Water Supply and Disposition**  
**(acre-feet)**

<b><i>Supply</i></b>		
Net 2007 SWP Carryover to 2008 <sup>1</sup>		12,146
Buena Vista/Rosedale Rio-Bravo		11,000
Yuba County Accord Water		1,022
2008 Final SWP Allocation <sup>2</sup>		33,320
<b>Total 2008 Imported Water Supply</b>		<b>57,488</b>
<b><i>Disposition</i></b>		
Purveyor Deliveries (Total)		41,705
<i>CLWA SCWD</i>	<i>18,598</i>	
<i>Valencia Water Company</i>	<i>16,325</i>	
<i>Newhall County Water District</i>	<i>5,428</i>	
<i>Los Angeles County WWD 36</i>	<i>1,354</i>	
CLWA/DWR/Purveyor Metering <sup>3</sup>		1,173
Rosedale – Rio Bravo Water Banking and Exchange Program		0
2008 Table A Carryover to 2009 <sup>4</sup>		14,610
<b>Total 2008 Imported Water Disposition</b>		<b>57,488</b>

1. Amount used by CLWA, based on final DWR delivery accounting; total 2008 carryover was 12,146 af.
2. Final 2008 allocation was 35% of contractual Table A amount of 95,200 acre-feet, which was an increase from the initial allocation:

Initial allocation, November 21, 2007	25%
Final allocation, January 31, 2008	35%

3. Reflects meter reading differences.
4. Total 2008 Table A carryover to 2009.

The Department of Water Resources issued its Draft State Water Project Delivery Reliability Report 2007 in August 2008. This report is intended to assist SWP contractors in assessing the adequacy of the SWP component of their overall supplies. The report is updated with new information and calculations of delivery reliability every two years. The Draft addresses the effect of interim remedies ordered by a federal court to protect the endangered Delta smelt under the federal Endangered Species Act and potential climate change. The court order resulted in the preparation of a new Biological Opinion (BO) requiring DWR to implement mitigation requirements; however, impacts on SWP water supply reliability are uncertain at this point and may require yet another revision in the Reliability Report in the future. The current Reliability Report, which has not been revised for the specific impacts of the BO, projects long-term reliability of 66 to 69 percent during normal year hydrology. In 2007, CLWA staff assessed the impact of the current Reliability Report on the CLWA reliability analysis contained in the Agency's 2005 UWMP. It concluded that current and anticipated supplies are available to meet anticipated water supply needs. When a revision to the Reliability Report is completed, or if DWR updates the reliability figures in the existing report, CLWA will adjust its current reliability assessment as appropriate.

Groundwater banking and conjunctive use offer significant opportunities to improve water supply reliability for CLWA. Groundwater banking is the process of storing available supplies of water in groundwater basins during wet years or when supplemental water is otherwise available. During dry periods, or when imported water supply availability is reduced, banked water can be recovered from groundwater storage to replace, or firm up, the imported water supply deliveries.

As described herein, CLWA has entered into two groundwater banking programs and now has, in aggregate, over 115,000 acre-feet of recoverable water in banked groundwater storage outside the local groundwater basin. The first component of CLWA's overall groundwater banking program is the result of two 10-year agreements between CLWA and Semitropic Water Storage District whereby, over the terms of the two agreements, CLWA can withdraw up to 50,870 af of SWP Table A water that it stored in Semitropic to meet Valley demands when needed in dry years. The second component of the program, the long-term Rosedale-Rio Bravo Water Banking and Exchange Program in Kern County, has a recoverable total of 64,900 acre-feet in storage (i.e., 75,200 af originally banked less contractual losses).

Conjunctive use is the purposeful integrated use of surface water and groundwater supplies to maximize water supply from the two sources. CLWA and the Purveyors have been conjunctively utilizing local groundwater and imported surface water since the initial importation of SWP water in 1980. The groundwater banking programs described above allow CLWA to

firm up the imported water component of conjunctive use in the Valley by storing surplus SWP and other water, in wet years, in groundwater basins outside the Valley. This allows recovery and importation of that water as needed in dry years to maintain a greater overall amount of imported surface water to be used conjunctively with local groundwater, further supporting the sustainable use of local groundwater at the rates in the groundwater operating plan.

### **3.5 Water Quality – General**

Water delivered by the Purveyors consistently meets drinking water standards set by the Environmental Protection Agency (EPA) and the California Department of Public Health (DPH). An annual Water Quality Report is provided to all Santa Clarita Valley residents who receive water from one of the four water retailers. There is detailed information in that report about the results of quality testing of the groundwater and treated SWP water supplied to the residents of the Santa Clarita Valley during 2008. Several constituents of particular local interest are discussed in more detail below.

#### **Total Trihalomethanes**

In 2002, the United States Environmental Protection Agency implemented the new Disinfectants and Disinfection Byproducts Rule. In part, this rule established a new MCL of 80 µg/l (based on an annual running average) for Total Trihalomethanes (TTHM). TTHMs are byproducts created when chlorine is used as a means for disinfection. CLWA and the Purveyors implemented an alternative method of disinfection, chloramination, in 2005 to maintain compliance with the new rule and future regulations relating to disinfection byproducts. TTHM concentrations have remained significantly below the MCL since implementation of alternative disinfection.

#### **Perchlorate**

Perchlorate has been a water quality concern in the Valley since 1997 when it was originally detected in four wells operated by the Purveyors in the eastern part of the Saugus Formation, near the former Whittaker-Bermite facility. In late 2002, perchlorate was detected in a fifth municipal well, in this case an Alluvial well (SCWD's Stadium Well) also located near the former Whittaker-Bermite site. In early 2005, perchlorate was detected in a second Alluvial well (VWC's Well Q2) near the former Whittaker-Bermite site. In 2006, a very low concentration of perchlorate was detected in another Saugus well (NCWD's Well NC-13), near one of the originally impacted wells. However, that detection has been interpreted to not be an indication of continued perchlorate migration in a westerly direction. Subsequent monitoring well installation has been completed and a focused study of the Saugus Formation have ultimately been incorporated into the overall groundwater remediation and removal actions submitted by

Whittaker-Bermite and reviewed by the State Department of Toxic Substances Control (DTSC) as discussed below.

Wells with perchlorate concentrations exceeding the then-applicable Action Level (18 µg/l) or, more recently, the then-applicable Notification Level (6 µg/l)<sup>3</sup> were removed from active water supply service. One of the Alluvial wells was returned to active water supply service, with treatment, in late 2005 as discussed below; the other impacted wells remain out of service. The 2005 UWMP specifically addressed the adequacy of groundwater supply in light of the inactivation of the impacted Alluvial and Saugus wells; and it addressed the plan and schedule for restoration of perchlorate-impacted wells, including the protection of existing non-impacted wells. As summarized in the 2005 UWMP, the inactivation of the impacted wells does not constrain the ability to meet the groundwater component of total water supply in the Valley.

In 2000, CLWA and the impacted Purveyors filed a lawsuit against Whittaker Corporation (the former owner of the contaminated property) and Santa Clarita LLC and Remediation Financial, Inc. (the owners of record at that time). The lawsuit sought to have defendants pay all necessary costs of response, removal of the contaminant, remedial actions, and any liabilities or damages associated with the contamination. An Interim Settlement and Funding Agreement was reached in 2003. Although that Agreement expired in January 2005, the parties, under DTSC oversight, jointly developed a plan to “pump and treat” contaminated water from two of the Purveyors’ impacted wells to stop migration of the contaminant plume and to partially restore the municipal well capacity that has been impacted by perchlorate. The parties also continued negotiations intended to achieve a long term settlement to the litigation through 2006, and a final settlement was completed and executed in April 2007.

In 2007, the impacted Purveyors (SCWD, NCWD, and VWC) and CLWA continued working toward implementation of a jointly developed plan that will combine pumping from two of the impacted wells and a water treatment process to restore the impacted pumping capacity and control the migration of contamination in the aquifer. The development and implementation of a cleanup plan for the Whittaker-Bermite site and the impacted groundwater is being coordinated among CLWA, the impacted Purveyors, the State DTSC, and U.S. Army Corps of Engineers. DTSC is the lead agency responsible for regulatory oversight of the Whittaker-Bermite site.

In February 2003, DTSC and the impacted Purveyors entered into a voluntary cleanup agreement entitled *Environmental Oversight Agreement*. Under the Agreement, DTSC is providing review and oversight of the response activities being undertaken by the Purveyors related to the

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<sup>3</sup> The Maximum Contaminant Level (MCL) for perchlorate was set at 6 µg/l by the State Department of Public Health in October 2007.

detection of perchlorate in the impacted wells. Under the Agreement's Scope of Work, the impacted Purveyors have prepared a Work Plan for sampling the production wells, a report on the results and findings of the production well sampling, a draft Human Health Risk Assessment, a draft Remedial Action Workplan, an evaluation of treatment technologies and an analysis showing the integrated effectiveness of a project to restore impacted pumping capacity, extract perchlorate for treatment, and control the migration of perchlorate in the Saugus Formation. Environmental review of that project was completed in 2005 with adoption of a mitigated Negative Declaration. The Final Interim Remedial Action Plan for containment and extraction of perchlorate was completed and approved by DTSC in January 2006. Design of the treatment facilities and related pipelines is complete. Construction of those facilities and pipelines to implement the pump and treat program and to also restore inactivated municipal well capacity began in November 2007 and is scheduled to be completed, followed by operational startup, in summer 2009.

On the Whittaker-Bermite site, soil remediation activities in operating unit subareas started in 2005. Groundwater "pump and treat" operations in the Northern Alluvium, which also started in 2005, continued through 2008. Expanded pumping, intended to effect perchlorate containment as well as to treat 'hot spots' in the Northern Alluvium, became operational in October 2007. Also on the Whittaker-Bermite site, remediation work in the Saugus Formation is underway. Additional objectives of this project include the reduction of further transport of contaminants to regional groundwater and reduction of the size of the contaminant mass in deep/perched zones.

As noted above, perchlorate was detected in a second Alluvial well, VWC's Well Q2, in early 2005. In response, Valencia removed the well from active service, and commissioned the preparation of an analysis and report assessing the impact of, and response to, the perchlorate contamination of that well. Valencia's response for Well Q2 was to obtain permitting for installation of wellhead treatment, followed by installation of treatment facilities and returning the well to water supply service in October 2005. After nearly two years of operation with wellhead treatment, including regular monitoring specified by the State Department of Public Health (DPH), all of which resulted in no detection of perchlorate in Well Q2, Valencia requested that DPH allow treatment to be discontinued. DPH approved that request in August 2007, and treatment was subsequently discontinued. DPH-specified monthly monitoring for perchlorate continues at Well Q2; there has been no detection of perchlorate since discontinuation of wellhead treatment.

### **Hardness**

In September, the Valencia Water Company began a demonstration project delivering pre-softened groundwater from one of its wells to approximately 420 residents located in

the Copperhill Community of Valencia. Hard water is the number one complaint from Valencia customers and it is estimated that more than 50 percent have installed individual water softening units at their homes. In addition to having high operating costs, many of these units are designed to discharge a brine (salt) solution to the sanitary sewer system that is eventually discharged to the Santa Clara River, or is part of the recycled water supply. The environmental impact of such discharges is the subject of an on-going Chloride Total Maximum Daily Load regulation by the Los Angeles Regional Water Quality Control Board. Valencia's project is aimed at improving the quality of water for its customers to eliminate the need for home softening devices and to achieve the environmental benefits of reduced chloride discharge to the river.

The demonstration project utilizes pellet softening technology that removes calcium and produces small calcium carbonate pellets which can be reused in a variety of industries. The demonstration project is scheduled to operate for up to one year and will provide the water company with sufficient customer feedback and technical/financial information to determine if expanding the treatment to other well sites is feasible.

### **3.5.1 Groundwater Quality – Alluvium**

Groundwater quality is, of course, a key factor in assessing the Alluvial aquifer as a municipal and agricultural water supply. Groundwater quality details and long-term conditions, examined by integration of individual records from several wells completed in the same aquifer materials and in close proximity to each other, have been discussed in previous annual Water Reports and in the 2005 UWMP. There were no changes in groundwater quality in 2008 that would change any of the fluctuations, trends, or other groundwater quality conditions as illustrated in Figures 3-11 and 3-12. In summary, those conditions include: no long-term overall trend and, most notably, no long-term decline in Alluvial groundwater quality; a general groundwater quality “gradient” from east to west, with lowest dissolved mineral content to the east, increasing in a westerly direction; and periodic fluctuations in some parts of the basin, where groundwater quality has inversely varied with precipitation and stream flow. Those variations are typically characterized by increased mineral concentrations through dry periods of lower stream flow and lower groundwater recharge, followed by lower mineral concentrations through wetter periods of higher stream flow and higher groundwater recharge.

The presence of long-term consistent water quality patterns, although intermittently affected by wet and dry cycles, supports the conclusion that the Alluvial aquifer remains a viable ongoing water supply source in terms of groundwater quality.

### **3.5.2 Groundwater Quality – Saugus Formation**

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a municipal and agricultural water supply. As with groundwater level data, long-term Saugus groundwater quality data are not sufficiently extensive to permit any sort of basin-wide analysis or assessment of pumping-related impacts on quality. However, integration of individual records from several wells has been used to examine general water quality trends. Based on those records, water quality in the Saugus Formation has not historically exhibited the precipitation-related fluctuations seen in the Alluvium. Based on available data over the last 50 years, groundwater quality in the Saugus has exhibited a slight overall increase in dissolved mineral content as illustrated in Figure 3-13. More recently, several wells within the Saugus Formation have exhibited an additional increase in dissolved mineral content, similar to short-term changes in the Alluvium, possibly as a result of recharge to the Saugus Formation from the Alluvium. Dissolved mineral concentrations in the Saugus Formation remain below the Secondary (aesthetic) Upper Maximum Contaminant Level. Groundwater quality within the Saugus will continue to be monitored to ensure that degradation to the long-term viability of the Saugus as a component of overall water supply does not occur.

### **3.5.3 Imported Water Quality**

CLWA operates two water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. CLWA produces water that meets drinking water standards set by the U.S. EPA and DPH. SWP water has different aesthetic characteristics than groundwater with lower dissolved mineral concentrations (total dissolved solids) of approximately 250 to 360 mg/l, and lower hardness (as calcium carbonate) of about 105 to 135 mg/l.

## **3.6 Recycled Water**

Recycled water is available from two water reclamation plants operated by the Sanitation Districts of Los Angeles County. In 1993, CLWA prepared a draft Reclaimed Water System Master Plan that outlined a multi-phase program to deliver recycled water in the Valley. CLWA previously completed environmental review on the construction of Phase I of the project, which will deliver 1,700 afy of water. Deliveries of recycled water began in 2003 for irrigation water supply at a golf course and in roadway median strips. In 2008, recycled water deliveries were 311 af.

Surveys conducted by CLWA indicate an interest for recycled water by existing water users as well as by future development as recycled water becomes available. In 2002, CLWA produced an updated Draft Recycled Water Master Plan. Overall, the program is expected to ultimately recycle up to 17,400 af of treated (tertiary) wastewater suitable for reuse on golf courses, landscaping and other non-potable uses, as set forth in the UWMP.

In 2007, CLWA completed California Environmental Quality Act (CEQA) analysis of the Recycled Water Master Plan (2002). This analysis consisted of a Program Environmental Impact Report (PEIR) covering the various options for a recycled water system as outlined in the Master Plan. The PEIR was certified by the CLWA Board in March 2007.

CLWA is preparing the design of the second phase of the Recycled Water Master Plan that will take water from the Saugus Water Reclamation plant and distribute it to identified users to the north, across the Santa Clara River and then to the west and the east, which will include service to Santa Clarita Central Park.

### **3.7 Santa Clara River**

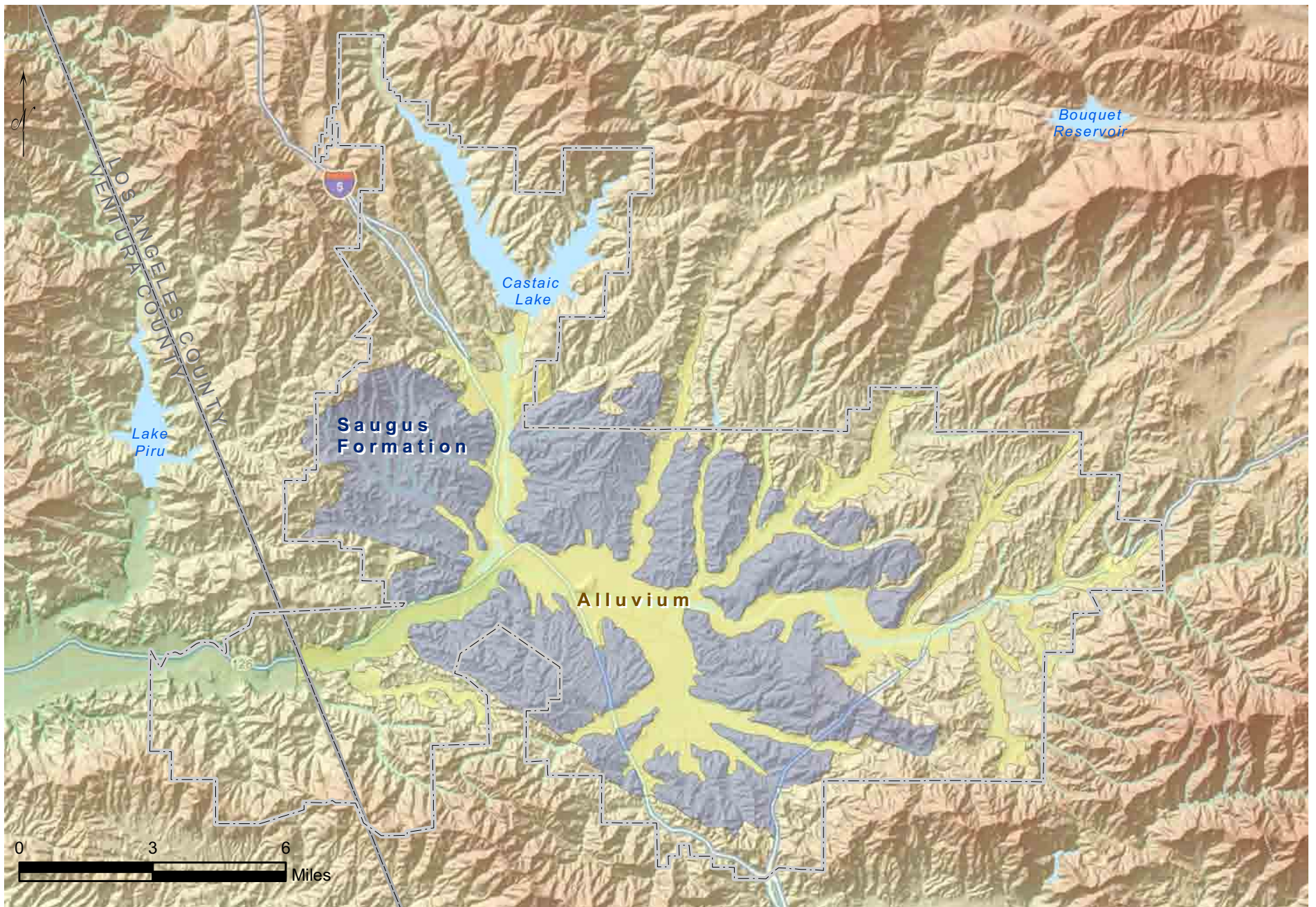
The Memorandum of Understanding (MOU) between the Santa Clarita Valley Purveyors and the United Water Conservation District, which manages surface and groundwater resources in seven groundwater basins in the Lower Santa Clara River Valley Area, was a significant accomplishment when it was prepared and executed in 2001. The MOU initiated a collaborative and integrated approach to data collection; database management; groundwater flow modeling; assessment of groundwater basin conditions, including determination of basin yield amounts; and preparation and presentation of reports, including continued annual reports such as this one for current planning and consideration of development proposals, and also including more technically detailed reports on geologic and hydrologic aspects of the overall stream-aquifer system. Meetings of the MOU participants have continued, and integration of the Upper (Santa Clarita Valley) and Lower (United WCD) Santa Clara River databases has been accomplished. As discussed above, a numerical groundwater flow model of the entire Santa Clarita groundwater basin was developed and calibrated in 2002-2004. Subsequent to its initial use in 2004 for assessing the effectiveness of various operating scenarios to restore pumping capacity impacted by perchlorate contamination (by pumping and treating groundwater for water supply while simultaneously controlling the migration of contaminated groundwater), the model was used in 2005 for evaluation of basin yield under varying management actions and hydrologic conditions. The results completed the determination of sustainable operating yield values for both the Alluvium and the Saugus Formation, which are now incorporated in the 2005 UWMP. As

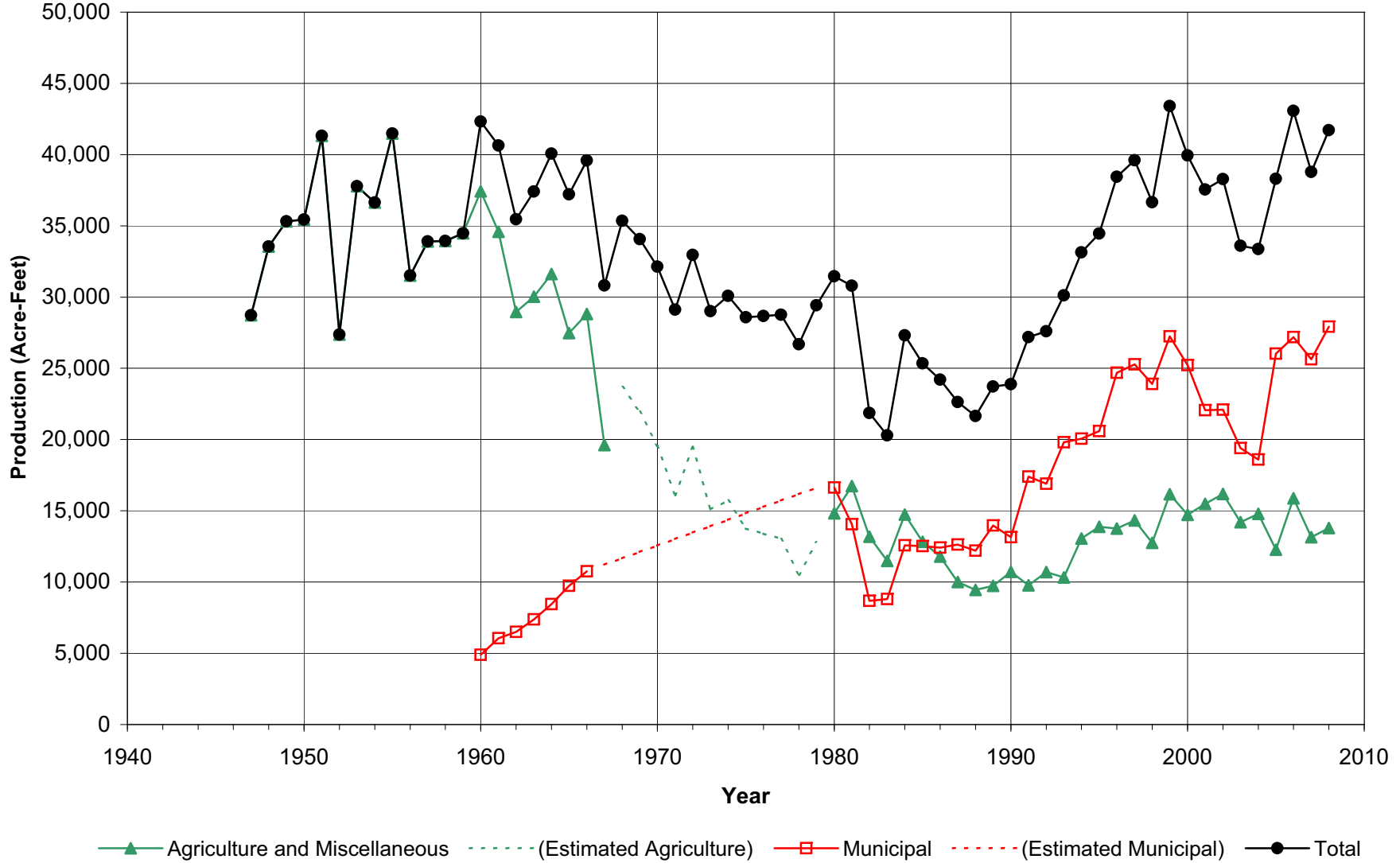


described in Section 3.1 above, an updated analysis of basin yield was initiated in 2008 and results of that work are expected to be completed in early 2009.

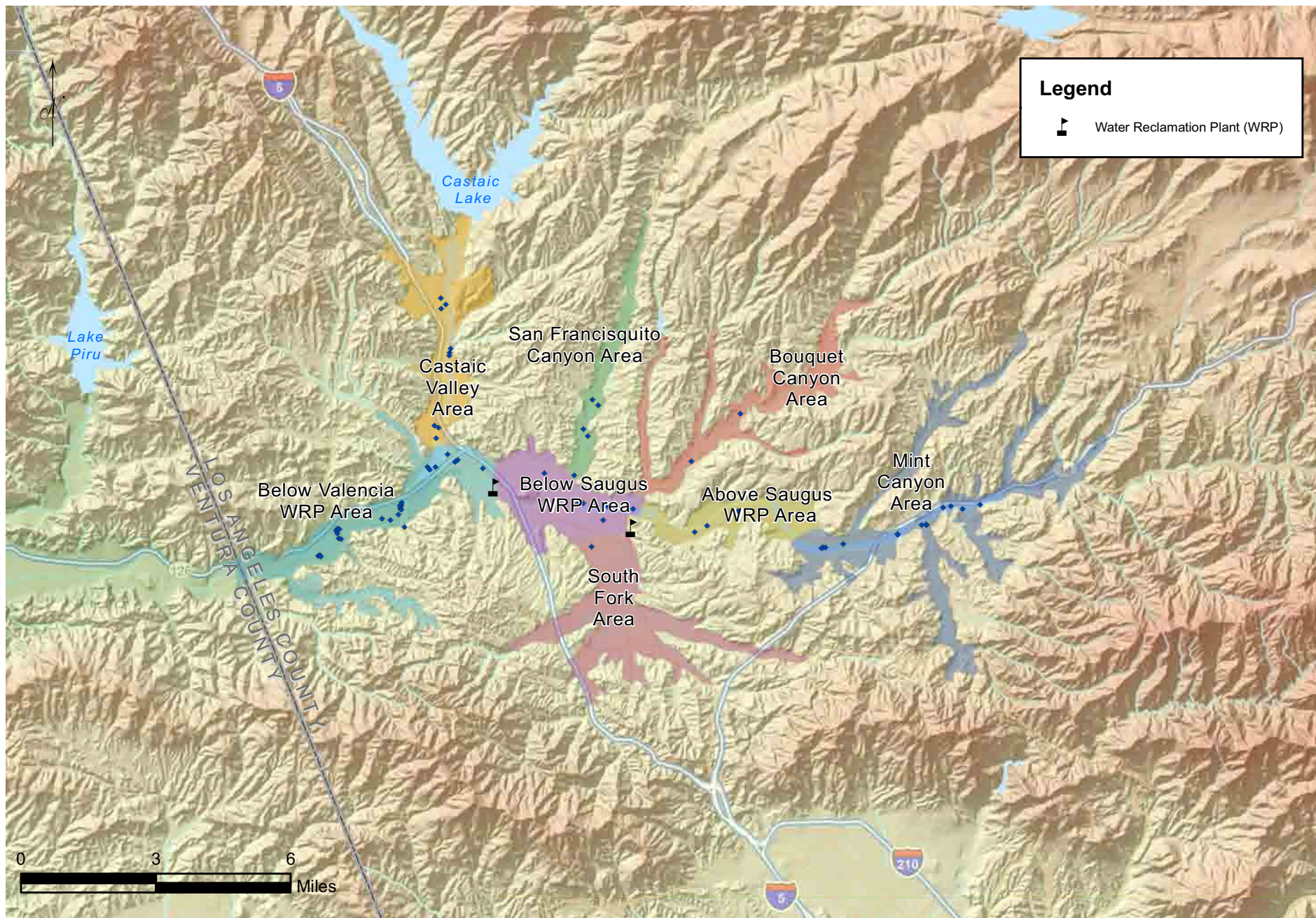
On occasion, issues have been raised about whether use and management of groundwater in the Santa Clarita Valley have adversely impacted surface water flows into Ventura County. Part of the groundwater modeling work has addressed the surface water flow question as well as groundwater levels and storage. While the sustainability of groundwater has logically derived primarily from projected long-term stability of groundwater levels and storage, it has also derived in part from modeled simulations of surface water flows and the lack of streamflow depletion by groundwater pumping. In addition, the long-term history of groundwater levels in the western and central part of the basin, as illustrated in Figures 3-4 and 3-5, supports the modeled analysis and suggests that groundwater has not been lowered in such a way as to induce infiltration from the river and thus impact surface water flows.

Historical annual average of daily mean streamflow in the Santa Clara River, into and out of the Santa Clarita Valley, is shown on Figure 3-14. The upstream gage at Lang Station was reinstated in 2002 and shows a wide range of average annual inflow over the last five years. The downstream gage was moved in 1996 to its present location near Piru, about two miles downriver from the former County Line Gage. The combined record of these two downstream gages indicates an average daily streamflow of about 65 cfs. These data gaged near the County line show notably higher flows from the Santa Clarita Valley into the uppermost downstream basin, the Piru Basin, over the last 30 to 35 years.

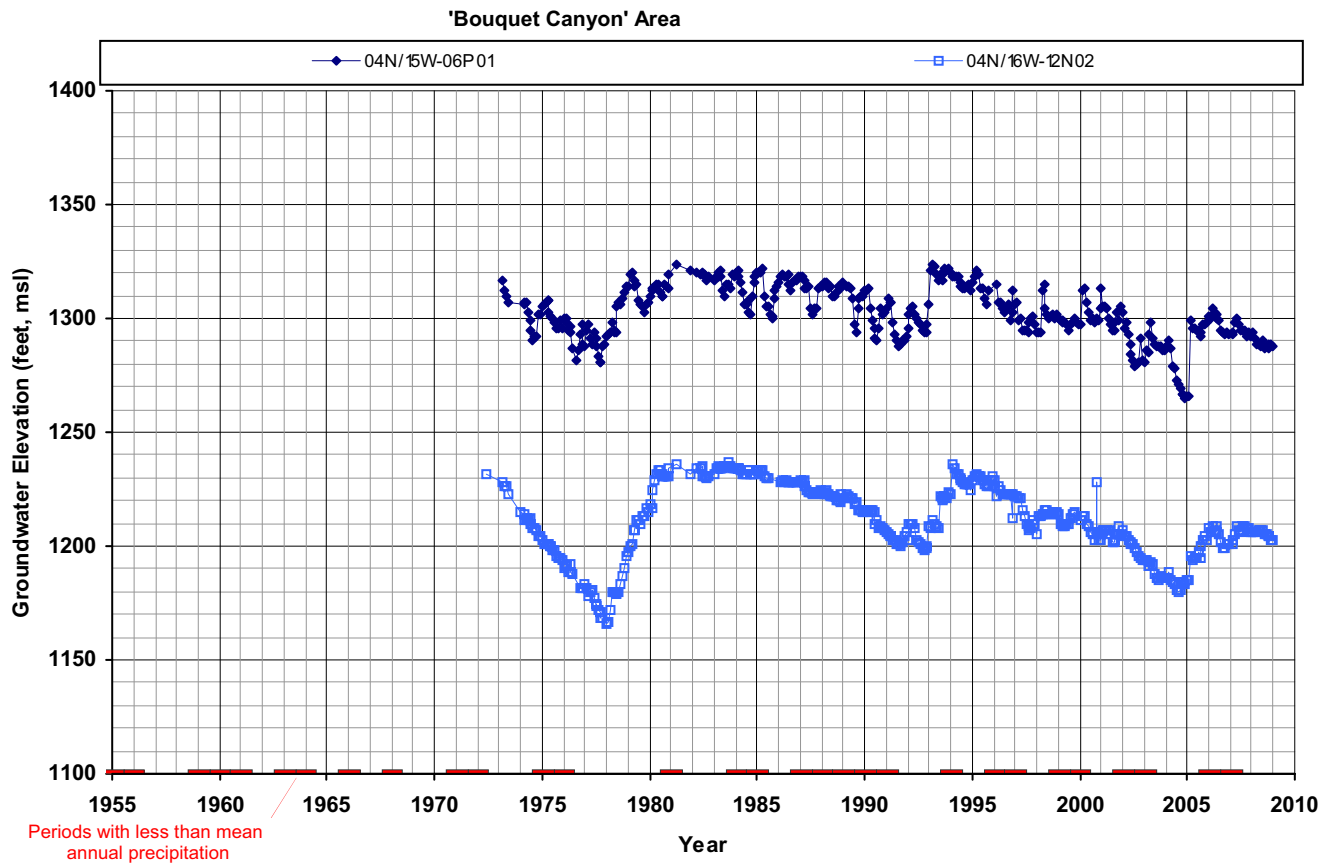
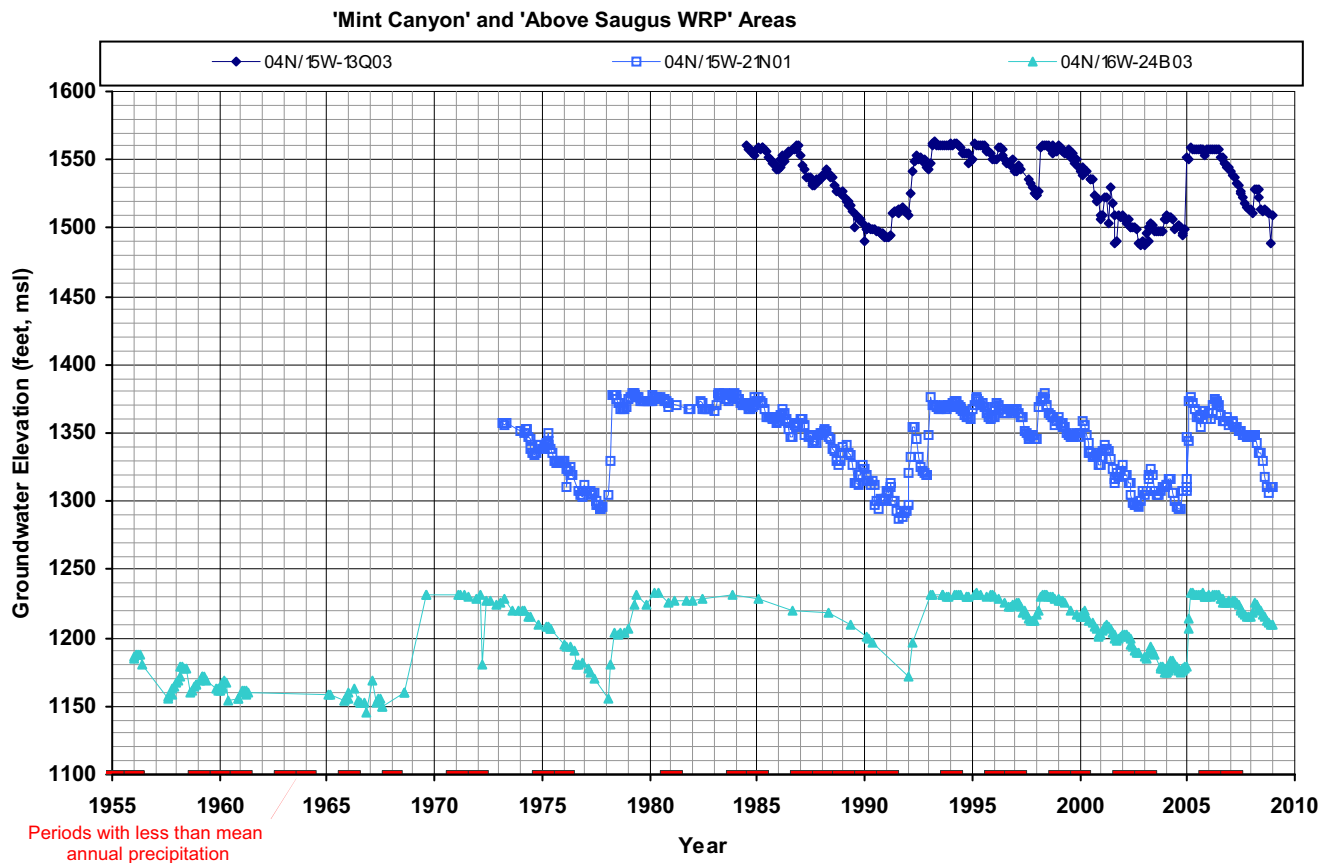


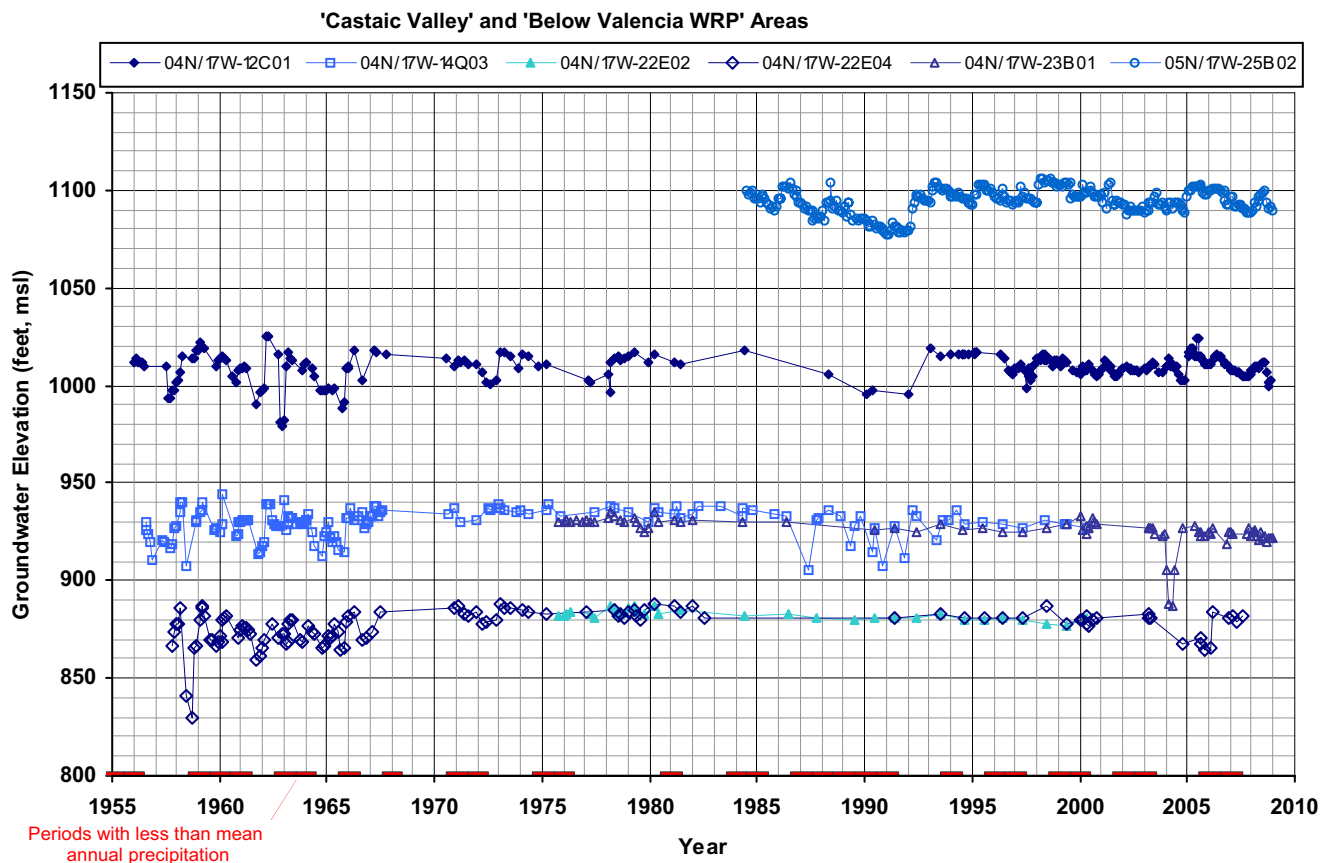
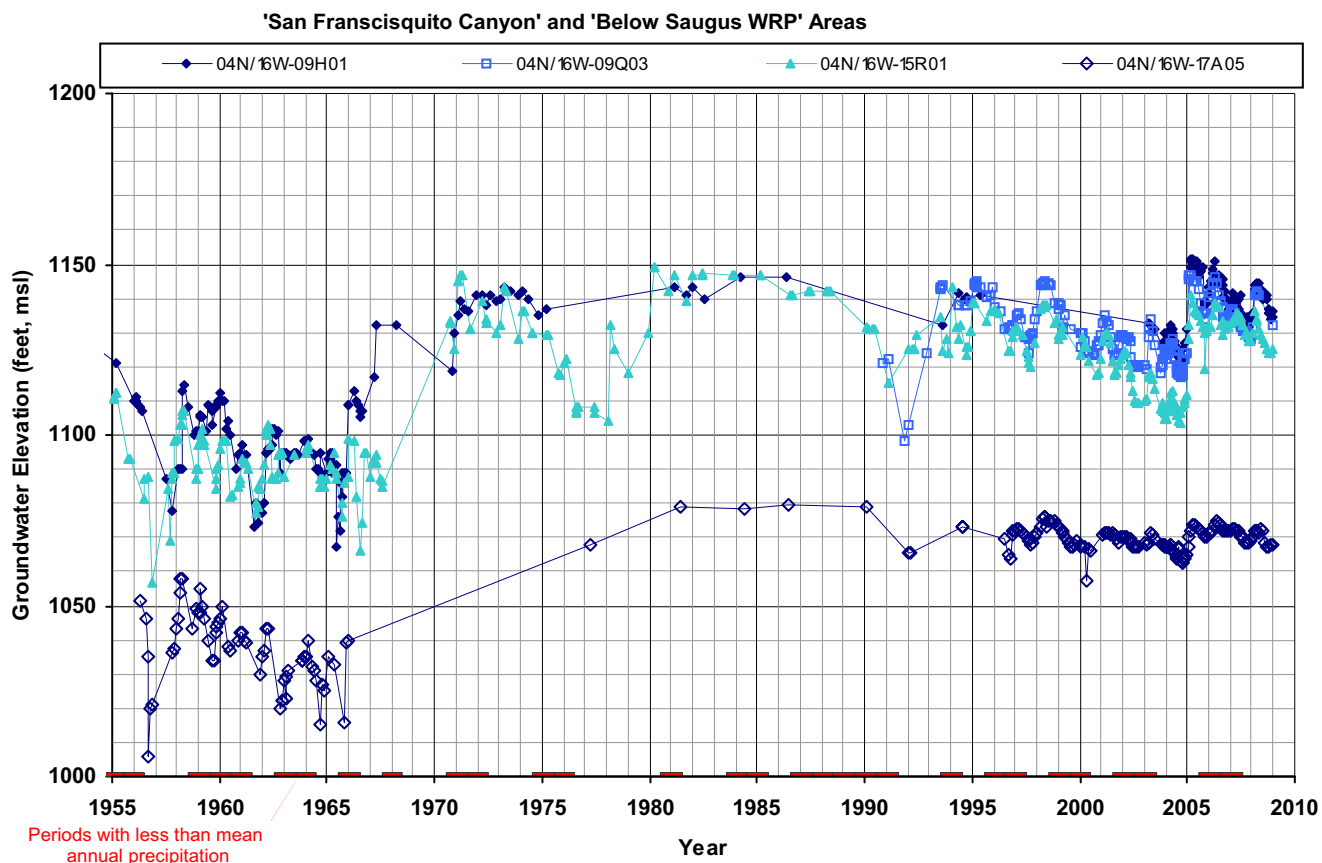




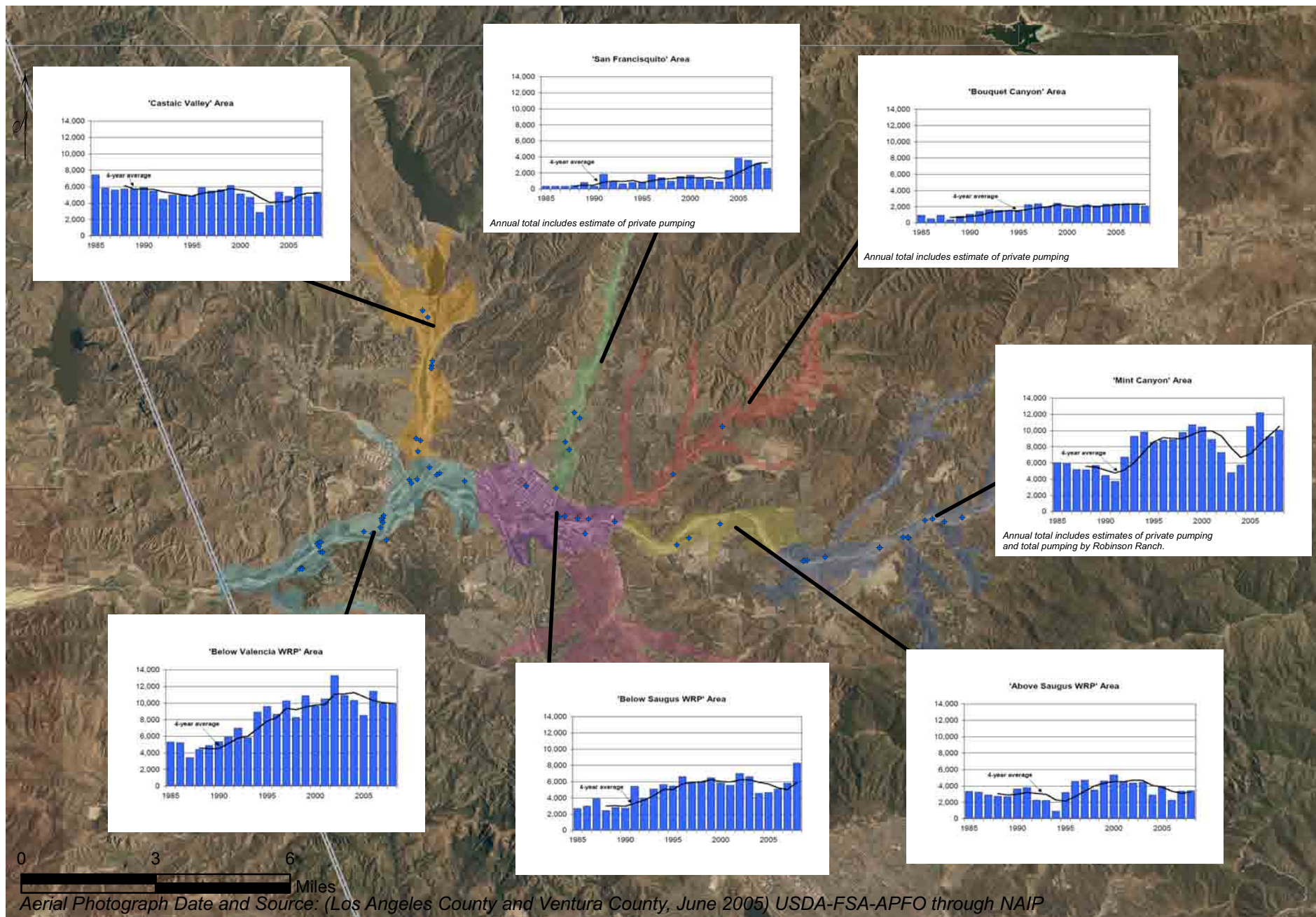


**Figure 3-3**  
**Alluvial Well Locations By Area**  
**Santa Clara River Valley, East Groundwater Subbasin**

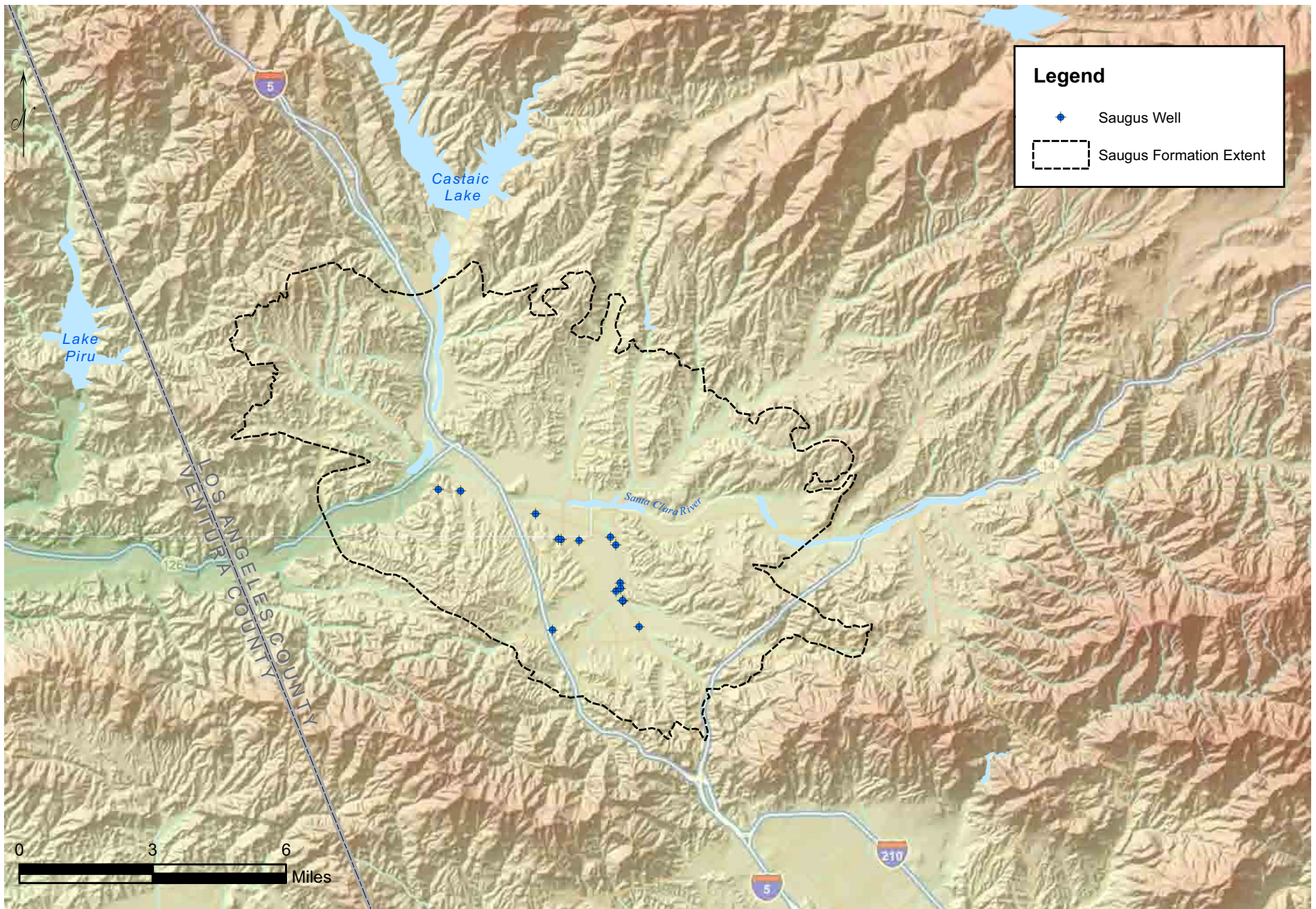




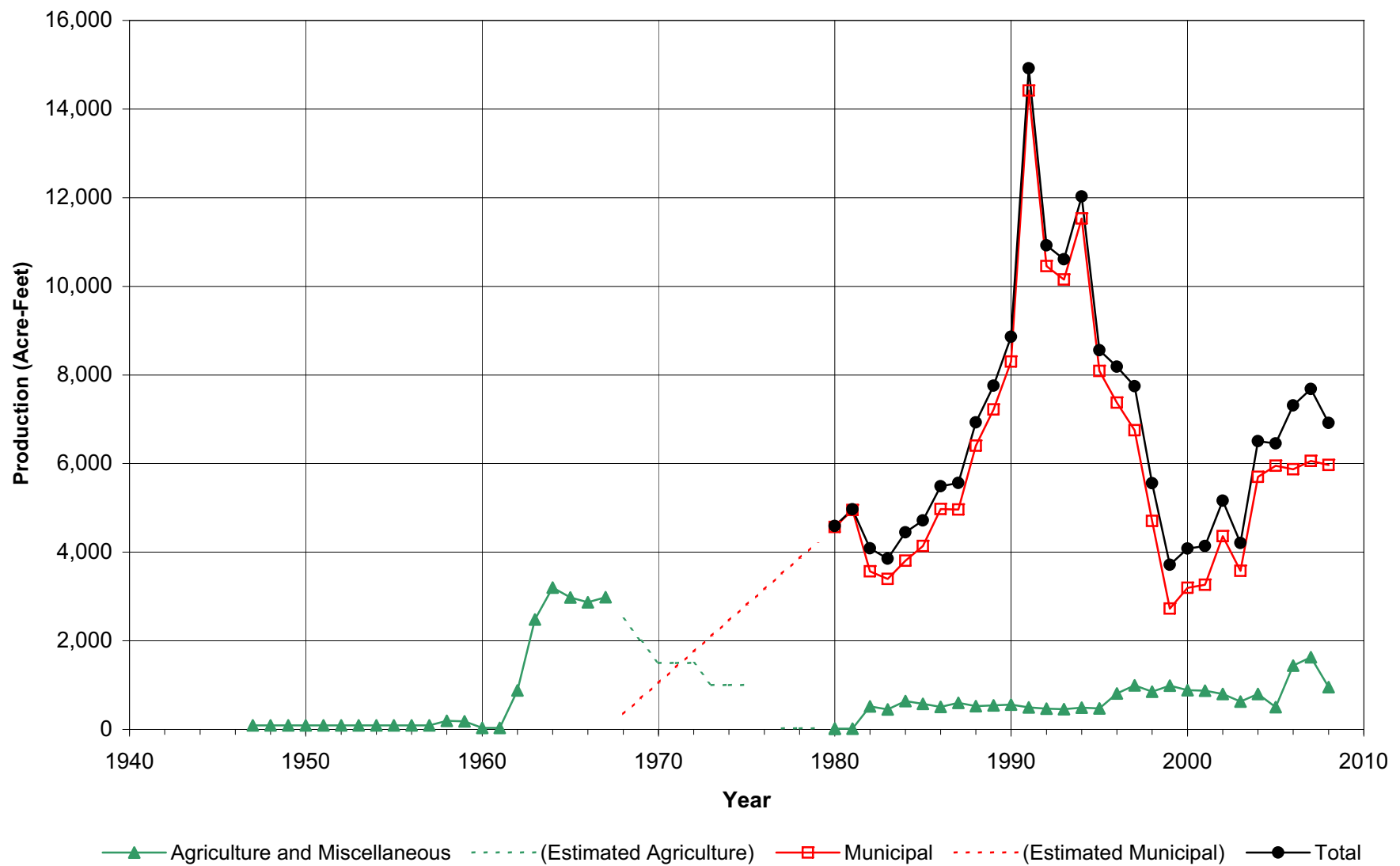




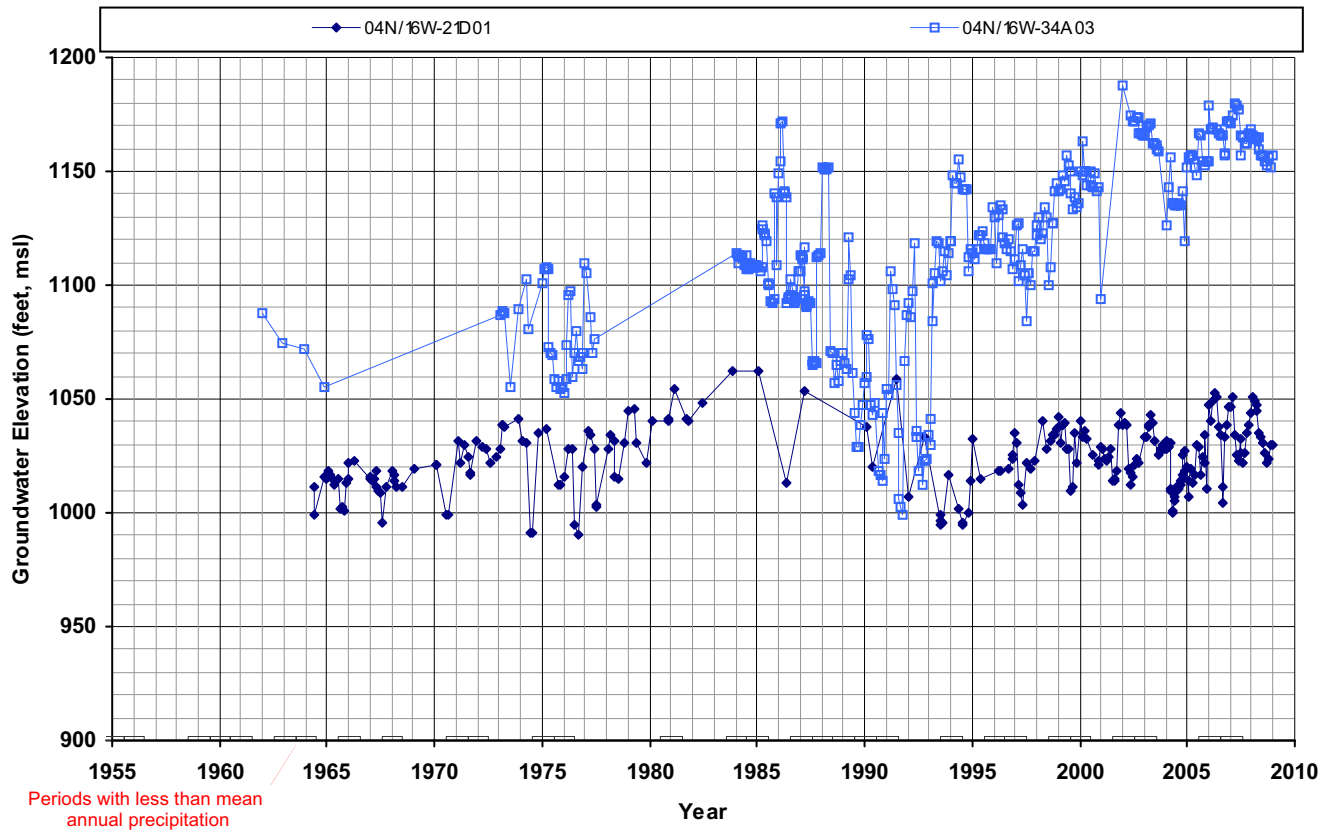


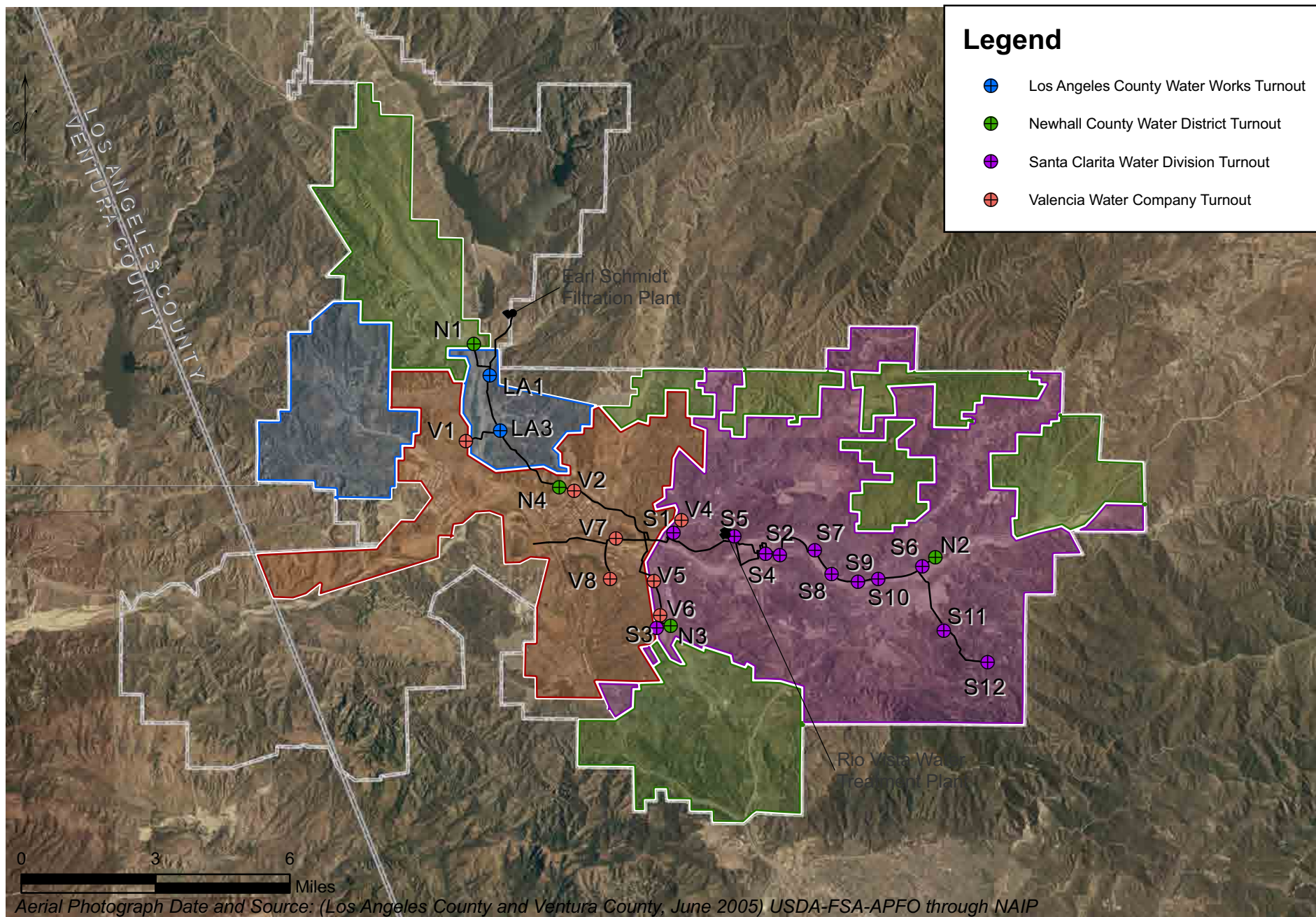




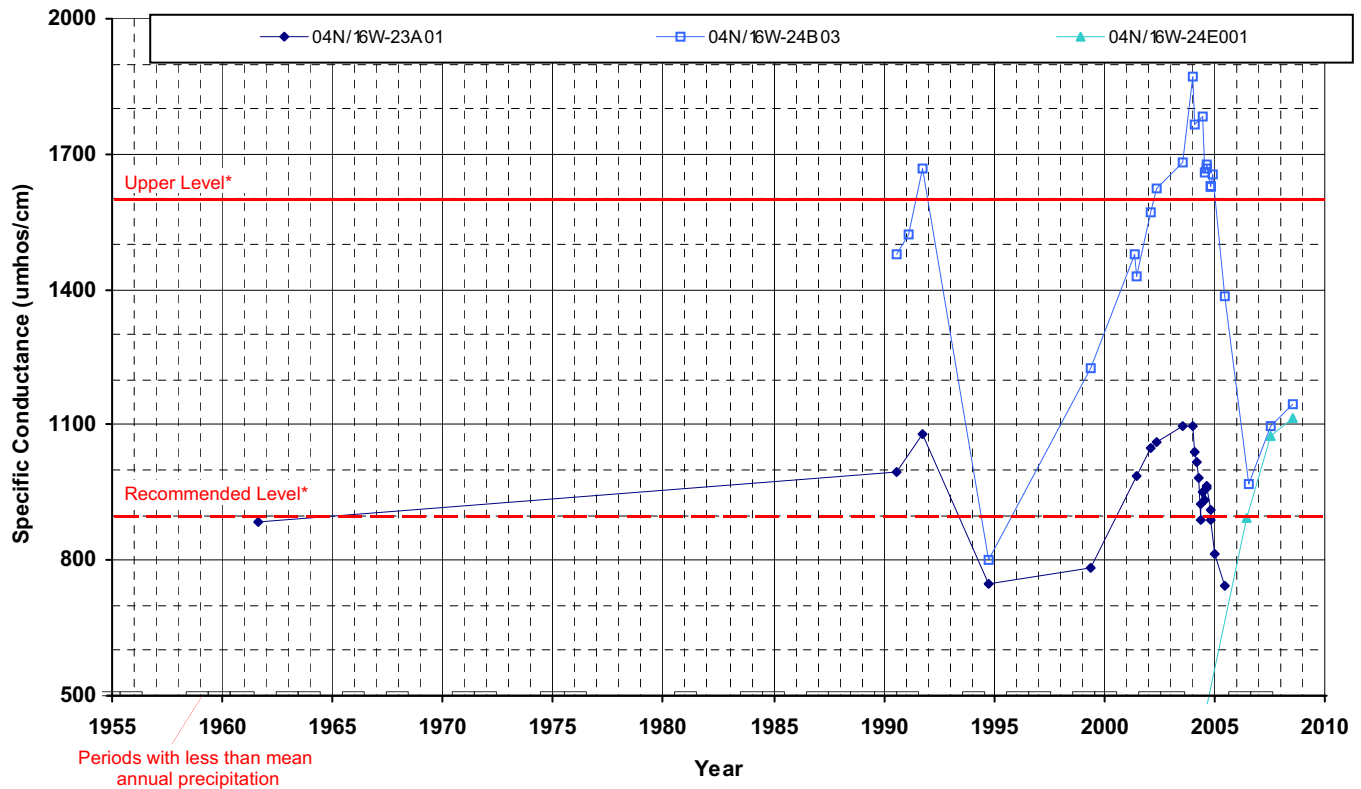


**Figure 3-8**  
**Groundwater Production - Saugus Formation**  
**Santa Clara River Valley, East Groundwater Subbasin**

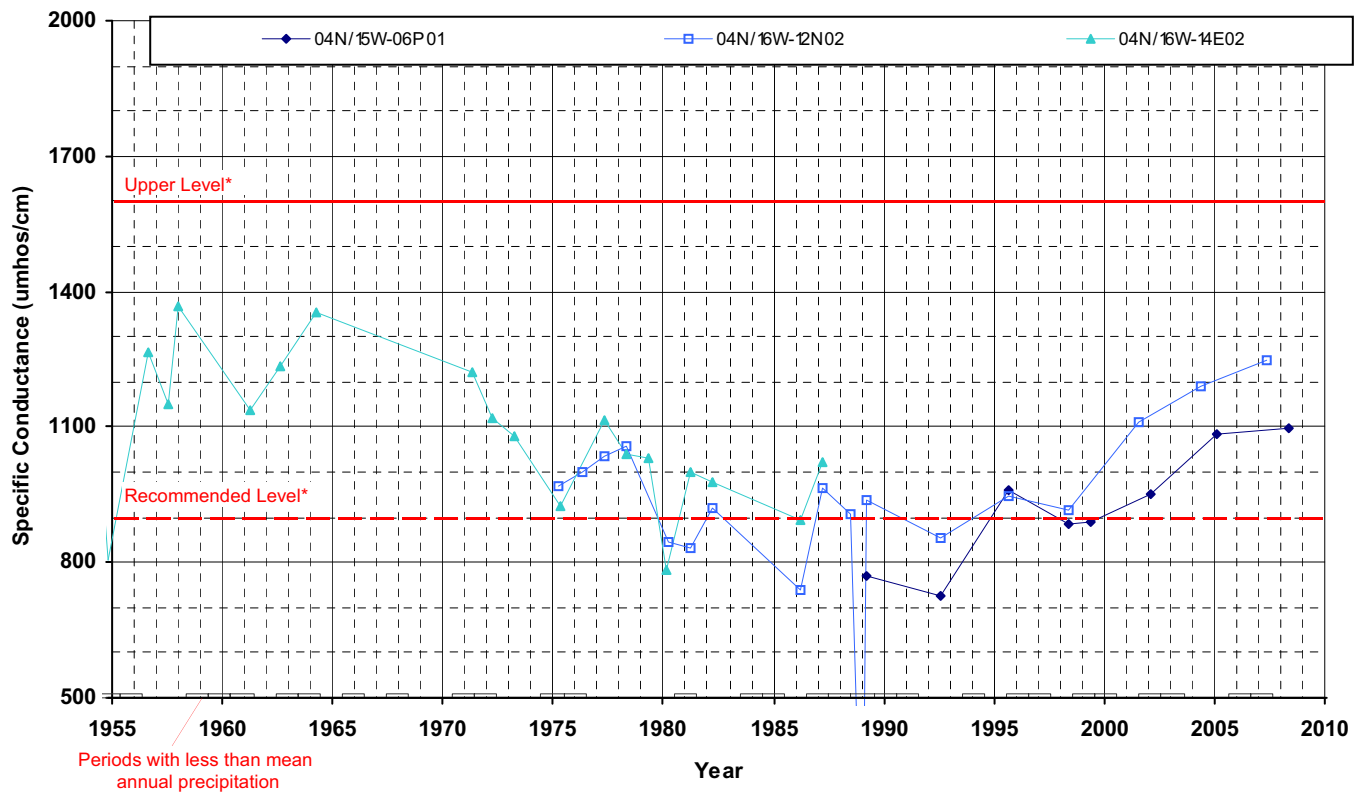




**'Above Saugus WRP' Area Alluvial Wells  
(representative selection for area shown)**

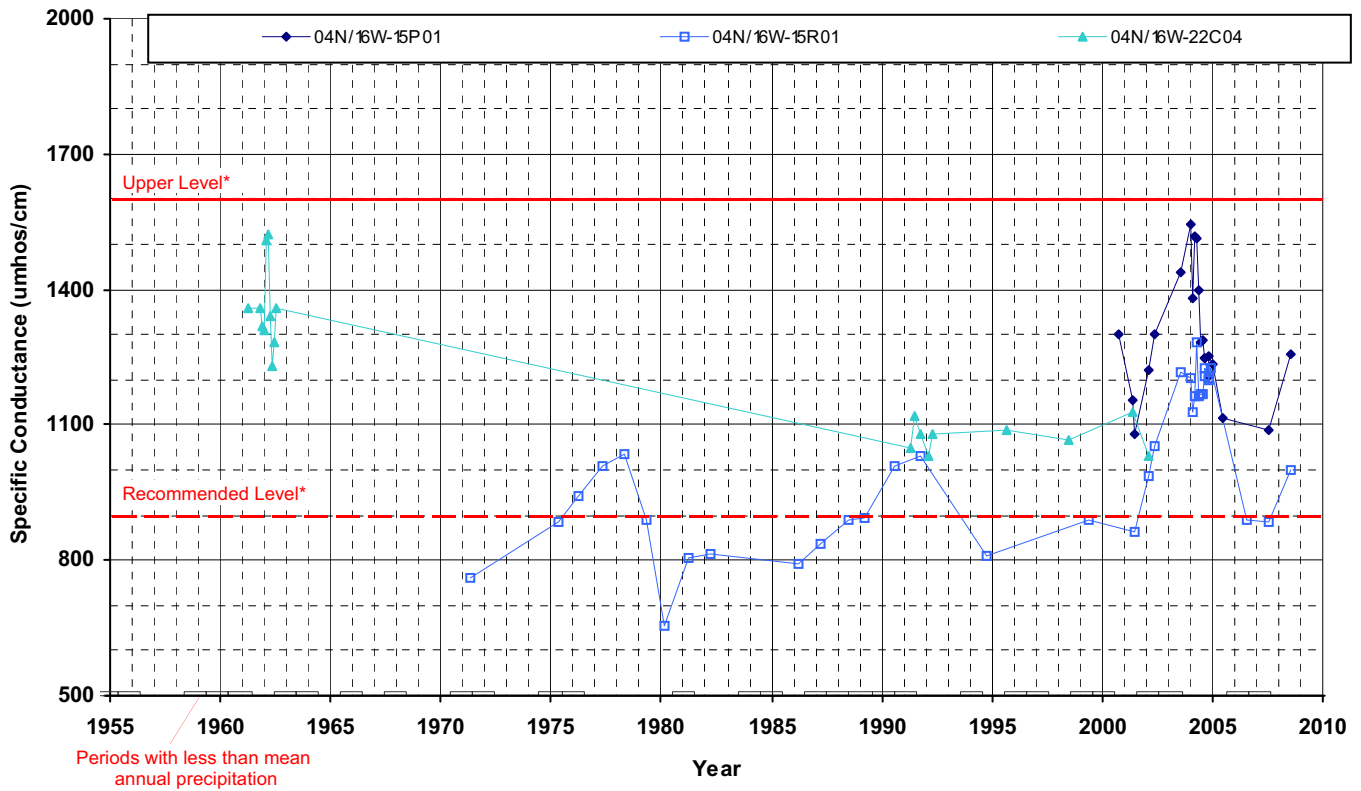


**'Bouquet Canyon' Area Alluvial Wells  
(representative selection for area shown)**

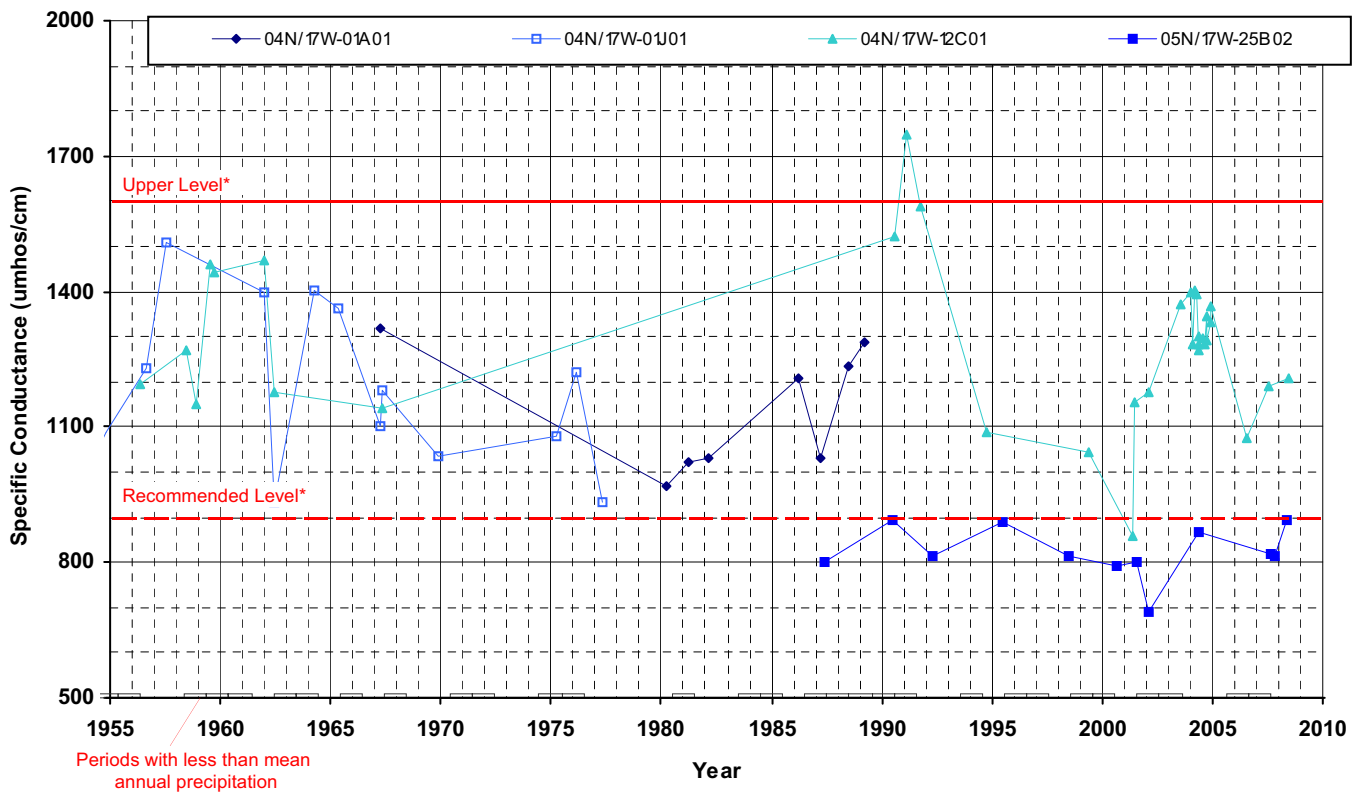


\*California Department of Public Health Secondary Maximum Contaminant Level

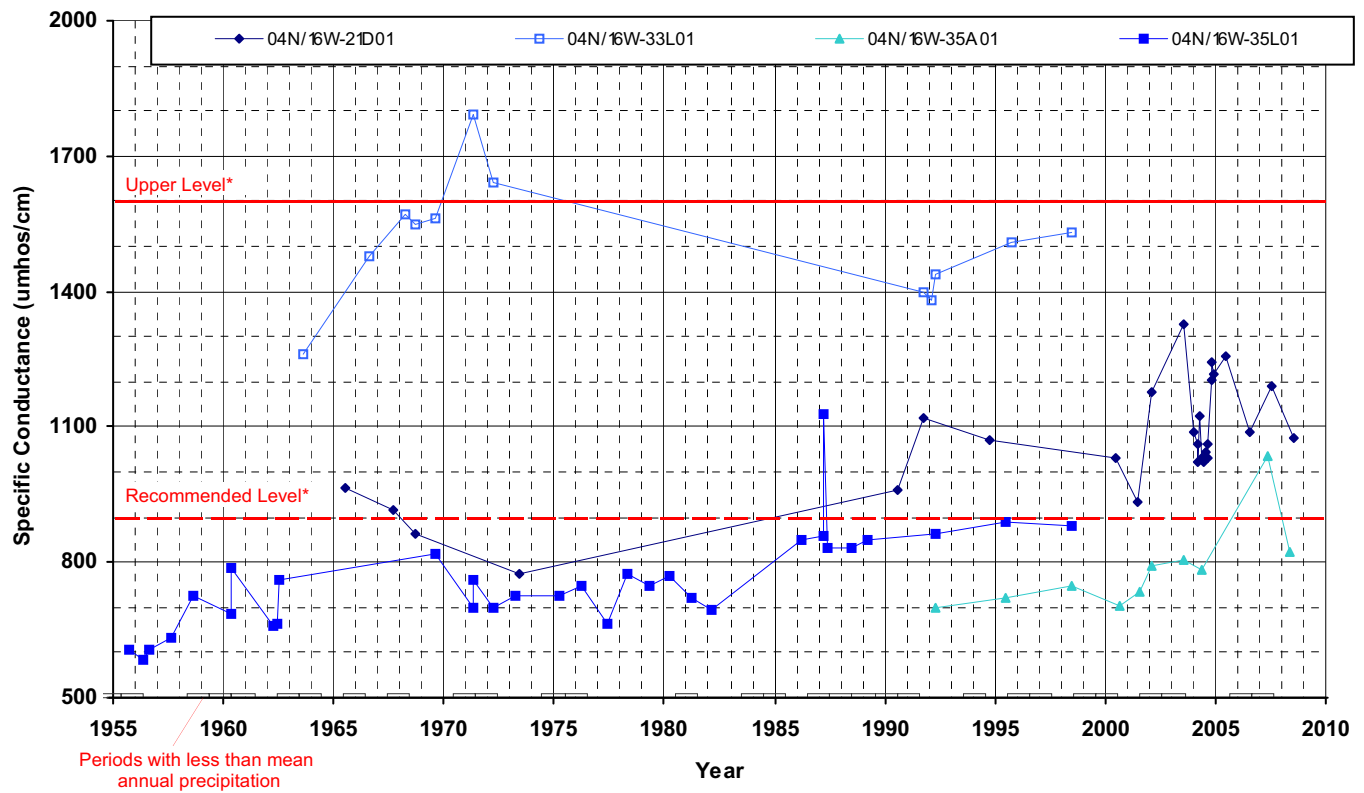
**'Below Saugus WRP' Area Alluvial Wells**  
(representative selection for area shown)



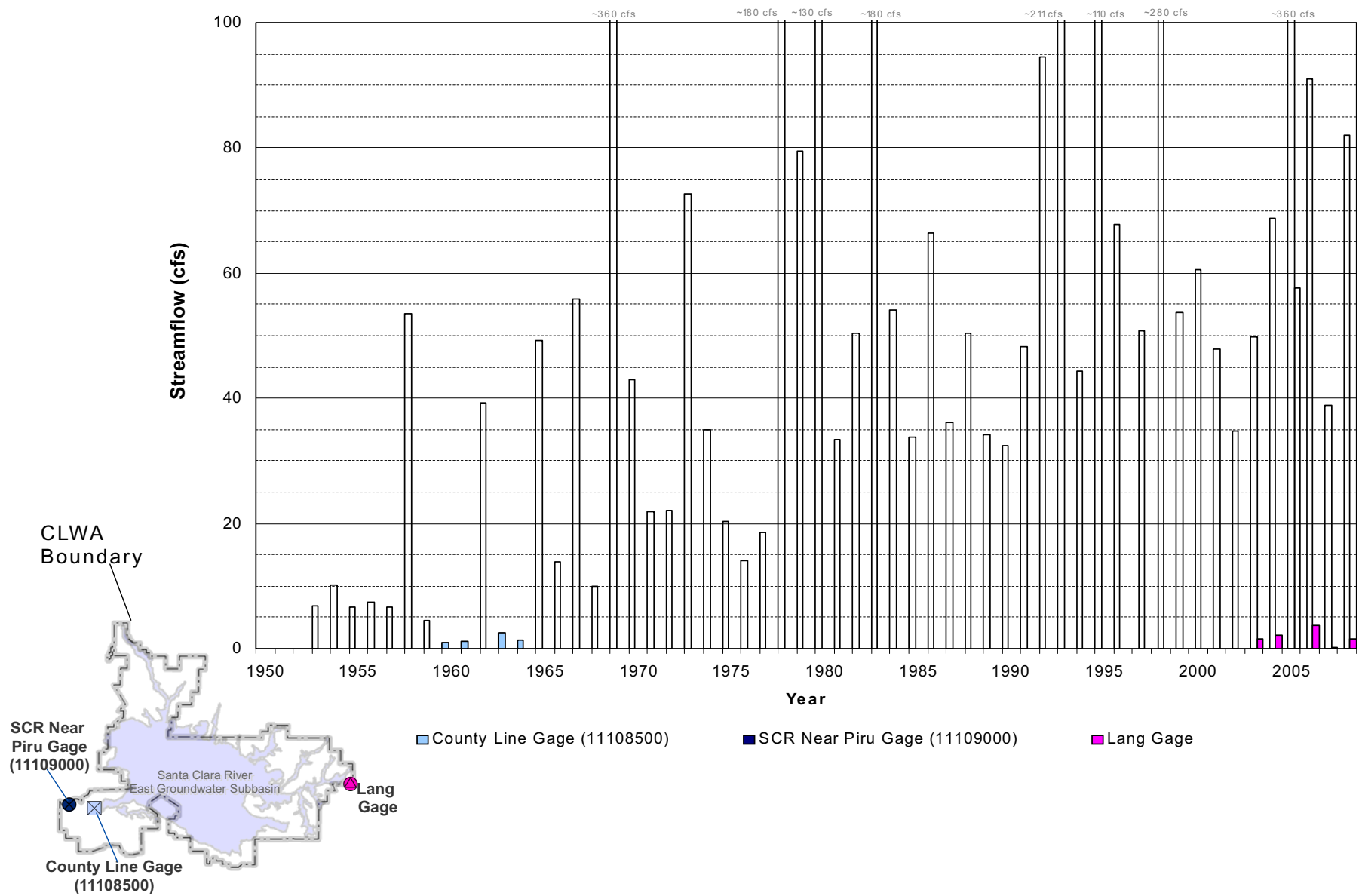
**'Castaic Valley' Area Alluvial Wells**  
(representative selection for area shown)



\*California Department of Public Health Secondary Maximum Contaminant Level



\*California Department of Public Health Secondary Maximum Contaminant Level





## **4. Summary of 2008 Water Supply and 2009 Outlook**

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As discussed in the preceding chapters, total water demands in the Santa Clarita Valley were 90,700 af in 2008. This represented a decrease of nearly two percent from total demand in 2007 and continues a basically flat trend in total water demand over the last three years. Of the total demand in 2008, nearly 76,000 af were for municipal water supply, and the balance (14,800 af) was for agricultural and other uses, including estimated individual domestic uses. As detailed in Chapter 2, the total demand in 2008 was met by a combination of local groundwater, SWP and other imported water, and a small amount of recycled water.

The water demand in 2008 was notably lower than the average projection in the 2005 UWMP, and also lower than the short-term projected demand that was estimated in the 2007 Water Report. For illustration, historical water use from 1980 through 2008 is plotted in Figure 4-1; also shown with that historical record are the projected total water demands in the 2005 UWMP through 2030. As discussed in the 2005 UWMP, year-to-year fluctuations in historical water demand have ranged from about ten percent below to about nine percent above the average or “normal” projection that would describe the long-term historical trend in the Valley’s total water demand. The primary factor causing the year-to-year fluctuations is weather. In the short term, wetter years have typically resulted in decreased water demand, and drier years have typically resulted in higher water demand. Extended drier periods, however, have resulted in decreases in demand due to conservation and water shortage awareness. The decline in water demand toward the end of the 1987-92 drought is a good example of such reduced demand. A good recent example of wet-year effects on water demand was 2005, where extremely wet conditions resulted in total water requirements about six percent below the average projection in the 2005 UWMP.

Adding to the types of demand fluctuations described in the 2005 UWMP are the recently-observed effects of broad economic conditions on growth. As reflected by the numbers of service connections in each Purveyor service area, growth in 2008 remained comparable to each of the preceding two years, with additions of about 1,000 new service connections each year, but in notable contrast to the predominant growth rate nearly three times higher from the late 1990’s through 2004. In addition, the Purveyors were informed by, and have conveyed to the local community, the Governor’s Alert in June 2008 regarding drought conditions and potential water supply shortages, and the Governor’s subsequent Drought Emergency Declaration in February, 2009. The widespread awareness of dry conditions throughout the state, aggressive conservation messaging, and the decrease in local growth are prime factors causing total water demand in 2008 to be slightly less than each of the preceding two years, and well below the earlier



estimated demand in the 2005 UWMP. Those factors are expected to have a continuing effect in 2009, resulting in estimated water demand about the same as the last three years. Consequently, for those reasons, that estimated demand, 91,000 af, is well below the 97,900 af demand projected for 2009 in the 2005 UWMP.

It is expected that both municipal and agricultural water demands in 2009 will be met with a generally similar mix of water supplies as in previous years, notably local groundwater and imported SWP water, complemented by recycled water that will continue to supply a small fraction of total water demand.

As of April 15, 2009, the allocation of water from the SWP in 2009 is 30 percent of CLWA's Table A Amount, or 28,560 af. Combined with local groundwater from the two aquifer systems (48,000 af), total Flexible Storage Account water (6,060 af), net carryover SWP water from 2008 (14,610 af), annual acquisition from Buena Vista Water/Rosedale-Rio Bravo Water Storage Districts (11,000 af), acquisition of water through the Yuba Accord (800 af), recovery and delivery of some water previously stored in the Semitropic Groundwater Storage Bank (4,950 af), and recycled water (500 af), the total available water supplies for 2009 are nearly 115,000 af. Consequently, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2009. Projected 2009 water supplies and demand are summarized in Table 4-1.

In August 2007, a federal court ruled that certain operational changes were required of the SWP in order to protect the endangered Delta smelt. Thereafter, DWR prepared an update to its 2005 Reliability Report, which is issued biennially to indicate how much SWP water is available during varying hydrologic scenarios (i.e., normal and dry years). The SWP Delivery Reliability Report 2007, issued in August 2008 by DWR, reduced the long term reliability of SWP supply from 77 percent to a range of 66 to 69 percent. The discussion of SWP supply should be tempered, though, by noting that while the SWP Reliability Report represents a reasonable scenario with respect to long term reliability, recent reductions in supply reduce the difference between available supply and demand in the future, thereby making the CLWA service area more subject to shortages in certain dry years. Accordingly, the reduction in SWP supply reinforces the need to continue diligent efforts to conserve potable water and increase the use of recycled water, both to meet the goals in the 2005 UWMP and to maximize utilization of potable water supplies. Additionally, as part of the court order, the US Fish and Wildlife Service (USFWS) was required to issue a Biological Opinion (BO) with mitigation measures to protect the Delta smelt. The USFWS issued the BO in December 2008 and the mitigation requirements may force additional pumping restrictions of the operation of the State Water Project.

**Table 4-1**  
**2009 Water Supply and Demand**  
**(acre-feet)**

<b>Projected 2009 Demand <sup>1</sup></b>	<b>91,000</b>
<b><i>Available 2009 Water Supplies</i></b>	
Local Groundwater	48,000
<i>Alluvium <sup>2</sup></i>	<i>39,000</i>
<i>Saugus Formation <sup>3</sup></i>	<i>9,000</i>
Imported Water	65,980
<i>Table A Amount <sup>4</sup></i>	<i>28,560</i>
<i>Net Carryover from 2008 <sup>5</sup></i>	<i>14,610</i>
<i>Buena Vista/Rosedale-Rio Bravo <sup>6</sup></i>	<i>11,000</i>
<i>Flexible Storage Account (CLWA) <sup>7</sup></i>	<i>4,684</i>
<i>Flexible Storage Account (Ventura County) <sup>7</sup></i>	<i>1,376</i>
<i>Yuba Accord <sup>8</sup></i>	<i>800</i>
Recovery of Banked Water	
<i>Semitropic 2002 Account</i>	<i>4,950</i>
Recycled Water	500
<b>Total Available 2009 Supplies</b>	<b>114,480</b>
<b><i>Additional Dry Year Supplies <sup>9</sup></i></b>	
Semitropic Groundwater Storage Bank	45,920
<i>2002 Account <sup>10</sup></i>	<i>16,650</i>
<i>2003 Account <sup>10</sup></i>	<i>29,270</i>
Rosedale-Rio Bravo Water Banking and Exchange Program	64,898
<i>2005 and 2006 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement <sup>11</sup></i>	<i>22,000</i>
<i>2005 Banking of Table A <sup>12</sup></i>	<i>17,800</i>
<i>2006 Banking of Table A <sup>12</sup></i>	<i>17,800</i>
<i>2007 Rosedale Rio-Bravo Banking <sup>12</sup></i>	<i>7,298</i>
<b>Total Additional Dry Year Supplies</b>	<b>110,818</b>

1. Decreased from 2005 UWMP projections to reflect recent three-year trend and economy-driven decrease in growth.
2. The Alluvium represents 30,000 – 40,000 afy of available supply under local wet-normal conditions, and 30,000 – 35,000 afy under local dry conditions. Available supply in 2009 is shown to be upper-range for average/wet conditions based on actual Alluvium conditions.
3. The Saugus Formation represents 7,500 – 15,000 afy of available water supply under non-drought conditions, and up to 35,000 afy under increasingly dry conditions. Available supply in 2009 is shown to be below mid-range for average/wet conditions; no short-term increase in Saugus Formation pumping is required or shown for 2009 water supply.
4. CLWA's SWP Table A amount is 95,200 af. The initial 2009 allocation was 15 percent (14,820 af). On March 17, 2009, the allocation was increased to 20 percent (19,040 af). On April 15, 2009, the allocation was increased to 30 percent (28,560 af).

5. Net amount used by CLWA in 2009; total carryover was 14,610 af.
6. 2009 annual supply from Buena Vista / Rosedale-Rio Bravo Water Acquisition Agreement.
7. CLWA can directly utilize up to 4,684 af of storage capacity in Castaic Lake. By agreement in 2005, CLWA can also utilize 1,376 af of Ventura County SWP contractors' flexible storage capacity in Castaic Lake.
8. Up to 850 af of non-SWP water supply is available to CLWA in critically dry years as a result of agreements among DWR, Yuba County Water Agency, and the U.S. Bureau of Reclamation regarding settlement of water rights issues on the Lower Yuba River (Yuba Accord). 800 af are expected to be available to CLWA in 2009.
9. Does not include other reliability measures available to CLWA and the retail water Purveyors. These measures include short-term exchanges, participation in DWR's dry-year water purchase programs, local dry-year supply programs and other future groundwater storage programs.
10. Net recoverable water after banking 24,000 af and 32,522 af in 2002 and 2003, respectively and recovering 4,950 af in 2009.
11. Water stored in Rosedale-Rio Bravo Water Banking and Exchange Program pursuant to the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement.
12. Net recoverable water after banking 20,000 af in 2005 and 2006, and banking 8,200 af in 2007.

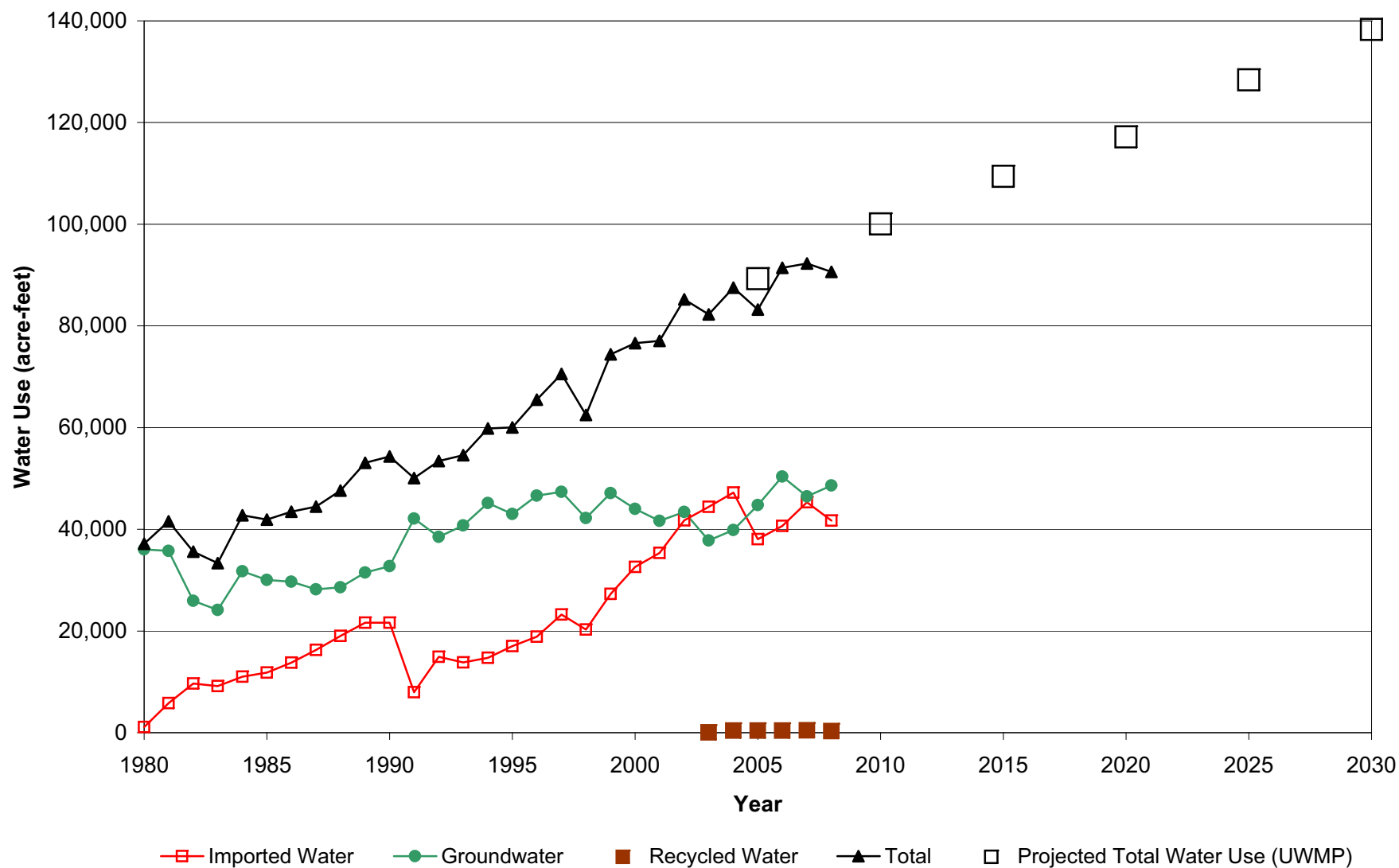
As discussed in Chapter 5, CLWA and the retail water purveyors have worked with Los Angeles County and the City of Santa Clarita in preparing a water conservation ordinance and the enforcement mechanisms to aggressively implement water conservation in the CLWA service area. In terms of short-term water supply availability, however, CLWA and the Purveyors have determined that, while current operational changes of the SWP are in effect, there are sufficient supplemental water supplies, including SWP water, to augment local groundwater and other water supplies such that overall water supplies will be sufficient to meet projected water requirements, as reflected herein, without the need for mandatory rationing through the summer of 2009. CLWA, the Purveyors, the City of Santa Clarita and Los Angeles County have reconvened the Santa Clarita Valley Drought Committee to determine, in part, if measures greater than voluntary conservation will be required later in the year if dry conditions persist.

In addition to the regular and previously banked water supplies described above to meet projected demand in 2009, a residual of nearly 46,000 af of recoverable water will remain stored in the Semitropic Groundwater Storage Bank in Kern County. Nearly 64,900 af of recoverable water have also been stored in the long-term Rosedale-Rio Bravo Water Banking and Exchange Program, also in Kern County. After recovery of nearly 5,000 af of banked water for use in 2009, remaining recoverable water in Kern County storage banks will slightly exceed 110,000 af. That component of overall water supply is separately reflected in Table 4-1 because it is intended for future dry-year supply and will not be used for 2009 water supply.

CLWA and the Purveyors have implemented a number of projects that are part of an overall program to provide facilities needed to firm up imported water supplies during times of drought. These involve water conservation, surface and groundwater storage, water transfers and exchanges, water recycling, additional short-term pumping from the Saugus Formation, and increasing CLWA's imported supply. This overall strategy is designed to meet increasing water demands while assuring a reasonable degree of supply reliability.

Part of the overall water supply strategy is to provide a blend of groundwater and imported water to area residents to ensure consistent quality and reliability of service. The actual blend of imported water and groundwater in any given year and location in the Valley is an operational decision and varies over time due to source availability and operational capacity of Purveyor and CLWA facilities. The goal is to conjunctively use the available water resources so that the overall reliability of water supply is maximized while utilizing local groundwater at a sustainable rate.

For long-term planning purposes, water supplies and facilities are added on an incremental basis and ahead of need. It would be economically unsound to immediately, or in the short term, acquire all the facilities and water supplies needed for the next twenty to thirty years. This would unfairly burden existing customers with costs that should be borne by future customers. There are numerous ongoing efforts to produce an adequate and reliable supply of good quality water for Valley residents. Water consumers expect that their needs will continue to be met with a high degree of reliability and quality of service. To that end, CLWA's and the Purveyors' stated reliability goal is to deliver a reliable and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions contained in the 2005 UWMP for a planning horizon over the next 25 years, in combination with conservation of non-essential demand during certain dry years, CLWA and the Purveyors believe implementing their water plan will successfully achieve this goal.



## 5. Water Conservation

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The California Urban Water Conservation Council (CUWCC) was formed in 1991 through the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California. The urban water conservation Best Management Practices (BMPs) included in the MOU are intended to reduce California's long-term urban water demands. While the BMPs are currently implemented by the MOU signatories on a voluntary basis, they are specified as part of the Demand Management Measures section of the Urban Water Management Planning Act. Water conservation can achieve a number of goals, such as:

- meeting legal mandates
- reducing average annual potable water demands
- reducing sewer flows
- reducing demands during peak seasons
- meeting drought restrictions
- reducing carbon footprint, waste water flows and urban runoff.

CLWA signed the urban MOU in 2001 on behalf of its wholesale service area, and pledged to implement several BMPs at a wholesale support level (listed below). NCWD signed the MOU in 2002 and VWC signed the MOU in 2006, on behalf of their respective retail service areas. As separate MOU signatories and in their respective roles as retailers, NCWD and VWC are committed to implementing all BMPs that are feasible and applicable in their service areas. Efforts are made to coordinate with CLWA and the other Purveyors wherever possible to maximize efficiency and ensure the cost effectiveness of NCWD's and VWC's conservation program.

In coordination with the Purveyors, CLWA has been implementing the following BMPs (which pertain to wholesalers) for several years (some prior to signing the MOU in 2001):

BMP 3	System Water Audits, Leak Detection and Repair
BMP 7	Public Information Programs
BMP 8	School Education Programs
BMP 10	Wholesale Agency Programs
BMP 12	Water Conservation Coordinator

CLWA and the Purveyors have been implementing these BMPs valley-wide. Since 2001,



CLWA has also instituted implementation of BMP 2 (Residential Plumbing Retrofits) and BMP 14 (Residential ULFT and HET Replacement Programs) on behalf of the Purveyors.

In addition to these efforts, in September 2006 CLWA installed a weather station at its headquarters adjacent to the Rio Vista Water Treatment Plant. This station became part a network of over 120 automated weather stations in the state of California that make up the California Irrigation Management Information System (CIMIS). The Department of Water Resources (DWR) manages the system which has a primary purpose of making available to the public, free of charge, information useful in estimating crop water use for irrigation scheduling.

NCWD, SCWD and VWC have initiated implementation of the remaining BMPs that are specific to retail water suppliers:

BMP 1	Water survey programs for single-family residential and multi-family residential customers
BMP 2	Residential plumbing retrofits (including Weather Based Irrigation Controllers)
BMP 3	System water audits, leak detection and repair
BMP 4	Metering with commodity rates for all new connections and retrofit of existing connections
BMP 5	Large landscape conservation programs and incentives
BMP 6	High-efficiency clothes washing machine financial incentive programs
BMP 7	Public Information Programs
BMP 8	School Education Programs
BMP 9	Conservation programs for commercial, industrial, and institutional (CII) accounts
BMP 11	Conservation pricing
BMP 12	Conservation coordinator
BMP 13	Water waste prohibition
BMP 14	Residential High Efficiency Toilet (HET) Replacement Program

Reports to the CUWCC on BMP implementation by CLWA and the Purveyors were included in the 2005 UWMP and have been reported to the CUWCC for 2007 and 2008..

Additional savings are occurring Valley-wide due to state interior plumbing code requirements that have been in effect since 1992, as well as due to changes in lot size and reduction in exterior square footage of new housing and commercial developments. The City of Santa Clarita and County of Los Angeles have also taken a more active conservation role and have begun implementing water efficient devices and practices on the properties they own and manage. All

of these efforts have begun to impact overall demand in the Valley. The Valley's water suppliers continue to monitor water demand trends through time to assess those factors that are accounting for the reduction, and to attempt to quantify them.

Most recently with regard to water conservation, CLWA and the retail water Purveyors entered into an MOU in 2007 to prepare a Santa Clarita Valley Water Conservation Strategic Plan (the Plan). The purpose of the plan is to prepare a comprehensive long-term conservation plan for the Santa Clarita Valley by adopting objectives, policies and programs designed to promote proven and cost effective conservation practices. A consultant was hired to prepare the Plan which will include significant input from stakeholders and the community at large. The plan provides a detailed study of existing residential and commercial water use and recommends programs designed to reduce the overall valley wide water demand by 10 percent by 2030. The programs are designed to provide Valley residents with the tools and education to use water more efficiently. The six programs identified in the Plan are:

- High Efficiency Toilet Rebate Program
- CII Audits & Customized Incentive Program
- Large Landscape Audits & Customized Incentive Program
- Landscape Contractor Certification and Weather Based Irrigation Controller Program
- High Efficiency Washer Rebate Program
- Public Information and Education Programs

In addition to the six programs designed for existing customers, the Plan also identifies three other key factors that will help reduce the valley's overall water demand; passive conservation, inflation and new more water efficient building ordinances.

Finally, the Plan includes an Appendix with more aggressive water use efficiency measures designed to meet a potential 20 percent reduction in water use by 2020. This includes funding more active conservation programs, retrofit on resale legislation, water rate reform, water budget based rates and a more aggressive recycled water program.

CLWA and the water purveyors will be implementing the majority of the programs identified in the Plan in 2009.

In addition to this effort, the water Purveyors are working with City and County agencies to develop a landscape irrigation ordinance for the Santa Clarita Valley. This ordinance will focus primarily on new construction aimed at reducing overall water demands by requiring efficient

landscape design and delivery systems. Implementation of the ordinance is expected in 2010, depending on review and adoption by the City and County.

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