2014
Santa Clarita Valley
Water Report

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

June, 2015

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

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ES EXECUTIVE SUMMARY

This annual report, which is the seventeenth 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 (Valley). The report was prepared for the imported water wholesaler, Castaic Lake Water Agency (CLWA), and for the four local retail water purveyors (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 as the Santa Clarita Valley Water Committee 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 2014, and it provides a short-term outlook of water supply and demand for 2015.

ES.1 2014 Water Requirements and Supplies

In 2014, total water requirements in the Valley were about 81,100 acre-feet (af), of which about 68,200 af (84 percent) were for municipal use and the remainder (12,900 af) was for agricultural and other (miscellaneous) uses, including individual domestic uses. Total demand in 2014 was almost ten percent lower than 2013; below what was estimated in the 2013 Water Report and the average projection in the 2010 Urban Water Management Plan (UWMP). Total water requirements in 2014 were met by a combination of about 47,500 af from local groundwater resources (about 34,600 af for municipal and about 12,900 af for agricultural and other uses), about 33,100 af of SWP and other imported water, and about 500 af of recycled water.

Of the 47,500 af of total groundwater pumping in the Valley in 2014, about 36,900 af were pumped from the Alluvium and about 10,600 af were pumped from the underlying, deeper Saugus Formation. Alluvial pumping in 2014 was similar to 2013 amounts, and Saugus pumping was higher than in 2013, by about 1,600 af. Neither pumping volume resulted in any notable long term, overall change in groundwater conditions (water levels, water quality, etc.) in either

aquifer system. Imported water deliveries to the Purveyors decreased by about 10,200 af from the previous year. Water uses and supplies in 2014 are summarized in the following Table ES-1.

Table ES-1
Santa Clarita Valley
Summary of 2014 Water Supplies and Uses
(acre-feet)

Municipal		
SWP and other Imported Supplies		33,092
Groundwater (Total)		34,612
Alluvium	*24,683*	
Saugus	*9,929*	
Recycled Water		474
Subtotal		**68,178**
Agriculture/Miscellaneous		
SWP and other Imported		-
Groundwater (Total)		12,885
Alluvium	*12,213*	
Saugus	*672*	
Subtotal		**12,885**
Total		***81,063***

In accordance with the California Urban Water Management Planning Act, the Valley-wide UWMP was updated in 2010 and adopted in 2011 (2010 UWMP) to extend projected water demands through projected buildout of the Valley in 2050, and to describe the combination of local groundwater, imported water supplies from the SWP and other sources, local recycled water supplies, and other water supplies planned to meet those projected water demands in the Valley. An update to the 2010 UWMP is currently in development. The 2010 UWMP describes the reliability of local groundwater resources and the adequacy of groundwater supplies to meet groundwater demand. The 2010 UWMP also describes the recently

completed work for integrated control of perchlorate migration and restoration of perchlorate-impacted groundwater supply.

Notable details about each component of water supply in the Valley, and about the water supply outlook for 2015, include the following.

ES.2 Alluvial Aquifer

Based on an updated evaluation of groundwater basin yield, completed in 2009, the groundwater operating plan in the 2010 UWMP includes Alluvial pumping in the range of 30,000 to 40,000 acre-feet per year (afy) following wet/normal years, and slightly reduced pumping (30,000 to 35,000 afy) following dry years. In 2014, a temporary variation to the 2008 Operating Plan was developed in response to a severe curtailment of SWP deliveries, a temporary decrease in Saugus Formation well capacity, and drought impacts on groundwater levels in the eastern portion of the subbasin. This variation involved a redistribution of Alluvial pumping from the eastern areas of the Valley, where groundwater levels have shown the most decline, to the central and western areas of the Valley and to temporarily increase groundwater pumping above 2008 Operating Plan dry year ranges. The temporary redistribution and increase was initially proposed to involve groundwater pumping from the Alluvium at amounts that would be more representative of normal year levels (about 40,000 af) rather than dry year levels (30,000 to 35,000 afy). Pumping from the Alluvium in 2014 was less than proposed at about 36,900 af, which is slightly above the middle of the operating plan range for the Alluvium during wet/normal years and slightly above the range following dry years. There were no adverse effects on groundwater levels and storage in the basin that have not normally occurred during previous dry periods in the basin. On average, pumping from the Alluvium has been about 33,300 afy since supplemental imported water became available in 1980. That average rate remains near the lower end of the range of operational yield for a wet/normal year and about mid-range for a dry period.

On a long-term basis, continuing through 2014, 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 35 years with short-term declines during dry periods followed by rapid recoveries during wet periods. Above-average precipitation in late 2004 and 2005, and more recently in 2010 and early-2011, resulted in significant water level recovery in the eastern part of the basin

despite the recent multi-year dry period (2006-2009, 2011-2014), when water levels declined to the low end of the historic range of groundwater levels. This continues the overall trend of fluctuating groundwater levels within a generally constant range over the last 35 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 2010 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 now been replaced to restore that component of municipal water supply that was impacted by 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; all Alluvial municipal wells are sampled in accordance with drinking water regulations and perchlorate has not been detected. The 2005 UWMP specifically addressed the adequacy of groundwater supply in light of the inactivation of the impacted Alluvial 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 2010 UWMP, the replacement and reactivation of the formerly impacted wells now adds to the overall ability to meet the groundwater component of total water supply in the Valley.

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 2014, 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. Under the direction of the State Department of Toxic Substances Control (DTSC), Whittaker has submitted a comprehensive site-wide remediation plan for the contaminants of concern in soil and groundwater detected on the site. A Draft Remedial Action Plan for Operable Units 2 through 6, focused on soil remediation, was submitted to DTSC in 2009. DTSC approved the Remedial Action Plan for contaminated soils in Operable Units 2 through 6 on December 6, 2010 and Preparation of the Remedial Design documents are underway. Whittaker also completed a Draft Feasibility Study for Operable Unit 7 to identify and select treatment technologies for both on-site and off-site groundwater. A work plan for Pilot Remediation of Saugus Aquifer Containment and Remediation was approved by DTSC on December 31, 2008 and the first phase of the work plan was completed in 2013.

ES.3 Saugus Formation

The groundwater operating plan in the 2010 UWMP includes pumping from the Saugus in the range of 7,500 to 15,000 afy in 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. As with the operation plan for the Alluvium, the ranges of Saugus pumping are based on the updated evaluation of groundwater basin yield, completed in 2009, which found those ranges of pumping to be sustainable on a long-term basis.

Pumping from the Saugus Formation was about 10,600 af in 2014; this included about 2,500 af that were pumped from CLWA's Saugus 1 and Saugus 2 Wells as part of the perchlorate pump and treat program. On average, Saugus pumping has been about 7,100 afy since 1980. Both the 2014 amount and the long-term average rates remain near the mid to lower end of the ranges included in the groundwater operating plan and 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 40 to 45 year time horizon. On a short-term time frame, there have been declining trends in groundwater elevations in the Saugus Formation since 2006 that likely reflect the generally dry climatic conditions that have existed during that time with the exception of 2010 and the early part of 2011 which were generally wet.

In 1997, ammonium perchlorate was discovered in four wells (Saugus 1, Saugus 2, VWC-157 and NC-11) 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. In 2006, a very low level of perchlorate was detected in another Saugus municipal well (NC-13). And in 2010, it was detected further downgradient in a sixth Saugus well (VWC-201). To date, one of the impacted wells has been destroyed and replaced, three have remained in or been returned to service with treatment as required, one remains out of service with its capacity replaced by an alternate source, and the most recently impacted well remains out of service with plans in development for restoration. As part of regular operation, those wells that remain in service are sampled in accordance with drinking water regulations. All other Saugus Formation wells owned and operated by the Purveyors remain available for municipal water supply service.

Work toward the remediation of perchlorate contamination, including the restoration of impacted groundwater supply was continued in 2014, with a focus on the implementation of 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 for municipal supply 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 was completed in May 2010, and the Division of Drinking Water (DDW) of the State Water Resources Control Board (SWRCB), formerly California Department of Public Health, issued an amendment to CLWA's Operating Permit in December 2010, whereupon two of the originally impacted Saugus Formation wells (Saugus 1 and 2) were placed back into water supply service in January 2011. Through this reactivation, Castaic Lake Water Agency's Saugus Perchlorate Treatment Facility (SPTF) is online and numerous monitoring tests are performed each week in order to ensure the safety of the water leaving the SPTF. In 2014, 2,503 af of groundwater were pumped from Saugus 1 and 2. After treatment for perchlorate removal, the groundwater is blended with treated imported water and delivered to the Purveyors through the CLWA distribution system. With this additional production at Saugus 1 and 2, the Purveyors continue to have sufficient pumping capacity to meet the planned normal range of Saugus pumping as described in the 2010 UWMP. Restoration of VWC Well 201 to service by 2016 will also increase available production capacity from the Saugus Formation.

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 and Yuba County Water Agency. 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 (RRBWSD), Buena Vista's high flow Kern River entitlements (and other acquired waters that may become available) are captured and recharged within the RRBWSD 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. 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. Up to 850 af of non-SWP supply is available to CLWA in critically dry years. Also, 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 (County) to allow CLWA to utilize the County's flexible storage account of 1,376 af. CLWA may withdraw water from the County's flexible storage on an as-needed basis; however any water withdrawn from this storage account must be replaced within five years. The combined flexible storage from CLWA's and the County's accounts provides total flexible storage of 6,060 af, which is maintained in Castaic Lake for use in a future dry period or an emergency.

CLWA has entered into four groundwater banking and water exchange programs and has, in aggregate, more than 143,000 af of recoverable water outside the local groundwater basin at the end of 2014. The first component of CLWA's overall groundwater banking program is the result of two 10-year agreements in 2002 and 2003 (extended in 2011 by 10 years to 2022/2024) between CLWA and Semitropic Water Storage District whereby, over the terms of the two agreements, CLWA can withdraw from the current balance of 35,970 af of SWP Table A water that was stored in Semitropic to meet Valley demands when needed in dry year. The second component of the program, the long-term RRBWSD Water Banking Program in Kern County, has a recoverable total of more than 97,000 acre-feet in storage. The third and fourth components are the Two-For-One Exchange Programs that CLWA initiated with RRBWSD and West Kern Water District in 2011 that now have a total of 10,009 af of recoverable water.

Since SWP water deliveries are subject to reduction when dry conditions occur in Northern California, the 2010 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.

CLWA's final allocation of SWP water for 2014 was 5 percent of its Table A Amount, or 4,760 af. The total available imported water supply in 2014 was 51,919 af, comprised of the 4,760 af of Table A supply, 11,000 af purchased from Buena Vista/RRBWSD, 445 af from the Yuba Accord, and 21,482 af of 2013 carryover available in 2014. CLWA withdrew water from multiple banking/exchange programs in 2014 including the West Kern Water District Two-for-One Exchange Program (2,000 af), Rosedale-Rio Bravo Water Banking Program (2,824 af), and Semitropic Water Banking Program (4,950 af). CLWA also accessed their Castaic Flexible Storage, and had withdrawn a total of 4,424 af at the end of 2014. CLWA also received a small amount of water from the Westlands Water District Aqueduct Pump-In and Conveyance Project (34 af). CLWA deliveries to the Purveyors were 33,092 af. Following disposition of available water supplies in 2014, carryover of 18,048 af from 2014 is available for 2015 water supply. No water was contributed to banking programs in 2014.

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 500 af in 2014. CLWA and the Purveyors completed programmatic CEQA analysis in early 2007 for full implementation of the recycled water system as outlined in the Master Plan. CLWA and the Purveyors are preparing the design of the second phase of the Recycled Water Master Plan (Phase 2A) 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. The environmental documentation for this phase was completed in July 2011. Another new phase of the recycled water system (Phase 2C) is in design to extend the system southward from the intersection of Valencia Boulevard and The Old Road, south along Rockwell Canyon Road to the intersection of Orchard Village Road and Lyons Avenue, serving large irrigation customers along its proposed alignment. Collectively, these phases will have design capacity to increase recycled water deliveries by about 500 afy.

ES.6 2015 Water Supply Outlook

In 2015, total water demands are expected to be about 79,000 af, almost 9,000 af below the water demand projections (with conservation) in the 2010 UWMP. It is expected that water demands in 2015 will continue to be met with a mix of water supplies that is primarily comprised of local groundwater, SWP carryover supplies and other imported water, and recycled water. Ongoing conservation programs that were expanded in 2014 are expected to reduce demands on water supplies in 2015.

Announced on March 2, 2015, the latest allocation of water from the SWP in 2015 is 20 percent of CLWA's Table A Amount, or 19,040 af. Combined with local groundwater from the two aquifer systems (45,000 af), total Flexible Storage Account (1,636 af), net carryover of SWP Table A allocation from 2014 to be used in 2015 (18,048 af), annual acquisition through the Buena Vista Water/Rosedale Rio-Bravo Water Acquisition Agreement (11,000 af), water recovered from the Rosedale-Rio Bravo Water Banking Program (3,000 af), and recycled water (400 af), the total available water supplies for 2015 is over 98,100 af. As a result, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2015.

In August 2007, a federal court ruled that certain operational changes were required of the SWP in order to protect the endangered Delta smelt. With the objective of protecting endangered fish such as the Delta smelt and spring-run salmon, the court order resulted in the preparation of new Biological Opinions (BO) requiring DWR to implement mitigation requirements with resultant impacts on SWP water supply reliability. The current SWP Delivery Reliability Report 2013, issued in 2014, maintains the restrictions on SWP operations according to the Biological Opinions of the U.S. Fish and Wildlife Service and the National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. In December 2010, a federal judge overruled most of the 2008 federal biological opinion and invalidated several of the criteria that reduced SWP's water supply. These matters were appealed to the U.S. Court of Appeals for the Ninth Circuit. The Ninth Circuit ruling upheld the Biological Opinions of the federal agencies. Therefore, the operational rules defined in these BOs continue to be legally required and were used by DWR in the analyses supporting its Delivery Reliability Report 2013. The current SWP Delivery Reliability Report 2013 also considers the impacts on SWP delivery reliability due to climate change, sea level rise, and vulnerability of the Delta's conveyance system and structure due to floods and earthquakes. With these factors, the Reliability Report projects that long-term reliability will be slightly less than the 2011 estimate of 60 percent

during normal year hydrology. Specifically, under existing conditions, the average annual delivery of Table A water is estimated at 1% more than the 2011 report; under future conditions, the average annual delivery is estimated at 2% less than the 2011 report. CLWA staff has assessed the impact of the current SWP Delivery Reliability Report on the CLWA reliability analysis contained in the Agency's 2010 UWMP that current and anticipated supplies are available to meet anticipated water supply needs through the year 2050.

CLWA, the four retail water purveyors, Los Angeles County and the City of Santa Clarita have formed the Santa Clarita Valley Water Committee. The specific purpose of the Committee is to work collaboratively to ensure the progressive implementation of water use efficiency programs and manage the conjunctive use of the water supplies in the Santa Clarita Valley. In terms of short-term water supply availability, the Committee has determined that, while current operational changes of the SWP are in effect, there are sufficient supplemental water supplies, even with the limited amount of SWP water allocated in 2015, to augment local groundwater and other water supplies such that overall water supplies will be sufficient to meet projected 2015 water requirements as reflected herein.

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. Following the recovery of 9,900 af (with delivery of 1,650 af in 2009, 3,300 af in 2010, and 4,950 af in 2014), with another 5,000 given to Newhall Land in consideration for CLWA's use of their first priority extraction capacity, the banked excess 2002 and 2003 SWP Table A water in Semitropic represents nearly 36,000 af of recoverable water for drought water supply. In addition, 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, 2007, 2010, 2011, and 2012, along with a recovery of 2,824 af in 2014, and an anticipated recovery of 3,000 af in 2015, represent a total of 94,200 af of recoverable water for drought water supply from the Rosedale-Rio Bravo Banking Program. And most recently, the new Two-for-One Exchange Programs that were initiated in 2011 provide an additional 10,000 af of dry-year supply following the first recovery of 2,000 af from

the West Kern Water District program in 2014. The total recoverable water in all the Kern County storage banks is now about 140,000 af.

Drought periods may affect available water supplies in any single year and even for a duration that spans multiple 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 retail water suppliers have emphasized developing a water supply portfolio that is diverse, especially in dry years along with water conservations programs. Diversity of supply is considered a key element of reliability, giving CLWA and the 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

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 (LACWD 36), Newhall County Water District (NCWD), and Valencia Water Company (VWC). Together, the four retail water purveyors (Purveyors) provide water to about 72,400 service connections. Castaic Lake Water Agency (CLWA) contracts for State Water Project (SWP) and other sources of imported water, which is delivered from Castaic Lake, after which it is treated, filtered, and disinfected at two CLWA treatment plants before distribution to the Purveyors; CLWA also contracts with the Santa Clarita Valley Sanitation District for recycled water, which is currently delivered to VWC. Staff of CLWA and the four retail water purveyors 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 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 as reported herein. Also, 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. In the absence of detailed information about private wells and associated water use, pumping as reported herein includes an estimate of groundwater pumped from private wells. It is intended that this estimate of private pumping will be refined in the future as more information about the private wells is obtained.

For more than 30 years, CLWA and the retail water 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, NCWD, on behalf of the Purveyors, prepared the area's first report on urban water supplies and water management. Beginning in 1995, formalized versions of Urban Water Management Plans (UWMP) have been developed and have included CLWA. Information in the plans 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 UWMP was most recently updated (2010 UWMP) and issued by CLWA and the Purveyors in 2011 (CLWA, 2011). An update to the 2010 UWMP is planned to be developed in 2015. The 2010 UWMP includes water demand projections through projected build out of the Valley in 2050, and describes the combination of local groundwater, imported water supplies from the SWP and other sources, local recycled water supplies, and other planned water supplies to meet the existing and projected water demands in the Valley. The 2010 UWMP 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 mitigation of perchlorate contamination which had impacted several municipal water supply wells, and the implementation of integrated control of perchlorate migration and full restoration of perchlorate-impacted groundwater supply.

In 2009, primarily in preparation of the 2010 UWMP, an updated analysis of groundwater basin yield was completed to guide the ongoing use of groundwater and the associated distribution of pumping to maintain groundwater use at a sustainable rate while also addressing localized issues such as restoration of groundwater contamination which has impacted local groundwater supplies since 1997. The results of the updated groundwater basin analysis are summarized in the groundwater basin yield discussion (Section 3.1) of this Water Report.

1.2 Purpose and Scope of the Report

The purpose of this report, which is the seventeenth in a series of annual water reports that began to describe water supply conditions in 1998, is to provide current information about water requirements and available water supplies to meet those demands in 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 two decades, 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 (CLWA, 2003), adopted in 2003, to regularly report on implementation of that Plan.

This report was prepared for CLWA, SCWD, LACWD 36, NCWD, and VWC. 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 2010 UWMP for the area, which provides longer-term water supply planning over a 40-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 covers 34,700 acres and 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 with about 30,200 service connections. Water has been supplied from both groundwater and imported water sources in varying proportions over the last 35 years, with the majority of supply currently being met by imported sources (78 percent in 2014).

Los Angeles County Waterworks District 36 has a service area that encompasses approximately 6,600 acres in the Hasley Canyon area and the unincorporated community of Val Verde. LACWD 36 has about 1,350 service connections. Prior to 2012, LACWD 36 had typically obtained its full water supply from a connection to the CLWA's Castaic Conduit. However, beginning in 2012 and continuing through 2014, that imported water supply was initially reduced to about one-third of the overall water supply; more recently, it has been temporarily replaced with groundwater pumped from the Saugus Formation.

Newhall County Water District's service area is approximately 24,170 acres and 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 with about 9,700 service connections. NCWD supplies water from both groundwater and imported water sources (with groundwater historically being the more predominant source of supply), and in 2014 groundwater accounted for 60 percent of supply.

Valencia Water Company's service area serves almost 31,100 service connections in a portion of the City of Santa Clarita and in the unincorporated communities of Castaic, Newhall, Saugus, Stevenson Ranch, and Valencia representing an area of about 18,000 acres. VWC supplies water from both groundwater and imported water sources in generally even proportions historically with slightly more supply generally coming from imported sources (however, in 2014, groundwater was 72 percent of supply). VWC also has a small amount of recycled water for 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 (**Figure 1-2**). 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 the River is the outlet from the Upper Santa Clara River Hydrologic Area. The principal tributaries of the Santa Clara River in the Santa Clarita Valley are Castaic Creek, San Francisquito Creek, Bouquet Creek, and the South Fork of the Santa Clara River. In addition to tributary inflow, the Santa Clara River receives treated wastewater discharge from the Saugus and Valencia Water Reclamation Plants, which are operated by the Santa Clarita Valley Sanitation District of Los Angeles County.

The Santa Clara River continues westward through Ventura County to its mouth near Oxnard. Along that route, the River traverses all subbasins of the Santa Clara River Valley Groundwater Basin. There are a total of seven subbasins that span across Los Angeles and Ventura counties: the Santa Clara River Valley East Subbasin, beneath the Santa Clarita Valley and the source of essentially all local groundwater used for water supply in the Santa Clarita Valley, Piru, Fillmore, Santa Paula, Oxnard Forebay, Oxnard Plain, and Mound subbasins as shown in **Figure 1-3**.

There are three precipitation gages in the Santa Clarita Valley. Two gages have long-term records, the Newhall-Soledad 32c gage and the Newhall County Water District gage, while the third gage, #204 Santa Clarita, was established in 2006 and has a short-term record that can be used for comparative purposes (**Figure 1-4**). 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 historically recording approximately 30 percent more precipitation than the Newhall-Soledad 32c gage over the entire period of record. During dry periods, this relative difference is greater, and there is closer to 40 percent more rainfall at the NCWD gage relative to the Newhall-Soledad 32c gage. The overall offset is likely due to the differences in location between the two gages, with the NCWD gage situated farther south in the hills rimming the southern edge of the Santa Clarita Valley at an elevation of about 1,390 feet, while the Newhall-Soledad 32c gage is located northwest of the NCWD gage and further away from the hills at an elevation of about 1,235 feet.

The third gage, #204 Santa Clarita, was established in December 2006 near the Rio Vista Treatment Plant (elevation 1,410') near the main Santa Clara River channel and on the north side of the Valley (**Figure 1-4**). This gage is operated by CLWA and is part of the California Irrigation Management Information System (CIMIS) managed by DWR. Daily precipitation data at this location are available beginning in January 2008, and these data correlate well with the other two precipitation gages in the Valley over the period of 2008 through 2014 with the exception of data for the month of December 2010. Comparison of historical data collected from all three gages between 2008 through 2014 indicates that the CIMIS gage located in the central part of the Valley near the river receives about 65% of the rainfall of the 32c gage and about 45% of the NCWD gage.

The Santa Clarita Valley is characterized as having an arid climate. Historically, intermittent periods of below-average precipitation have typically been followed by periods of above-average precipitation in a cyclical pattern, with each above average or below average period typically lasting from one to five years. The longer-term precipitation records for the Newhall-Soledad 32c gage are illustrated in **Figure 1-5**. Long-term annual (calendar year) average precipitation at that gage is 17.5 inches calculated for the 1931 through 2014 period. **Figure 1-5** also shows the cumulative departure from mean annual precipitation which shows periods of above average rainfall (increasing slope or trend with time) and below average rainfall (declining trend or slope with time). In general, periods of below-average precipitation have been longer and more moderate than periods of above average precipitation. Historically, the periods from 1947 to 1951, 1959 to 1964, 1971 to 1976, 1984 to 1991 and 1999 to 2003 have generally been drier than average; the periods from 1938 to 1946, 1965 to 1970, 1977 to 1983, 1992 to 1996, and 2004 to 2005 have been wetter than average. Recently, the dry or below average period that began in 2006, has generally persisted through 2014 with all but two of those years (2008 and 2010) having below average rainfall totals. 2012 and 2013 were significantly below average with about 9.0 and 3.7 inches, respectively, and 2013 experienced the lowest amount of precipitation that has been recorded since 1931. 2014 precipitation was higher at 13.3 inches for the year but still 25 percent below the long-term average. Early year precipitation in 2015 has been below average through April; these conditions combined with other water supply considerations and more aggressive water conservation measures, discussed in Chapters 3 and 4, are expected to result in 2015 water requirements being slightly less than the water requirements in 2014.

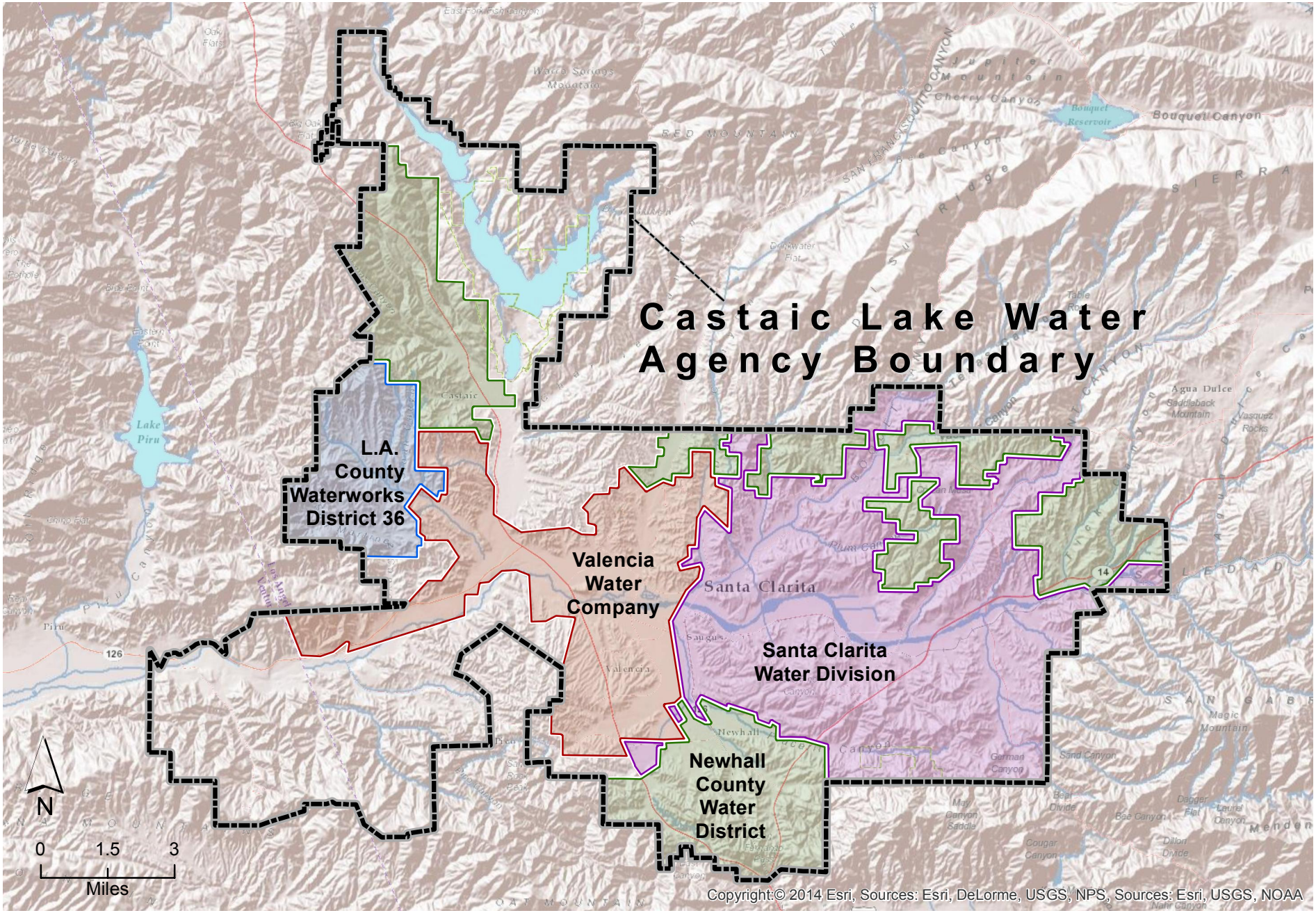

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Figure 1-1
CLWA and Purveyor Service Areas
Santa Clarita Valley Water Report

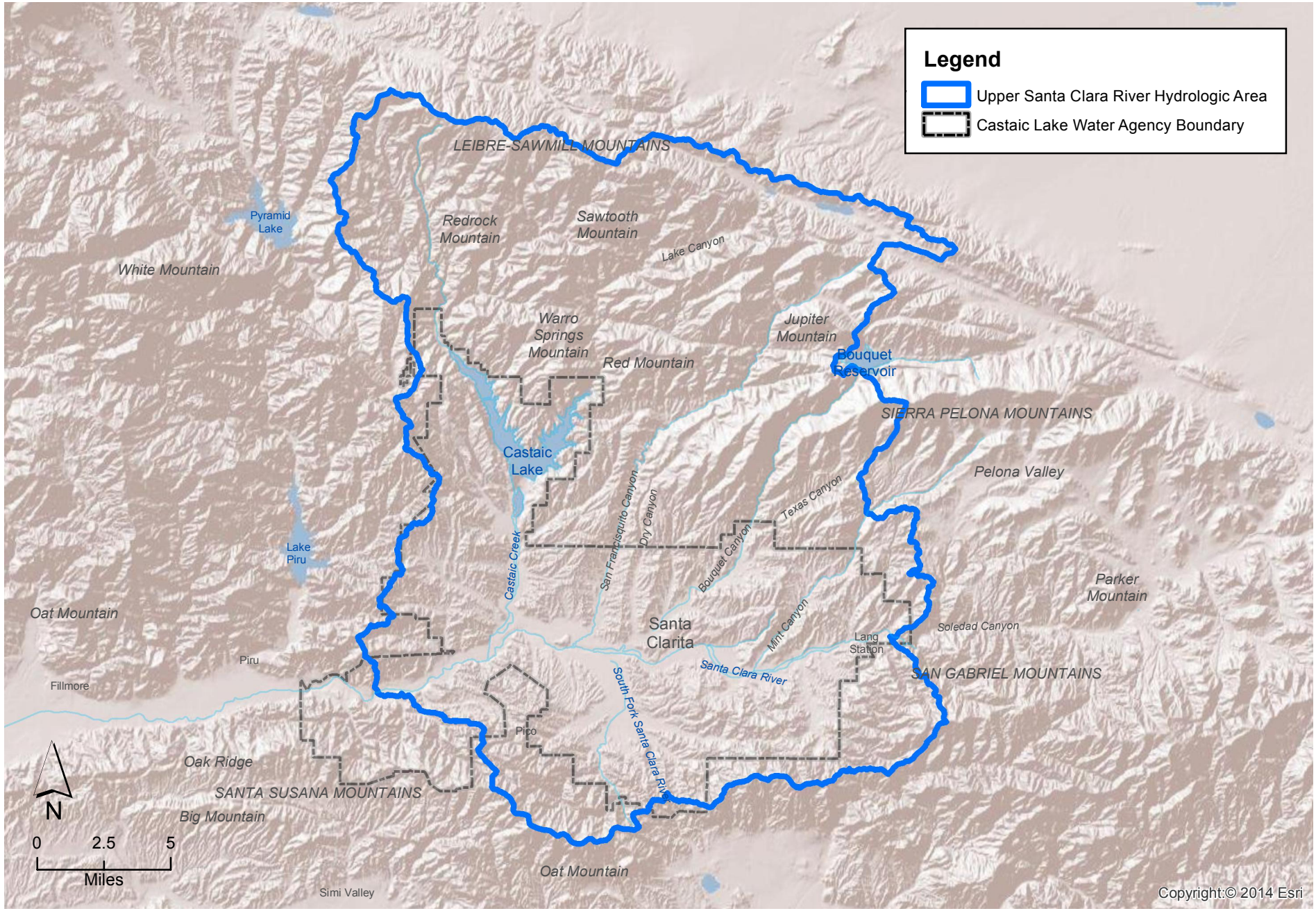

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Figure 1-2
Upper Santa Clara River Hydrologic Area
Santa Clarita Valley Water Report

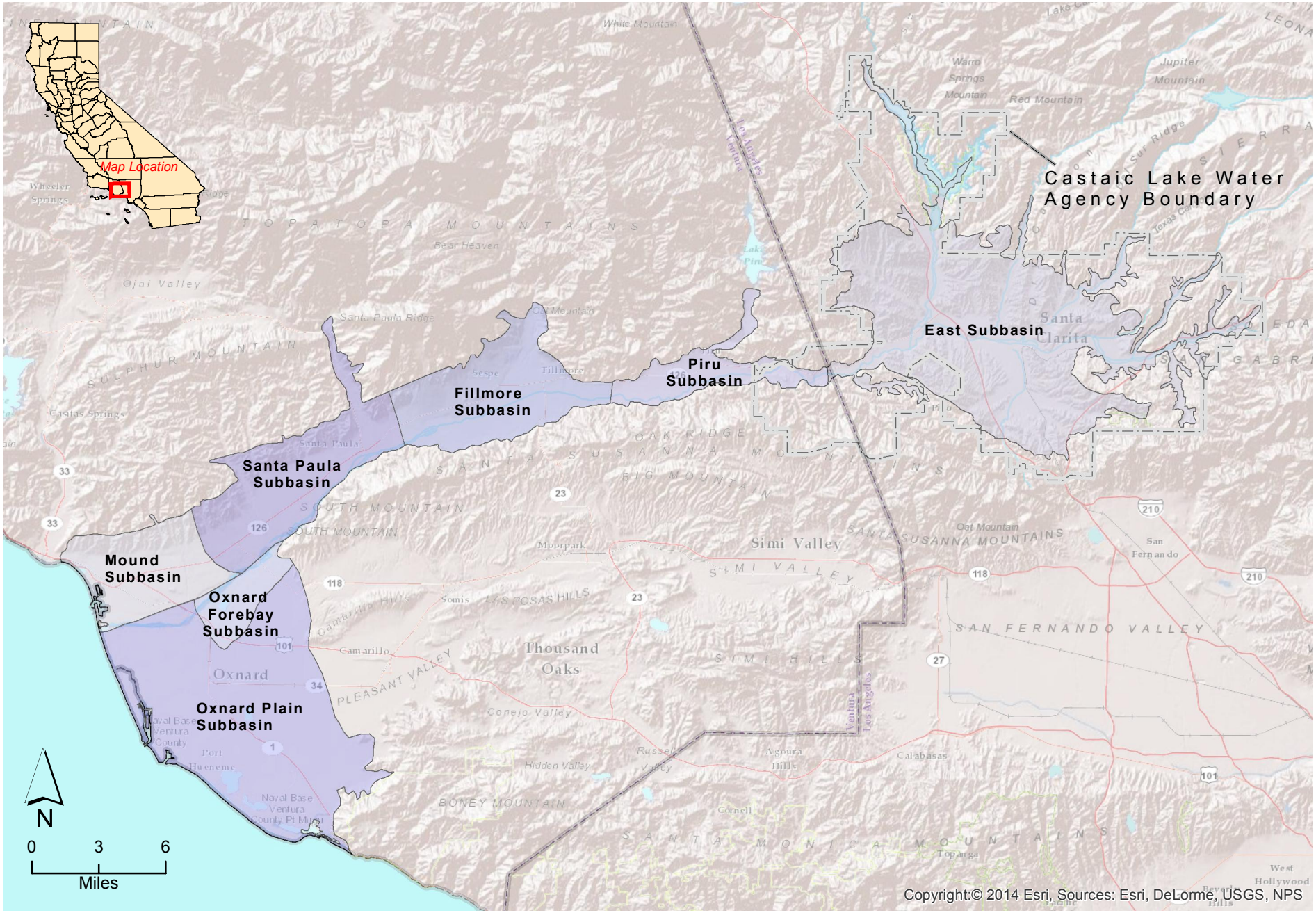

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Figure 1-3
Santa Clara River Valley Groundwater Basin and Subbasins
Santa Clarita Valley Water Report

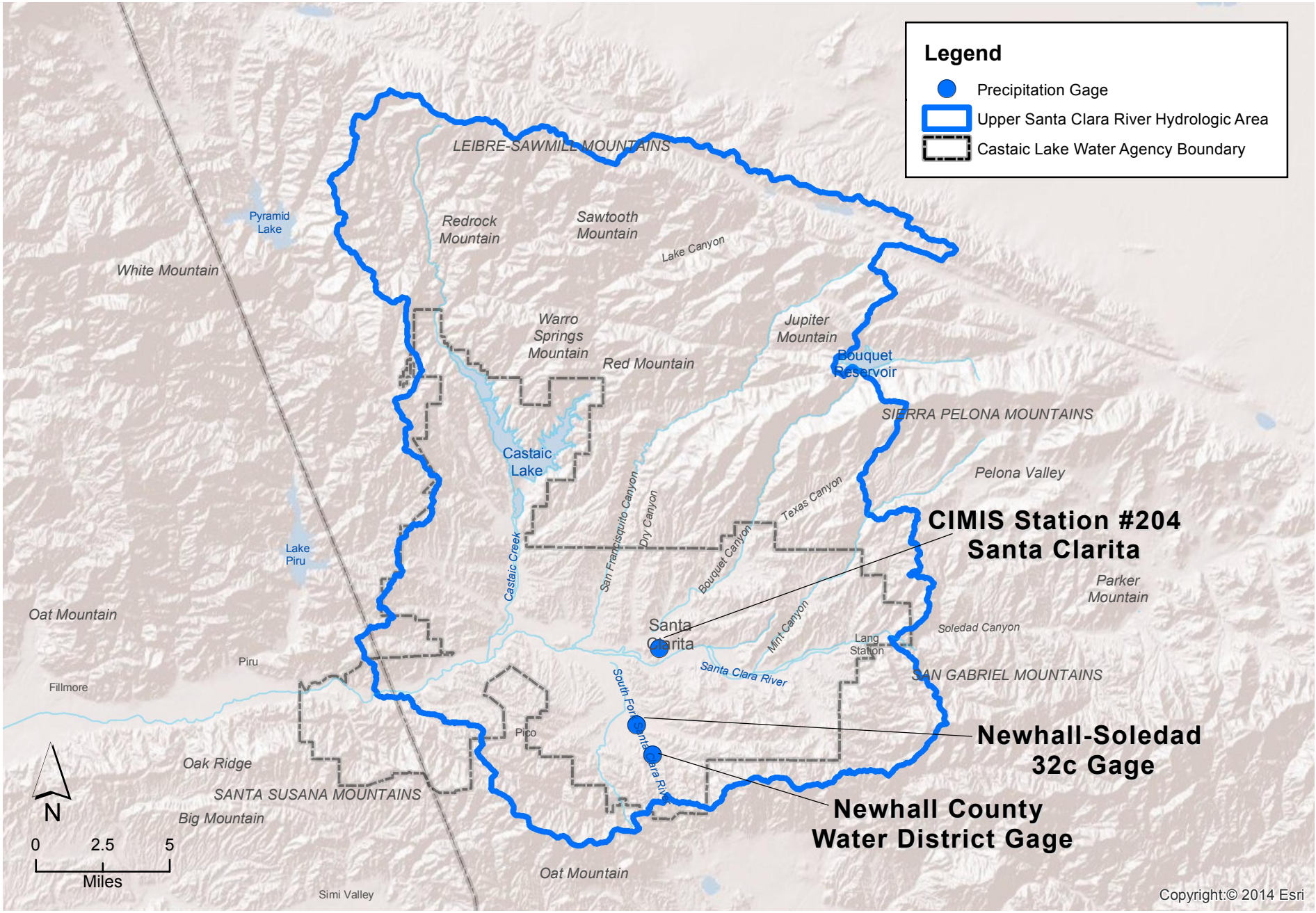

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Figure 1-4
Precipitation Gage Locations
Santa Clarita Valley Water Report

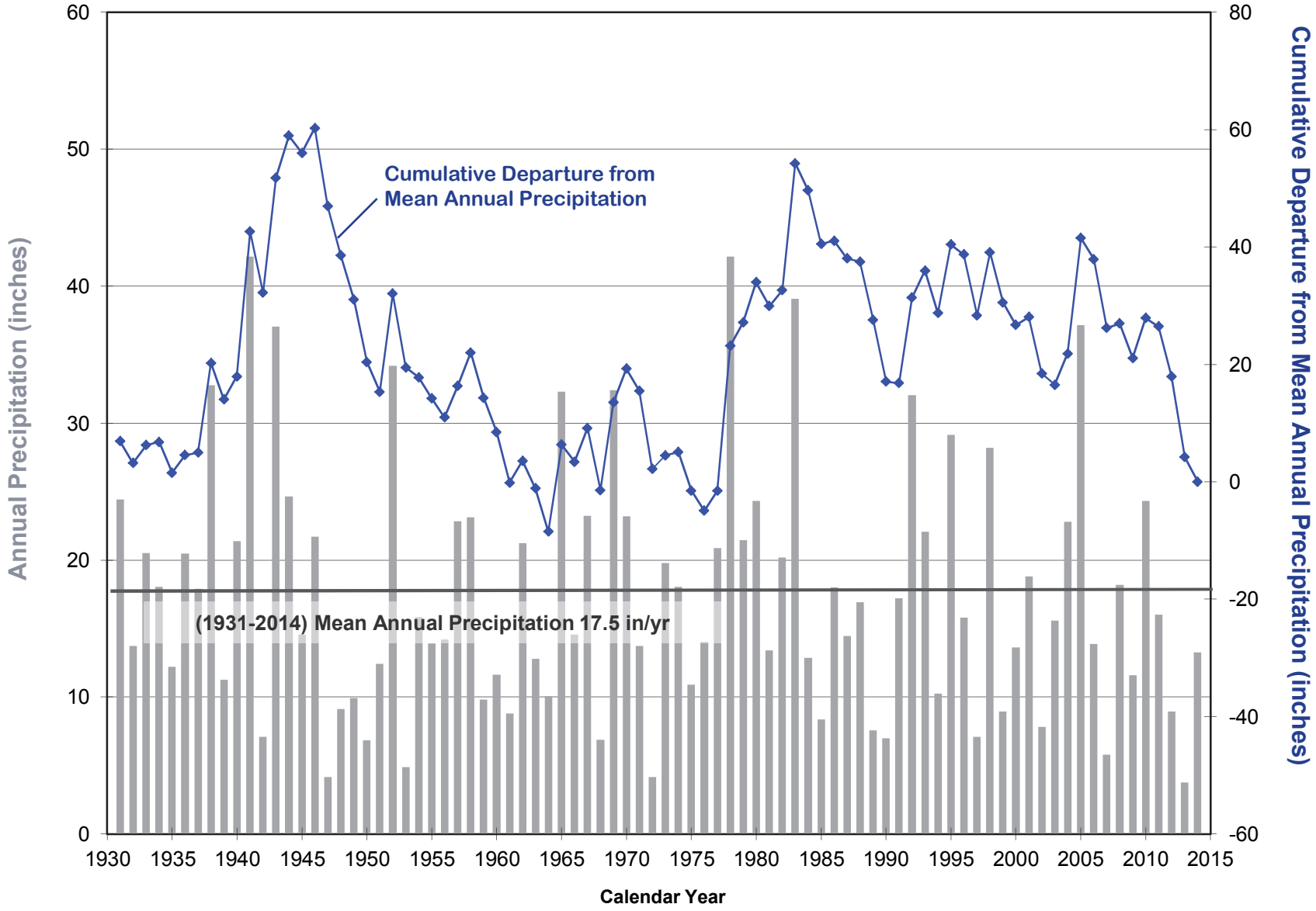

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Figure 1-5
Annual Precipitation and Cumulative Departure from Mean Annual Precipitation at Newhall-Soledad 32c Gage
Santa Clarita Valley Water Report

2 2014 WATER SUPPLIES AND USE

Water use in Santa Clarita Valley is utilized for municipal, agricultural, private domestic, and miscellaneous purposes. The sources of water are varied and include imported water from the State Water Project and other sources, along with local supplies from treated groundwater, recycled water, and groundwater.

2.1 2014 Water Supplies

Total water use in the Santa Clarita Valley was 81,100 acre feet (af) in 2014. Of the total, 68,200 af (about 84 percent) were for municipal use (**Table 2-1**) and the remaining 12,900 af (16 percent) were for agricultural and other (miscellaneous) uses (**Table 2-2**), including estimated individual domestic uses. Total water use was met by a combination of about 47,500 af from local groundwater resources (about 34,600 af for municipal supply and 12,900 af for agricultural and other uses), 33,100 af from SWP and other imported water sources, and about 500 af from recycled water (**Table 2-3**).

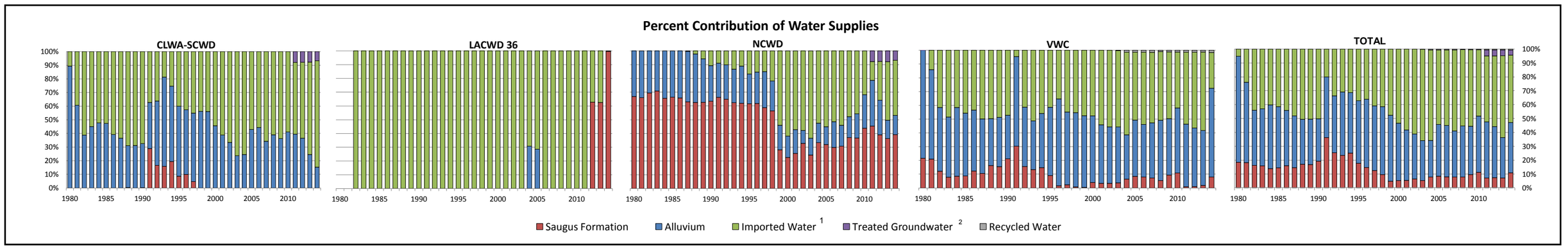
Compared to 2013, total water use in the Santa Clarita Valley in 2014 was almost ten percent lower, and it was below the short-term projected water requirement estimated in last year's Annual Water Report. The decrease in water use in 2014 is primarily attributed to aggressive conservation in 2014 as the Purveyors and the local community continue to be aware of ongoing drought conditions.

2.2 Total Water Use Historical Trends

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 addition of recycled water, are graphically illustrated in **Figure 2-1**. As can be seen by inspection of **Table 2-3** and **Figure 2-1**, total water use in the Valley was nearly linearly increasing from the early 1980's (about 36,000 to 42,000 afy) through 2007 (92,000 af), with some climatic-related fluctuations in certain years. Total water use progressively declined from 2007 through 2010 (80,200 af), followed by an increase in water use in 2012 and 2013 and a decline back to 2010 levels in 2014. Overall, since the inception of supplemental SWP importation, total annual water use has increased from about 37,000 af in 1980 to 80 to 90,000 af per year from 2002 through 2014. The relatively stable trend over the last 13 years is mostly attributed to the expansion of water conservation efforts having a

Table 2-1
Water Supply Utilization by Municipal Purveyors
Santa Clarita Valley Water Report
(Acre-Feet)

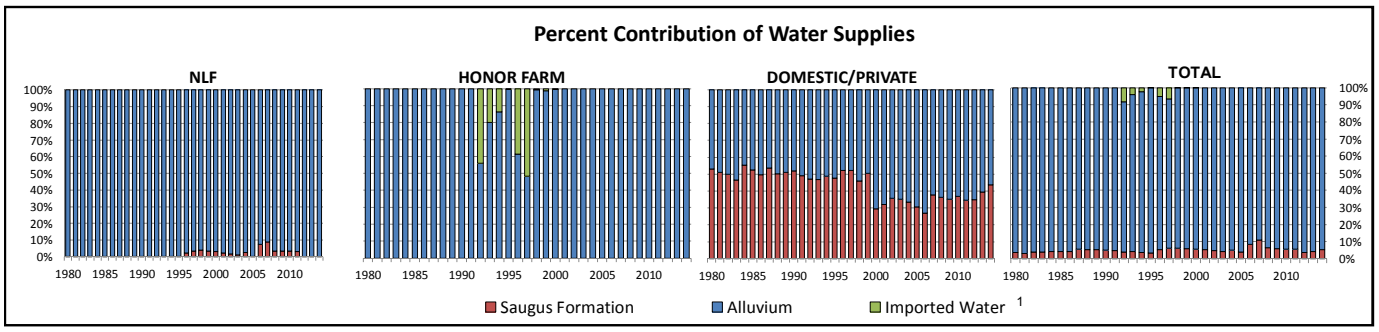
Year	CLWA Santa Clarita Water Division					Los Angeles County Waterworks District 36				Newhall County Water District					Valencia Water Company					All Municipal Purveyors					
	Purchased from CLWA		Local Production			Purchased from CLWA	Local Production			Purchased from CLWA		Local Production			Purchased from CLWA	Local Production		Other		Purchased from CLWA		Local Production		Other	
	Imported Water[1]	*Treated Groundwater*[2]	*Alluvium*	*Saugus Formation*	**Total**	*Imported Water*[1]	*Alluvium*[3]	*Saugus Formation*[4]	**Total**	*Imported Water*[1]	*Treated Groundwater*[2]	*Alluvium*	*Saugus Formation*	**Total**	*Imported Water*[1]	*Alluvium*	*Saugus Formation*	*Recycled Water*[5]	**Total**	*Imported Water*[1]	*Treated Groundwater*[2]	*Alluvium*	*Saugus Formation*	*Recycled Water*	**Total**
1980	1,126	-	9,467	0	**10,593**	0	-	-	**0**	0	-	1,170	2,363	**3,533**	0	5,995	1,644	-	**7,639**	1,126	-	16,632	4,007	-	**21,765**
1981	4,603	-	7,106	0	**11,709**	0	-	-	**0**	0	-	1,350	2,621	**3,971**	1,214	5,597	1,808	-	**8,619**	5,817	-	14,053	4,429	-	**24,299**
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	-	9,941	0	**25,589**	907	-	-	**907**	5,452	-	1,641	2,432	**9,525**	13,362	10,518	835	-	**24,715**	35,369	-	22,100	3,267	-	**60,736**
2002	18,916	-	9,513	0	**28,429**	1,069	-	-	**1,069**	5,986	-	981	3,395	**10,362**	15,792	11,603	965	-	**28,360**	41,763	-	22,097	4,360	-	**68,220**
2003	20,665	-	6,424	0	**27,089**	1,175	-	-	**1,175**	6,572	-	1,266	2,513	**10,351**	16,004	11,707	1,068	50	**28,829**	44,416	-	19,397	3,581	50	**67,444**
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	-	18,970	5,701	420	**72,296**
2005	16,476	-	12,408	0	**28,884**	857	343	-	**1,200**	5,932	-	1,389	3,435	**10,756**	14,732	12,228	2,513	418	**29,891**	37,997	-	26,368	5,948	418	**70,731**
2006	16,548	-	13,156	0	**29,704**	1,289	-	-	**1,289**	5,898	-	2,149	3,423	**11,470**	16,313	11,884	2,449	419	**31,065**	40,048	-	27,189	5,872	419	**73,528**
2007	20,488	-	10,686	0	**31,174**	1,406	-	-	**1,406**	6,478	-	1,806	3,691	**11,975**	16,779	13,140	2,367	470	**32,756**	45,151	-	25,632	6,058	470	**77,311**
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**
2009	17,739	-	10,077	0	**27,816**	1,243	-	-	**1,243**	4,832	-	1,860	3,868	**10,559**	14,732	12,459	2,836	328	**30,355**	38,546	-	24,396	6,704	328	**69,974**
2010	15,188	-	10,607	0	**25,795**	1,141	-	-	**1,141**	3,035	-	2,323	4,173	**9,531**	11,214	13,054	2,995	336	**27,599**	30,578	-	25,984	7,168	336	**64,066**
2011	13,593	2,038	10,195	0	**25,826**	1,172	-	-	**1,172**	1,325	746	3,216	4,389	**9,676**	14,718	12,775	265	373	**28,131**	30,808	2,784	26,186	4,654	373	**64,805**
2012	15,600	2,164	10,192	0	**27,956**	471	-	794	**1,265**	2,965	792	2,631	4,081	**10,469**	16,522	12,770	302	428	**30,022**	35,558	2,956	25,593	5,177	428	**69,712**
2013	20,059	2,275	7,262	0	**29,596**	485	-	811	**1,296**	4,488	833	1,405	3,835	**10,561**	18,249	12,764	594	400	**32,007**	43,281	3,108	21,431	5,240	400	**73,460**
2014	21,478	1,832	4,220	0	**27,530**	4	-	1,238	**1,242**	3,942	671	1,383	3,849	**9,845**	7,668	19,080	2,339	474	**29,561**	33,092	2,503	24,683	7,426	474	**68,178**



1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.
2. In January 2011, CLWA began operation of its Saugus groundwater containment project as part of municipal water supply. After treatment for perchlorate removal, that water was blended with treated imported water and delivered to the Purveyors through the CLWA distribution system. The amounts of treated groundwater from Saugus 1 and 2 utilized by each Purveyor reflect the estimated distribution to each Purveyor consistent with the proportions in the December, 2006 MOU that establishes amounts to be delivered and sold by CLWA to SCWD and NCWD at a reduced rate. Although the MOU and the CLWA subsidized rate structure indicates all the treated Saugus 1 and 2 water is delivered to NCWD and SCWD, a minor, unquantifiable amount of the water may have been delivered to the other purveyors as a result of varying distribution system operations.
3.Groundwater purchased from LA County Honor Farm.
4.Groundwater production began at a new LA County Waterworks District 36 Saugus well in December 2011.
5. Recycled water totals for 2012 and 2013 are estimates based on the water treament plant production meter; estimates were necessary due to customer meter failure.

Table 2-2
Individual Water Supply Utilization by Agricultural and Other Users
Santa Clarita Valley Water Report
(Acre-Feet)

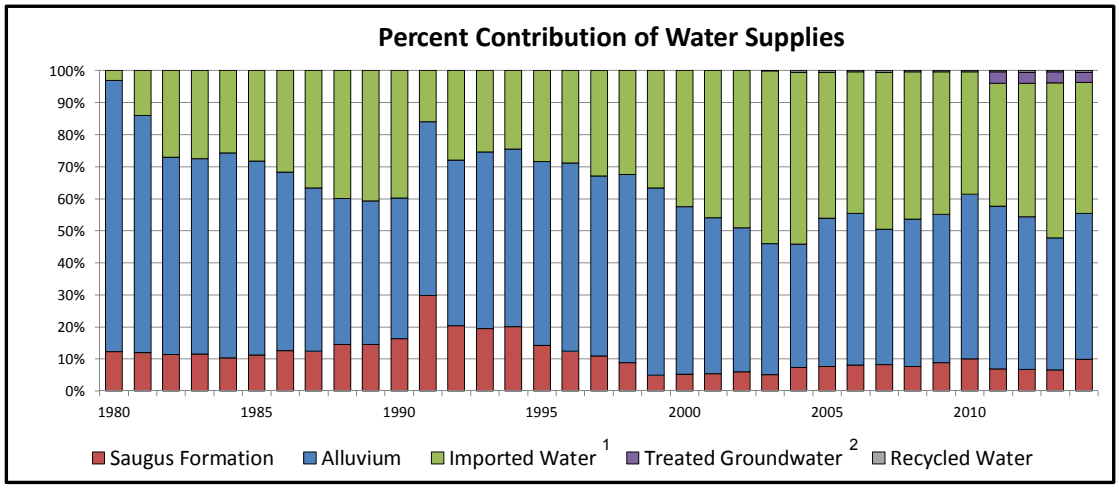
Year	Newhall Land and Farming			Los Angeles County Honor Farm			Small Private Domestic, Irrigation, and Golf Course Uses			All Agricultural and Other Users			
	Local Production		Total	Purchased from CLWA	Local Production	Total	Local Production		Total	Purchased from CLWA	Local Production		Total
	Alluvium	*Saugus Formation*		*Imported Water* [1]	*Alluvium*		*Alluvium* [2]	*Saugus Formation* [3]		*Imported Water* [1]	*Alluvium*	*Saugus Formation*	
1980	11,331	20	**11,351**	0	3,000	**3,000**	500	562	**1,062**	0	14,831	582	**15,413**
1981	13,237	20	**13,257**	0	3,000	**3,000**	500	521	**1,021**	0	16,737	541	**17,278**
1982	9,684	20	**9,704**	0	3,000	**3,000**	500	501	**1,001**	0	13,184	521	**13,705**
1983	7,983	20	**8,003**	0	3,000	**3,000**	500	434	**934**	0	11,483	454	**11,937**
1984	11,237	20	**11,257**	0	3,000	**3,000**	500	620	**1,120**	0	14,737	640	**15,377**
1985	9,328	20	**9,348**	0	3,000	**3,000**	500	555	**1,055**	0	12,828	575	**13,403**
1986	8,287	20	**8,307**	0	3,000	**3,000**	500	490	**990**	0	11,787	510	**12,297**
1987	6,512	20	**6,532**	0	3,000	**3,000**	500	579	**1,079**	0	10,012	599	**10,611**
1988	5,951	20	**5,971**	0	3,000	**3,000**	500	504	**1,004**	0	9,451	524	**9,975**
1989	6,243	20	**6,263**	0	3,000	**3,000**	500	522	**1,022**	0	9,743	542	**10,285**
1990	8,225	20	**8,245**	0	2,000	**2,000**	500	539	**1,039**	0	10,725	559	**11,284**
1991	7,039	20	**7,059**	0	2,240	**2,240**	500	480	**980**	0	9,779	500	**10,279**
1992	8,938	20	**8,958**	987	1,256	**2,243**	500	446	**946**	987	10,694	466	**12,147**
1993	8,020	20	**8,040**	443	1,798	**2,241**	500	439	**939**	443	10,318	459	**11,220**
1994	10,606	20	**10,626**	311	1,959	**2,270**	500	474	**974**	311	13,065	494	**13,870**
1995	11,174	20	**11,194**	6	2,200	**2,206**	500	453	**953**	6	13,874	473	**14,353**
1996	12,020	266	**12,286**	780	1,237	**2,017**	500	547	**1,047**	780	13,757	813	**15,350**
1997	12,826	445	**13,271**	1,067	1,000	**2,067**	500	548	**1,048**	1,067	14,326	993	**16,386**
1998	10,250	426	**10,676**	12	2,000	**2,012**	500	423	**923**	12	12,750	849	**13,611**
1999	13,824	479	**14,303**	20	1,842	**1,862**	500	509	**1,009**	20	16,166	988	**17,174**
2000	11,857	374	**12,231**	3	1,644	**1,647**	1,220	513	**1,733**	3	14,721	887	**15,611**
2001	12,661	300	**12,961**	0	1,604	**1,604**	1,224	573	**1,797**	0	15,489	873	**16,362**
2002	13,514	211	**13,725**	0	1,602	**1,602**	1,063	589	**1,652**	0	16,179	800	**16,979**
2003	10,999	122	**11,121**	0	2,273	**2,273**	931	504	**1,435**	0	14,203	626	**14,829**
2004	10,991	268	**11,259**	0	2,725	**2,725**	1,071	535	**1,606**	0	14,787	803	**15,590**
2005	8,648	6	**8,654**	0	2,499	**2,499**	1,133	499	**1,632**	0	12,280	505	**12,785**
2006	11,477	934	**12,411**	0	3,026	**3,026**	1,369	506	**1,875**	0	15,872	1,440	**17,312**
2007	9,968	971	**10,939**	0	2,085	**2,085**	1,088	656	**1,744**	0	13,141	1,627	**14,768**
2008	9,191	330	**9,521**	0	3,506	**3,506**	1,100	623	**1,723**	0	13,797	953	**14,750**
2009	11,061	379	**11,440**	0	3,432	**3,432**	1,097	595	**1,692**	0	15,590	974	**16,564**
2010	10,772	366	**11,138**	0	3,446	**3,446**	957	558	**1,515**	0	15,175	924	**16,099**
2011	10,323	344	**10,667**	0	3,226	**3,226**	1,013	533	**1,546**	0	14,562	877	**15,439**
2012	11,296	0	**11,296**	0	2,722	**2,722**	1,090	586	**1,676**	0	15,108	586	**15,694**
2013	12,091	0	**12,091**	0	2,309	**2,309**	1,061	690	**1,751**	0	15,461	690	**16,151**
2014	9,262	0	**9,262**	0	2,082	**2,082**	869	672	**1,541**	0	12,213	672	**12,885**



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.*

Table 2-3
Total Water Supply Utilization for Municipal, Agricultural and Other Uses
Santa Clarita Valley Water Report
(Acre-Feet)

Year	Purchased from CLWA		Local Production		Other	Total
	Imported Water [1]	*Treated Groundwater* [2]	*Alluvium*	*Saugus Formation*	*Recycled Water*	
1980	1,126	-	31,463	4,589	-	**37,178**
1981	5,817	-	30,790	4,970	-	**41,577**
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	-	37,589	4,140	-	**77,098**
2002	41,763	-	38,276	5,160	-	**85,199**
2003	44,416	-	33,599	4,207	50	**82,273**
2004	47,205	-	33,757	6,503	420	**87,885**
2005	37,997	-	38,648	6,453	418	**83,516**
2006	40,048	-	43,061	7,312	419	**90,840**
2007	45,151	-	38,773	7,685	470	**92,079**
2008	41,705	-	41,716	6,918	311	**90,650**
2009	38,546	-	39,986	7,678	328	**86,538**
2010	30,578	-	41,159	8,092	336	**80,165**
2011	30,808	2,784	40,748	5,531	373	**80,244**
2012	35,558	2,956	40,701	5,763	428	**85,406**
2013	43,281	3,108	36,892	5,930	400	**89,611**
2014	33,092	2,503	36,896	8,098	474	**81,063**



1. Reflects State Water Project through 2006; includes imported water from State Water Project and Buena Vista WSD Agreement beginning in 2007.
2. In January 2011, CLWA began operation of its Saugus Formation groundwater containment project. After treatment for perchlorate removal, that water was blended with treated imported water and delivered to the Purveyors through the CLWA distribution system.

greater effect on demand than the continued growth in service connections (**Table 2-3** and **Figure 2-1**).

As can also be seen by inspection of **Table 2-3** and **Figure 2-1**, most of the historical increase in water demand from 1980 through 2007 has been met with generally greater proportions of imported SWP water, complemented by other imported water sources. Recent variations in water demand (from 2007 through 2012) have been met with a corresponding increase or decrease in the use of imported water while groundwater use has generally remained unchanged, ranging from about 46,000 to 49,000 acre-feet per year. In 2014, the almost ten percent decrease in water demand over 2013 was primarily met with a 24 percent decrease in imported water and about an 3 percent increase in groundwater use (from 45,900 af to 47,500 af).

2.3 Municipal Water Use

The retail water Purveyors use of local groundwater, augmented by water supplies purchased from CLWA (imported SWP and non-SWP water supplies and treated Saugus Formation groundwater), and also slightly augmented by the use of recycled water, are summarized in **Table 2-1**. Municipal water requirements in 2014 (68,200 af) were below (by about 8,700 af in 2014) the projections in the 2010 UWMP without conservation, and about 2,500 af below the projections with conservation.

The decrease in water use in 2014 occurred despite a one percent increase in service connections in 2014 (about 72,400 connections) as compared to 2013 (about 71,600 connections). The largest number of additional service connections occurred in the SCWD (about 500 new connections) and VWC (almost 300 new connections) service areas. There were about 800 new service connections in 2014 compared to about 200 to 500 new annual connections in the 2009 through 2012 period. The number of new annual service connections in 2014 is still less than the number and rate of new annual connections in the late 1990s through 2008 period. Water demand has fluctuated between 80,000 to 90,000 afy over the last 12 years (**Table 2-3**) even though there are currently about 14,000 more service connections in 2014 as compared to 2002 (**Table 2-4**) and **Figure 2-2**.

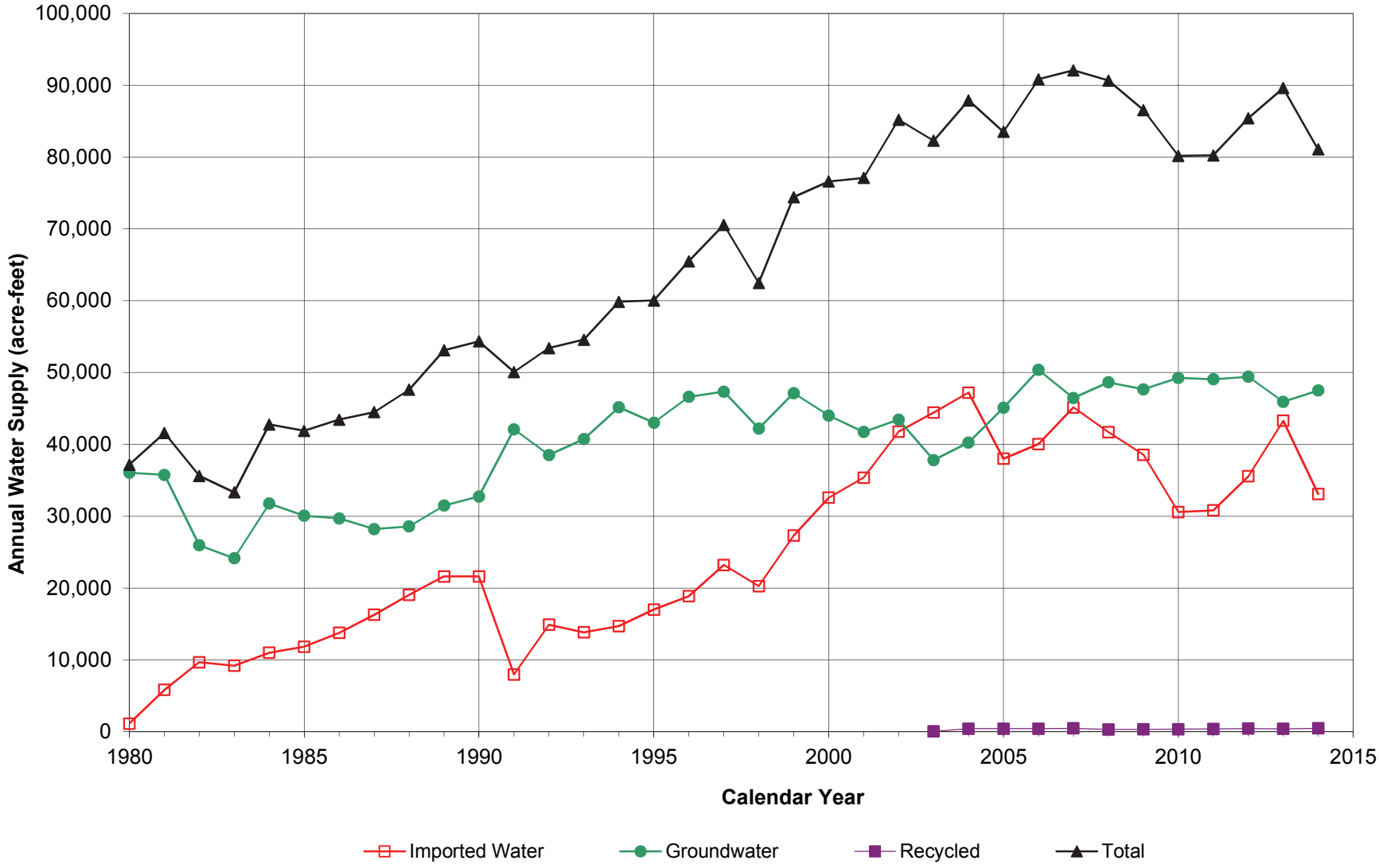
Table 2-4

Service Connections by Purveyor

Year	SCWD	VWC	NCWD	LACWD 36	TOTAL
2001	22,000	22,000	7,200	1,111	52,311
2002	24,175	25,286	7,700	1,187	58,348
2003	25,175	26,810	8,650	1,301	61,936
2004	26,161	28,296	9,010	1,319	64,786
2005	27,000	28,800	9,200	1,321	66,321
2006	27,582	29,111	9,346	1,338	67,377
2007	27,911	29,445	9,525	1,343	68,224
2008	28,547	29,924	9,540	1,357	69,368
2009	28,687	29,948	9,580	1,350	69,565
2010	28,904	30,080	9,637	1,332	69,953
2011	29,089	30,217	9,670	1,337	70,313
2012	29,352	30,411	9,693	1,343	70,799
2013	29,713	30,796	9,702	1,350	71,561
2014	30,229	31,101	9,710	1,345	72,385

2.4 Agricultural and Other Water Uses

Water supply utilization for 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 afy of small individual private pumping from the Alluvium. Annual water supply utilization for all agricultural and other non-municipal uses has generally remained stable and has averaged about 15,500 af since the mid-1990s and was about 12,900 af in 2014.



LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 2-1
Total Water Supply Utilization
Santa Clarita Valley Water Report

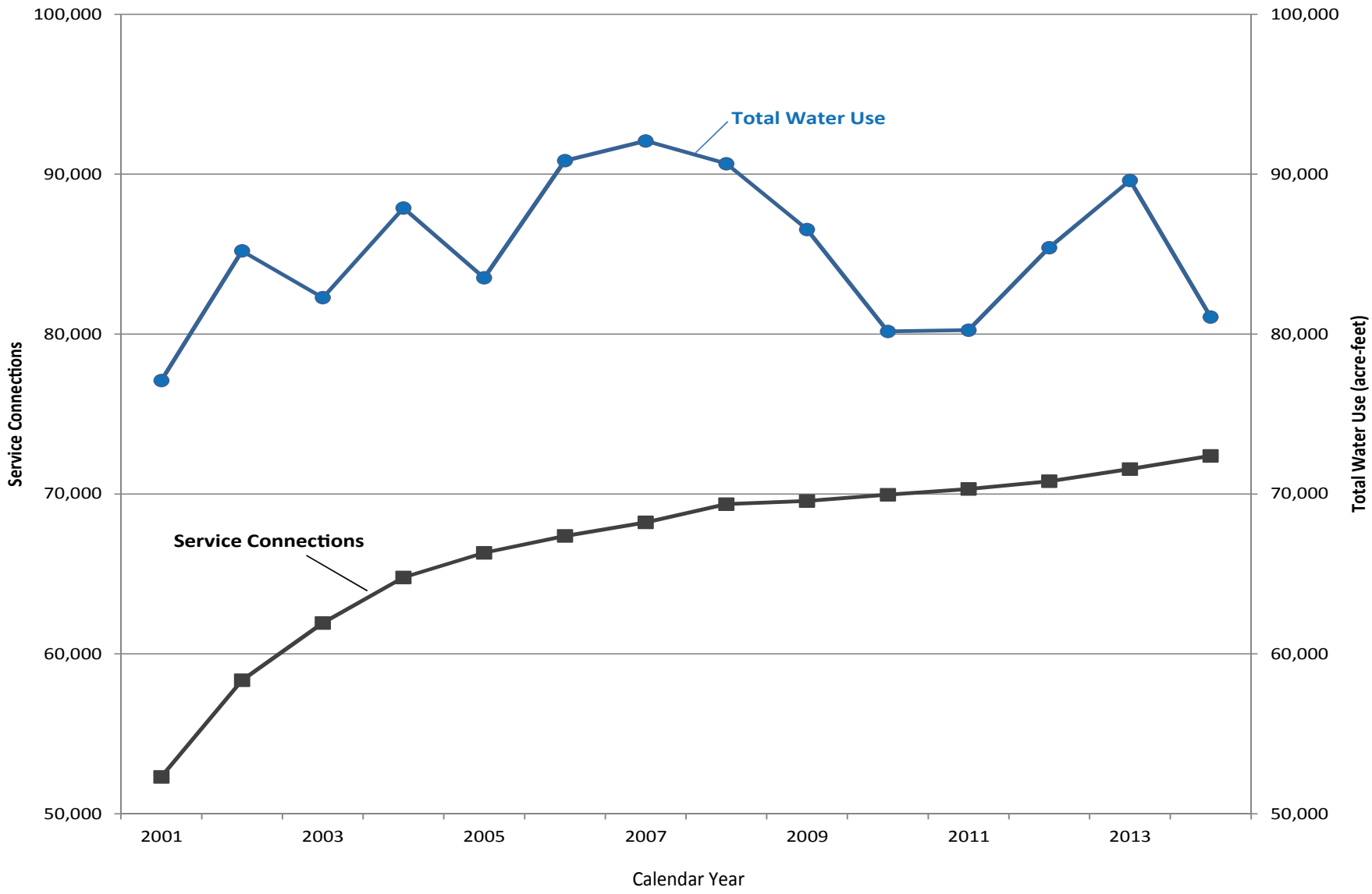


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Figure 2-2
Service Connections and Total Water Use
Santa Clarita Valley Water Report

3 WATER SUPPLIES

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 imported from the Buena Vista Water Storage District, and Yuba Accord water in 2008. 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 the recycled water program in the Valley.

3.1 Groundwater Basin Yield

The groundwater basin generally beneath the Santa Clarita Valley, identified in the State Department of Water Resources' Bulletin 118 (DWR, 2003) as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin No. 4-4.07), comprises two aquifer systems, the Alluvium and Saugus Formation. 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 Groundwater Subbasin in DWR Bulletin 118 and its relationship to the extent of the CLWA service area are illustrated in Figure 3-1. The mapped subbasin boundary approximately coincides with the outer extent of the Alluvium and Saugus Formation.

3.1.1 Historical Investigations

Since 1986, there have been several efforts which have evaluated and reported on the Alluvium and Saugus Formations, interpretation of hydrologic conditions, and estimated sustainable yields from both formations (Slade, 1986; Slade, 1988; Slade, 2002; CLWA, 2003; CH2M Hill, 2004; CH2M HILL, 2005; CH2M HILL and LSCE, 2005; CLWA, 2005; and LSCE and GSI, 2009). Generally, these investigations have concluded similarly about the basin conditions and yield:

- Analysis of groundwater levels and production indicates that there have been no conditions that would be illustrative of groundwater overdraft.
- The 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 the fluctuating utilization of groundwater in conjunction with imported SWP water.

- The operational yield of the Alluvium would typically be 30,000 to 40,000 acre feet per year (afy) for wet and normal rainfall years, with an expected reduction into the range of 30,000 to 35,000 afy in dry years.
- The 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.

These points became the foundation of the initial Groundwater Operating Plan (initial Plan) first developed in 2004 after the adoption of a formal Groundwater Management Plan in 2003 (CLWA, 2003). The groundwater component of overall water supply in the Valley was derived from this initial Plan to meet water requirements (municipal, agricultural and other non-municipal, and small individual domestic) while maintaining the basin in a sustainable condition (i.e., no long-term depletion of groundwater or interrelated surface water). This initial Plan also addressed groundwater contamination issues in the basin, all consistent with the Groundwater Management Plan. The initial Plan was 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 locally wet periods, and to collectively assure that the groundwater basin is adequately replenished through various wet/dry cycles.

The initial 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 multiple locally dry years.

Saugus Formation – Pumping from the Saugus Formation in a given year is related to the availability of imported 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. For three or more consecutive years of reduced SWP deliveries, pumping from the Saugus Formation can

range between 21,000 and 35,000 afy. 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 enhance the effectiveness of natural recharge processes that would cause groundwater levels and storage volumes to recover after the higher pumping during dry years.

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

Aquifer	Groundwater Production (af)			
	Normal Years	Dry Year 1	Dry Year 2	Dry Year 3
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
Total	37,500 to 55,000	45,000 to 60,000	51,000 to 60,000	51,000 to 70,000

3.1.2 2008 Operating Plan

The initial Plan was updated in 2008 to evaluate the yield of the basin and present a sustainable operating plan for utilizing groundwater resources from the Alluvium and the Saugus Formation under wet, normal, and dry conditions (LSCE and GSI, 2009). This effort was conducted partly in preparation for the 2010 UWMP, and in part because of events that can be expected to impact the future reliability of the supplemental water supply from the SWP. The Purveyors initiated this updated analysis (2008 Operating Plan) to further assess groundwater development potential and possible augmentation of the initial Plan. A further consideration in conducting the updated analysis of the basin was 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) was planning a number of small flood control projects in the Santa Clarita Valley; estimated amounts of conservation/groundwater recharge potential were being included for each of the individual projects in the overall LACFCD planning, and the Purveyors had interest in whether that potential could appreciably augment the yield of the basin.

The updated basin yield analysis (LSCE and GSI, 2009), completed in August 2009, had the following conclusions:

- The 2008 Operating Plan, with currently envisioned pumping rates and distribution and comparable to the initial Plan described above, will not cause detrimental short- or long-term effects to the groundwater and surface water resources in the Valley and is, therefore, sustainable (**Table 3-1**). Further, local conditions in the Alluvium in the eastern end of the basin can be expected to repeat historical groundwater level declines during dry periods, necessitating a reduction in desired Alluvial aquifer pumping due to decreased well yield and associated actual pumping capacity during those periods. However, those reductions in pumping from the Alluvial aquifer can be made up by an equivalent amount of increased pumping in other parts of the basin without disrupting basin-wide sustainability or local pumping capacity in those other areas. For the Saugus Formation, the modeling analysis indicated that it can sustain the pumping that is embedded in the 2008 Operating Plan.
- A Potential Operating Plan (Alluvial pumping between 41,500 and 47,500 afy) would result in lower Alluvial groundwater levels, failure of the basin to fully recover (during wet hydrologic cycles) from depressed storage that would occur during dry periods, and generally declining trends in groundwater levels and storage. Long-term lowering of groundwater levels would also occur in the Saugus Formation (pumping between about 16,000 and nearly 40,000 afy) with only partial water level recovery occurring in the Saugus. Thus, the Potential Operating Plan would not be sustainable over a long-term period.
- Several climate change models were examined to estimate the potential impacts on local hydrology in the Santa Clarita Valley. The range of potential climate change impacts extends from a possible wet trend to a possible dry trend over the long term. The trends that range from an approximate continuation of historical average precipitation, to something wetter than that, would appear to result in continued sustainability of the 2008 Operating Plan, again with intermittent constraints on full pumping in the eastern part of the basin. The potential long-term dry trend arising out of climate change would be expected to decrease local recharge to the point that lower and declining groundwater levels would render the 2008 Operating Plan unsustainable. Ultimately it was recognized that a wide range of potential global climate change produces a range of non-unique results with respect to local hydrologic conditions and associated sustainable groundwater supply. Notable in the wide range of possibilities, however, was the output that, over a 20 to 25-year planning horizon of the 2005 UWMP, the range of relatively wet to relatively dry hydrologic conditions would be

expected to produce sustainable groundwater conditions under the 2008 Groundwater Operating Plan.

Based on the preceding conclusions, groundwater utilization generally has continued in accordance with the 2008 Operating Plan; and the Potential Operating Plan is not being considered for implementation.

In 2014, a temporary variation to the 2008 Operating Plan was developed in response to a severe curtailment of SWP deliveries, a temporary decrease in Saugus Formation well capacity due to perchlorate concentrations in the vicinity of some Saugus Formation production wells, and drought impacts on groundwater levels in the eastern portion of the subbasin. This variation involved a redistribution of Alluvial pumping from the eastern areas of the Valley, where groundwater levels have shown the most decline, to the central and western areas of the Valley and to temporarily increase groundwater pumping above 2008 Operating Plan dry year ranges. The temporary redistribution and increase was initially proposed to involve groundwater pumping from the Alluvium at amounts that would be more representative of normal year levels (about 40,000 af) rather than dry year levels (30,000 to 35,000 afy). The temporary redistribution was consistent with the overall water supply strategy to conjunctively use 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 individual Purveyor and CLWA facilities. The actual amount of groundwater pumped from the Alluvium in 2014 did not approach normal year levels of about 40,000 af and instead was similar to 2013 levels at almost 37,000 af. This was due to a reduction in demand through conservation efforts and an increase in production from the Saugus Formation.

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, and 2002), CH2M Hill (2005) and LSCE (2005), the 2005 UWMP (CLWA, 2005) and the 2010 UWMP (CLWA, 2011).

Consistent with the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), the 2005 UWMP, the 2009 Updated Basin Yield Report (LSCE and GSI, 2009), and the 2010 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 2008 groundwater Operating Plan, 30,000 to 40,000 afy in wet and normal years, with possible reduction to 30,000 to 35,000 afy during multiple dry years (with the exception of the temporary redistribution of pumping conducted in 2014). 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, such as what occurred in 2014. 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 level 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 in 2008, there is ongoing confidence that groundwater will continue to be a sustainable source of water supply at the rates of pumping as described in the 2009 Updated Basin Yield Report, and incorporated in the 2010 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 supplemental 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 – Current Conditions

Total pumping from the Alluvium in 2014 was about 36,900 af, similar to the amount pumped in 2013. Total Alluvial pumping was slightly above the upper end of the groundwater Operating Plan range for a dry year due to the temporary redistribution in Alluvial pumping as described previously. Of the total Alluvial pumping in 2014, about 24,700 af (67 percent) was for municipal water supply, and the balance, about 12,200 af (33 percent), was for agriculture and other smaller uses, including individual domestic uses.

Groundwater level response in 2014 to the amount and redistribution of pumping in 2014 varied depending on the location in the Valley. In the Mint Canyon area, groundwater levels declined up to five feet in 2014 (**Figure 3-4**); these declines were about three times less than what occurred in 2013. In the Above Saugus WRP area, groundwater levels declined about 10 feet, similar to 2013 (**Figure 3-4**). In the Bouquet Canyon area, groundwater levels declined up to 10 feet, similar in nature to declines experienced in 2013 (**Figure 3-4**). In the San Francisquito Canyon and Below Saugus WRP areas, groundwater levels declined 10 to 15 feet compared to 5 to 10 feet in 2013 (**Figure 3-5**). Groundwater levels in the Castaic Valley declined about 5 to 10 feet during 2014 compared to about 5 feet in 2013. Groundwater levels did not show any declines in the Below Valencia WRP area in 2014, similar to 2013 patterns (**Figure 3-5**).

3.2.2 Alluvium – Historical Conditions

Interpretation of longer term, historical groundwater levels and pumping indicate that the amount of groundwater pumping in 2014 has remained consistent with historically observed conditions, with no negative changes in groundwater levels that might indicate pumping in excess of a sustainable amount. Overall, the combination of pumping and groundwater level response in 2014 suggests that the Operating Plan range does not reflect absolute groundwater pumping limits. 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 33,300 afy, which is at the lower end of the range of operational yield of the Alluvium during wet/normal years and in the middle of the range for dry years. That average has been higher over the last ten years, about 39,900 afy, which remains within the range of operational yield of the Alluvium. The overall historic record of Alluvial pumping is shown in **Table 2-3** and 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 subbasin), or have fluctuated from near the ground surface when the subbasin is full, to as much as 100 feet lower during intermittent dry periods of reduced recharge (generally toward the eastern end of the subbasin). For illustration of the various groundwater level conditions in the subbasin, 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 showing groundwater elevation on a time series basis as illustrated in **Figures 3-4 and 3-5**. Also shown on these plots is a marker indicating whether any year had a below-average amount of rainfall. The wells shown on these plots are representative of the respective areas, showing the range of values (highest to lowest groundwater elevation) through each area, and containing a sufficiently long-term record to illustrate trends over time.

Situated along the upstream end of the Santa Clara River Channel, the Mint Canyon area, located at the far eastern end of the groundwater subbasin, and the nearby Above Saugus WRP area generally exhibit similar groundwater level responses (**Figure 3-4**) to hydrologic and pumping conditions. The wells located in the Mint Canyon area generally show a more pronounced rebound in groundwater elevations during wet periods compared to wells located in the Above Saugus WRP area. These eastern parts of the Valley have historically experienced a number of alternating wet and dry hydrologic conditions during which groundwater level declines have been followed by returns to high or mid-range historic levels. When water levels are low, well yields and pumping capacities in this and other eastern areas can be impacted. The affected Purveyors typically respond by decreasing pumping in the Alluvium and increasing use of Saugus Formation and imported (SWP and other) supplies, as shown in **Table 2-3**. The Purveyors also shift a fraction of the Alluvial pumping that would normally be supplied by the

eastern areas to areas further west, where well yields and pumping capacities remain fairly constant because of smaller groundwater level fluctuations in response to wet and dry hydrologic periods. Long-term pumping in the Mint Canyon area has averaged about 7,600 afy. However, since a high of over 12,000 afy in 2006, pumping in the Mint Canyon area has since generally declined and in 2014 pumping was about 3,000 af or less than half the long-term average. Recent wet and dry periods illustrate the groundwater level response to managed Alluvial pumping. The five-year period of 2006 through 2010 saw water level declines on the order of 50 to 60 feet; pumping was gradually reduced by about 40 percent over that period (from 12,000 af in 2006 to 6,900 in 2010) and water levels stopped declining (**Figure 3-6).** Subsequent wet conditions in late 2010, continuing into 2011, resulted in a nearly full recovery of groundwater levels and aquifer storage. With such high groundwater levels, pumping increased by about 1,500 afy over 2010 levels in 2011 (8,400 af) and 2012 (8,600 af). Dry conditions in 2012 through 2014 prompted pumping reductions in each subsequent year as groundwater levels declined through 2013 and began to stabilize during 2014. Groundwater levels in the Mint Canyon area are currently at the lower end of the historical range.

Just west of the Mint Canyon area, the Above Saugus WRP area has shown similar hydrologic trends. Pumping trends are historically similar to the Mint Canyon area, with the pumping fluctuating in response to wet/dry periods. However, long-term average annual pumping in the Above Saugus WRP area has been less than half the pumping rate in Mint Canyon, as shown in **Figure 3-6**, at about 3,600 afy. Groundwater level response is similar to the Mint Canyon area in that groundwater levels are sensitive to variations in rainfall and pumping. Groundwater levels have exhibited a decline since 2005 and 2006 with a slight increase in levels in 2010 and 2011 in response to the above normal rainfall in late 2010 and 2011. Currently, groundwater levels in the Above Saugus WRP area are at the lower end of the range of long-term levels that are representative of dry periods experienced in the late 1970s, early 1990s and mid-2000s.

In the Bouquet Canyon area, groundwater levels, as represented by the Guida and Clark wells in **Figure 3-4**, are influenced by a number of factors, including groundwater pumping and recharge from rainfall, natural streamflow in Bouquet Creek and releases from Bouquet Reservoir into Bouquet Creek. Groundwater pumping has ranged from 500 to 2,500 afy since 1985 and has declined slightly since 2007 from about 2,200 af to about 1,200 af in 2014, similar to the early 1990s. Although groundwater pumping has gradually declined since 2007, groundwater elevations during this period do not appear to be changing in response to the declining

pumping trend. Rather, they appear to be influenced more by changes in releases from Bouquet Reservoir into Bouquet Creek, and the associated groundwater recharge. Since 2005, groundwater elevations had increased in response to a wet rainfall year in 2005 and to resumed 'normal' releases of water from Bouquet Reservoir to Bouquet Creek that occurred in 2009 through 2011[1]. However, over the past three years, the dry conditions and a continued reduction in Bouquet Reservoir releases (related to streambed issues – not drought related) have resulted in groundwater elevations declining 10 to 30 feet to levels that remain within the historical range of levels for each well.

In the western parts and lower elevations of the subbasin, groundwater levels in the Alluvium respond to pumping and precipitation in a similar manner, but to an attenuated or limited extent compared to those situated in the eastern, higher elevation areas. As shown in the group of hydrographs in **Figure 3-5** that represent Alluvial groundwater conditions in the western portion of the subbasin, specifically the San Francisquito Canyon and Below Saugus WRP areas, groundwater level fluctuations in the subbasin become more subtle in the westward and lower portion of the Valley.

Wells located in the San Francisquito Canyon area and presented in **Figure 3-5** (W5, W9 and W11 wells) generally exhibit similar long-term groundwater level trends that respond to variations in rainfall and pumpage with seasonal declines and partial recovery in dry years or full recovery to historical highs in wet years, similar in nature to other eastern areas of the Valley. In this area, groundwater levels have declined 40 feet from historic highs in 2011, however they are still higher than historical groundwater levels in the 1950s and 60s.

Groundwater levels in this area notably recovered, possibly as a result of a decline in pumping through the 1960s and 1970s. They have subsequently sustained generally high levels for much of the last 30 years, with four dry-period exceptions: mid-1970s, late 1980s to early 1990s, late

[1] Flow in Bouquet Creek is regulated by releases from Bouquet Reservoir, which is operated by Los Angeles Department of Water and Power. Per an agreement with United Water Conservation District, minimum releases from Bouquet Reservoir are specified. These releases had been maintained until a series of storms in 2005 created substantial runoff and altered the streambed so that even small amounts of flow spills out of the creek and onto Bouquet Canyon Road. Efforts to prevent flow onto the road while maintaining specified releases have not been completely successful, and therefore releases from Bouquet Reservoir have continued to be reduced March through October since 2006 (except for 2009-2011).

1990s to early 2000s and late 2000s. Recoveries to previous high groundwater levels have followed all of the recent dry-period declines.

Wells located in the Below Saugus WRP area in **Figure 3-5** (VWC's I and Q2 wells), along the Santa Clara River immediately downstream of the Saugus Water Reclamation Plant generally show steadily declining groundwater levels since 2006 through 2014 (without the short-term rise in levels in 2010-11 as seen in other areas), and are currently 20 to 50 feet below historic high levels. Although the groundwater levels in the Below Saugus WRP area are relatively low, the water levels are still at or substantially above well screen intake sections and they remain higher than historic lows observed in the 1960s. Pumping has been generally constant at about 6,000 afy from the mid-1990s to the early 2000s, followed by more variable pumping that ranged from 4,000 af in 2005 and 2006 to 10,500 af in 2014 in the Below Saugus WRP area.

Groundwater levels in the Castaic Valley area, located along Castaic Creek below Castaic Lake, continue to remain fairly stable since the 1950s. Historically, there have been some fluctuations in groundwater levels from 20 to 40 feet in response to climatic and other fluctuations (**Figure 3-5**). Pumping has remained relatively constant for nearly 30 years at about 5,200 afy (**Figure 3-6**); in 2014 pumping was below that long-term average at 4,600 af. Since 2011, groundwater levels have declined approximately 20 to 35 feet, however, they are still higher than levels observed in the 1960s. These recent declines in groundwater levels are consistent with other short-term historical fluctuations around the Valley.

In the Below Valencia WRP area, downstream of the Valencia Water Reclamation Plan which discharges treated effluent to the Santa Clara River, groundwater pumping notably increased through the 1990s but has since increased at a much lower rate since the early 2000s, and was about 10,900 af in 2014 (**Figure 3-6**). Long-term groundwater levels in this area have generally been stable and have exhibited slight response to pumping and climatic fluctuations, although in the last ten years there has been a slight decline of about 10 feet observed in the C and E designated wells in this area. These slight declines may be attributed to generally dry conditions present since 2005 (**Figure 3-5**).

In summary, the Alluvium shows the same general picture: groundwater levels over the last 30 years have exhibited historic highs as recent as 2011. In some locations, there are intermittent, short-term dry-period declines (resulting from use of some groundwater from storage) followed

by shorter wet-period recoveries (and associated refilling of storage space). On a long-term basis, whether over the last 30 years since importation of supplemental SWP water, or over the last 40 to 50 years (since the 1950s - 60s), the Alluvium shows no chronic trend toward decreasing water levels and storage, and thus shows no symptoms of water level-related overdraft. 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.

3.3 Saugus Formation – General

Saugus wells operated by the Purveyors and CLWA are located in the southern portion of the basin, primarily south of the Santa Clara River (one well is located north of the river) (**Figure 3-7**). Consistent with the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), and the 2009 Updated Basin Yield Report (LSCE and GSI, 2009), the Purveyors have utilized the Saugus in accordance with the original (and the 2008) 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 in order to allow recharge to recover water levels and storage in the Saugus Formation. Maintaining the substantial volume of water in the Saugus Formation remains an important strategy to help maintain water supplies in the Santa Clarita Valley during drought periods. The ability of the Purveyors to pump the Saugus Formation at dry-year levels has been historically impaired due to perchlorate contamination issues and resultant lack of production capacity. Both of these issues are expected to be resolved over the next few years.

3.3.1 Saugus Formation – Current Conditions

Total pumping from the Saugus in 2014 was about 10,600 af, or about 1,600 af more than in the preceding year. This included about 2,500 af that were pumped from CLWA's Saugus 1 and Saugus 2 wells as part of the perchlorate pump and treat program as described herein. Of the total Saugus Formation pumping in 2014, most (about 9,900 af) was for municipal water supply, and the balance (700 af) was for agricultural and other irrigation uses.

3.3.2 Saugus Formation – Historical Conditions

On a long-term 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 7,100 afy. These pumping

rates remain well within, and generally at the lower end of the range of Operating Yield of the Saugus Formation. The overall historic record of Saugus pumping is illustrated in **Figure 3-8**.

Since the early 1990s, when groundwater pumping from the Saugus Formation peaked, there has been a steady decline through the remainder of that decade. Since then, Saugus pumping has been trending upward from about 4,000 in the early 2000s to above 10,000 afy last year, with the recent 5-year average at about 9,000 af per year.

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 geographic distribution of the wells in that Formation and the periods of water level records. The wells that do have a historical water level record that exists prior to the initiation of SWP deliveries in 1980 indicate that groundwater levels in the Saugus Formation were relatively low in the 1960s and experienced a gradual increase to the mid-1980s, followed by a decline that ended in the early 1990s. Since then, groundwater levels increased over the next 10 to 15 years and over the past 8 or 9 years have experienced a decline that has not reached the low levels experienced in the 1960s (**Figure 3-9**). The most recent downward trend that has been experienced since 2006, has resulted in groundwater level declines that have ranged from 20 to 50 feet over that time. However, there is no evidence the recent decline in groundwater levels are representative of a permanent water level or storage decline. There continues to be fluctuations in groundwater levels attributed to seasonal and climatic fluctuations along with pumpage, but the prevalent long-term trend is one of general stability.

Consistent with the 2001 Update Report (Slade, 2002), the 2005 Basin Yield Report (CH2M Hill and LSCE, 2005), the 2005 UWMP, the 2009 Updated Basin Yield Report (LSCE and GSI, 2009), and the 2010 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 supplies from Alluvial pumping, the SWP, and/or other supplemental supplies may be reduced. The period of increased pumping during the early 1990s 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 groundwater level declines, reflecting the use of water from storage. However, groundwater levels subsequently recovered when pumping declined in the late 1990s to early

2000s to around 4,000 afy, reflecting recovery of groundwater storage in the Saugus Formation. The ability of the Purveyors to pump the Saugus Formation at dry-year levels has been recently impaired due to perchlorate contamination issues and associated reduction in production capacity. Both of these issues are expected to be resolved over the next few years.

3.4 Imported Water

CLWA obtains the majority of its imported water supplies from the SWP, which is owned and operated by the DWR. CLWA is one of 29 contractors holding long-term SWP contracts with DWR. SWP water originates as rainfall and snowmelt in the Feather River watershed in northern California. Runoff from the watershed is stored in Lake Oroville, which is the SWP'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 delivered to southern California 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, a terminal reservoir 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. SWP and other imported water from Castaic Lake 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 122 million gallons per day. Treated water is delivered from the treatment plants to each of the four retail Purveyors through a distribution network of pipelines and turnouts. At present, CLWA delivers water to the four Purveyors through 26 potable turnouts as schematically illustrated in **Figure 3-10**.

In 2014, 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 long-term water banking programs with Rosedale-Rio Bravo Water Storage District and the Semitropic Water Storage District,
- continued to participate in two-for-one exchange programs with Rosedale-Rio Bravo Water Storage District and West Kern Water District,

- applied for and was awarded grant funding to provide for additional recovery capacity from both the Rosedale-Rio Bravo Water Storage District and the Semitropic Water Storage District banking programs,
- continued implementation of the AB 3030 Groundwater Management Plan,
- initiated process to update the 2010 Urban Water Management Plan in the form of the 2015 Urban Water Management Plan,
- continued implementation of the water conservation Best Management Practices, including measures in the Santa Clarita Valley Water Use Efficiency Plan,
- continued participation in the Santa Clarita Valley Water Committee,
- completed rehabilitation of Saugus 1 well,
- pumped and treated about 2,500 af from the Saugus 1 and 2 wells in 2014 as part of the remediation of the Saugus Formation groundwater 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,
- initiated expansion of existing perchlorate containment and treatment program with the design of treatment facilities to remove perchlorate from VWC Well 201,
- initiated replacement of liner and floating cover on the Rio Vista Water Treatment Plant Clearwell Number 1,
- continued recycled water service, and
- provided for the construction of a 3.5 MW solar plant at the Rio Vista Water Treatment Plant that, in conjunction with the existing 1 MW solar plant, provides energy price stability and cost savings to help control water costs.

3.4.1 Disposition of State Water Project Table A and Imported Water 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 nearly 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. On November 19, 2013, the initial allocation for 2014 was announced as 5 percent. The allocation

was decreased to 0 percent on January 31, 2014, and subsequently increased to 5 percent on April 18, 2014. CLWA's final allocation of Table A Amount for 2014 was thus 5 percent, or 4,760 af, of which, CLWA used 451 af and carried the remainder (4,309 af) over to 2015. CLWA also used 7,743 af of the carryover (21,482 af) from 2013, leaving 13,739 af to carry over to 2015) for a total carryover to 2015 of 18,048 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 (County) to allow CLWA to utilize the County's flexible storage account of 1,376 af. CLWA may withdraw water from the County's flexible storage on an as-needed basis; however any water withdrawn from this storage account must be replaced within five years. The combined flexible storage from CLWA's and the County's accounts provides total flexible storage of 6,060 af, which is maintained in Castaic Lake for use in a future dry period or an emergency. Flexible storage was utilized in 2014, and 4,424 af had been withdrawn by the end of the year.

Also in 2005, CLWA completed an agreement to participate in a long-term water banking program with Rosedale-Rio Bravo Water Storage District (RRBWSD) in Kern County. This long-term program allows storage of up to 100,000 af at any one time, and provides significant dry year water supply reliability for the Santa Clarita Valley. CLWA delivered 20,000 af of its excess Table A water into storage in both 2005 and 2006. In 2007, pursuant to the Water Acquisition Agreement with Buena Vista Water Storage District (BVWSD) and RRBWSD as described below, CLWA was also back-credited a total of 22,000 af for 2005 and 2006 (11,000 af in each year). CLWA delivered 8,200 af and another 33,668 af of SWP and BVWSD/RRBWSD water to the bank in 2007 and 2010, respectively. In 2011, CLWA delivered 1,006 af into storage and in 2012, delivered another 6,031 af into storage. At the beginning of 2014, the recoverable storage in the program after groundwater and other losses was 100,000 af. In 2014, 2,824 af of water was withdrawn from the bank, leaving more than 97,000 af in storage.

In 2011, CLWA executed a water Two-for-One Exchange Program with RRBWSD whereby CLWA can recover one acre-foot of water for each two acre-feet delivered (less losses). In 2011, CLWA delivered 15,602 af to the program, delivered another 3,969 af in 2012 and, after program losses, has 9,509 af of recoverable water. No water was withdrawn from or contributed to the RRBWSD Two-for-One Exchange Program in 2014, and this program remains at/near capacity. CLWA also has a Two-for-One Exchange Program with the West Kern Water

District in Kern County and delivered 5,000 af in 2011, resulting in a recoverable total of 2,500 af. In 2014, 2,000 af of water was withdrawn from the West Kern Water District Two-for-One exchange program leaving a balance of 500 af.

The other banking component of CLWA's imported water supply reliability program comprises two agreements with Semitropic Water Storage District whereby CLWA banked surplus Table A water supply in 2002 and 2003 (24,000 af and 32,522 af, respectively). Notable in 2009 was the first recovery of water from the 2002 account; of 4,950 af withdrawn in 2009, 1,650 af was delivered for water supply in the Valley in 2009, and the 3,300 af balance was delivered in 2010. An additional 4,950 af of water was withdrawn from the Semitropic Water Banking Program in 2014 (with another 5,000 given to Newhall Land in consideration for CLWA's use of their first priority extraction capacity).

As delineated in **Table 3-2**, with the 5 percent Table A allocation and other imported water supplies (further described in the next section), including 21,482 af of carryover from 2013, CLWA's available supply, including water extracted from banking programs was 51,919 af in 2014. This available supply was subdivided with the largest portion delivered to the Purveyors (33,092 af) while the remainder (18,048 af) was carried over in SWP storage for use in 2015 and subsequent years or was associated with differences in meter readings (779 af). None of the 51,919 af was banked or sold in 2014.

3.4.2 Other Imported Water Supplies

In early 2007, CLWA finalized a Water Acquisition Agreement with the BVWSD and the RRBWSD 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. CLWA receives 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 2014, CLWA received 11,000 af of water from this Program.

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. Up to 850 af of non-SWP supply is available to CLWA in critically dry years. Under

Table 3-2
2014 CLWA Imported Water Supply and Disposition
(acre-feet)

Supply		
Net 2013 SWP Carryover to 2014 [1]		21,482
Buena Vista/Rosedale Rio-Bravo		11,000
Yuba County Accord Water		445
2014 SWP Article 21 Water		0
2014 Final SWP Table A Allocation[2]		4,760
Westlands Water District Conveyance[3]		34
West Kern Water District Two-for-One Exchange Program		2,000
Rosedale-Rio Bravo Water Banking Program		2,824
Semitropic Water Banking Program[4]		4,950
Net Castaic Flexible Storage Withdrawal[5]		4,424
Total 2014 Imported Water Supply		**51,919**
Disposition		
Purveyor Deliveries		33,092
CLWA Santa Clarita Water Div.	*21,478*	
Valencia Water Company	*7,668*	
Newhall County Water District	*3,942*	
Los Angeles County WD 36	*4*	
Deliveries to Devil's Den		0
CLWA/DWR/Purveyor Metering[6]		779
2014 Table A Carryover to 2015[7]		18,048
Total 2014 Imported Water Disposition		**51,919**

1. Total 2013 carryover available in 2014 was 21,482af; of that amount 7,743 af was used by CLWA, based on final DWR delivery accounting, and the difference plus unused Table A (4,309 af) remains available for future use.

2. Final 2014 allocation was 5% of contractual Table A amount of 95,200 af, which progressed as follows:

Initial allocation, November 19, 2013	5%
Allocation decrease, January 31, 2014	0%
Allocation increase, April 18, 2014	5%
Final allocation (no change)	5%

3. Mitigation water received from Westlands Water District Aqueduct Pump-In and Conveyance Project.

4. Used Newhall Land and Farm extraction capacity to deliver 4,950 af.

5. Total Castaic Lake flexible storage capacity used in 2014 was 8,085 af, and a total of 3,661 af was added to flexible storage with water from banking partners for a "net" withdrawal of 4,424 af.

6. Reflects meter reading differences.

7. Total 2014 Table A and previous years' carryover to 2015.

certain hydrologic conditions, additional water may be available to CLWA from this program. CLWA purchased water from this source in 2014, and after carriage losses through the Sacramento-San Joaquin Delta, 445 af were delivered to the CLWA service area.

3.4.3 Imported Water Supply Reliability

The current SWP Final Delivery Reliability Report 2013, issued in December 2014, maintains the restrictions on SWP operations according to the Biological Opinions of the U.S. Fish and Wildlife Service and the National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. In December 2010, a federal judge overruled most of the 2008 federal biological opinion and invalidated several of the criteria that reduced SWP's water supply. These matters were appealed to the U.S. Court of Appeals for the Ninth Circuit. The Ninth Circuit ruling upheld the Biological Opinions of the federal agencies. Therefore, the operational rules defined in these BOs continue to be legally required and were used by DWR in the analyses supporting its 2013 Draft Delivery Reliability Report. The SWP Final Delivery Reliability Report 2013 also considers the impacts on SWP delivery reliability due to climate change, sea level rise, and vulnerability of the Delta's conveyance system and structure due to floods and earthquakes. With these factors, the Reliability Report projects that long-term reliability under future 2033 conditions will decrease relative to the 2011 estimate of 60 percent to 58 percent during normal year hydrology. Specifically, under existing conditions (2013), the average annual delivery of Table A water is estimated at 1% more than the 2011 report; under future conditions, the average annual delivery is estimated at 2% less than the 2011 report. CLWA staff has assessed the impact of the current Reliability Report on the CLWA water supply and concluded that the 2010 UWMP's statement that current and future supplies are available to meet anticipated water supply needs through the year 2050 remains correct.

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 four groundwater banking and water exchange programs and has, in aggregate, more than 143,000 af of recoverable water outside the local

groundwater basin at the end of 2014. 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 35,970 af of SWP Table A water that it stored in Semitropic to meet Valley demands when needed in dry years (35,970 af is the net recoverable balance after originally banking 24,000 af in 2002 and 32,522 af in 2003 (of which 90 percent is recoverable), and withdrawing 4,950 af in 2009 for delivery in 2009 and 2010 and withdrawing 4,950 af in 2014 and giving 5,000 af to Newhall Land in 2014 for the use of their recovery capacity). In April 2011, Semitropic and CLWA extended the original agreements by 10 years to 2022/2024. The second component of the program, the long-term RRBWSD Water Banking Program in Kern County, has a recoverable total of more than 97,000 acre-feet in storage. The third and fourth components are the Two-For-One Exchange Programs that CLWA initiated with RRBWSD and West Kern Water District in 2011 that now have a total of 10,009 af of recoverable water.

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

Water delivered by the Purveyors consistently meets drinking water standards set by the United States Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW). An annual Water Quality Report is provided prior to July 1st 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.

3.5.1 Water Quality – General

3.5.1.1 Total Trihalomethanes

In December 2005, the USEPA implemented the Stage 2 Disinfectants and Disinfection Byproducts Rule. In part, this rule did not change the existing Maximum Contaminant Level (MCL) of 80 micrograms per liter (µg/l) for Total Trihalomethanes (TTHM), however, it requires water systems to apply that MCL at each compliance monitoring location (instead of as a system-wide average as in previous rules). TTHMs are byproducts created when chlorine is used as a means for disinfection. CLWA and NCWD 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. VWC and SCWD continue to use chlorination (using free chlorine) to disinfect groundwater and have been in compliance with the USEPA's Disinfection Byproducts Rule.

3.5.1.2 Perchlorate

Perchlorate is a regulated chemical in drinking water. In October 2007, the California Department of Public Health (which currently is the State Water Resources Control Board Division of Drinking Water) established an MCL for perchlorate of 6 µg/l. 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. Currently, two of those wells (VWC's Well 157 and SCWD's Stadium Well) have been sealed and replaced by new wells, and two wells (CLWA's Saugus 1 and 2 Wells) were returned to service in January 2011 as described below. NCWD's Well NC-11 has remained out of service with a portion of its capacity replaced by a combination of imported water from CLWA and treated water from CLWA's Saugus Perchlorate Treatment Facility (described further below) through a SWP turnout. In early 2005, perchlorate was detected in a second Alluvial well (VWC's Well Q2) near the former Whittaker-Bermite site; following the installation of wellhead treatment for the removal of perchlorate in the same year, the well was returned to regular water supply service. After two years of subsequent operation with no detections of perchlorate, the wellhead treatment was removed and the well has since remained in active water supply service.

In 2006, perchlorate was detected in low concentrations below the Detection Limit for Reporting (<4.0 µg/l) in another Saugus well (NCWD's Well NC-13), near one of the originally impacted wells. Saugus Well NC-13 has remained in service with regular sampling per the DDW requirements and no subsequent detections of perchlorate. In August 2010, perchlorate was detected further down gradient in an eighth well, VWC's Well 201 that is completed in the Saugus Formation. While the initial detection was below the MCL, the well was immediately taken out of active supply service. VWC is currently pursuing restoration alternatives at Saugus Well 201 that are expected to involve methodologies already employed at other previously impacted wells. Pending regulatory approval by the DDW in 2015, it is planned that the approved DDW restoration alternative will be implemented in 2016, resulting in the return of VWC's Well 201 to service. Following the detection of perchlorate in Well 201 in 2010, VWC elected to minimize pumping from Well 205 through 2011 and since 2011 the well was voluntarily taken out of service entirely when perchlorate was detected in low concentrations below the Detection Limit for Reporting (<4.0 µg/l) in April 2012. This well is planned to resume service as part of the implementation of the restoration and containment program at Well 201. As described in the 2010 UWMP, the replacement and reactivation of the impacted wells, augmented by planned and funded replacement wells, adds to the overall ability to meet the groundwater component of total water supply in the Valley.

In February 2003, DTSC and the impacted Purveyors entered into a voluntary cleanup agreement entitled *Environmental Oversight Agreement* (amended in 2012). Under the Agreement, DTSC is providing review and oversight of the response activities being undertaken by the Purveyors related to the detection of perchlorate in the impacted wells. Under the Agreement's Scope of Work, the impacted Purveyors 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-impacted groundwater from two Saugus wells 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 and construction of the treatment facilities and pipelines to implement the pump and treat program and to also

restore inactivated municipal well capacity was completed in May 2010. Water from Saugus 1 and Saugus 2 was initially treated and discharged into the Santa Clara River. DDW issued an amendment to CLWA's Operating Permit in December 2010, and the wells were placed back in water supply service on January 25, 2011.

As part of the operation of CLWA's Saugus Perchlorate Treatment Facility (SPTF), numerous monitoring tests are performed on a continuous basis in order to ensure the safety of the treated water leaving the SPTF. Groundwater samples are collected semi-weekly at several locations, including at the Saugus 1 and Saugus 2 wells, both at the influent and effluent water points, at the lead and lag vessels, and at several distribution locations. The samples are analyzed at different frequencies for numerous constituents, including chlorate, perchlorate, chloride, nitrate, nitrite and sulfate. In addition, samples are analyzed for microbiological growth, radiological and volatile organic compounds. In 2014, 2,503 af of groundwater were pumped from Saugus 1 and Saugus 2. After treatment for perchlorate removal, the groundwater was blended with treated imported water and delivered to the Purveyors through the CLWA distribution system. In October 2011, Saugus 2 experienced a failure in its casing/screen assembly and associated damage to its pump, causing the well to be taken out of service for mechanical rehabilitation and pump replacement. An inner liner assembly was installed in the well, followed by installation of a new pump. The well was returned to service in April 2012. To avoid the failure that Saugus 2 experienced, Saugus 1 was taken out of service in May 2014 for rehabilitation similar to that performed on Saugus 2. A new liner was installed and Saugus 1 was returned to service in November 2014.

Since 2007, the impacted Purveyors (SCWD, NCWD, and VWC) and CLWA continued working toward the now-implemented plan that combines pumping from two of the impacted wells (Saugus 1 and 2) and a water treatment process (the SPTF) 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, Whittaker Corporation, the State DTSC, and U.S. Army Corps of Engineers. DTSC is the lead agency responsible for regulatory oversight of the Whittaker-Bermite site.

Under the direction of DTSC, Whittaker has submitted a comprehensive site-wide remediation plan for the contaminants of concern in soil and groundwater detected on the property. A

Draft Remedial Action Plan for Operable Units 2 through 6 that is focused on soil remediation was submitted to DTSC in 2009. The plan contains a number of recommended technologies to remove contaminants from the soil, in addition to a proposed clean-up schedule for the site. DTSC approved the Remedial Action Plan for contaminated soils in Operable Units 2 through 6 on December 6, 2010 and preparation of the Remedial Design documents are underway. Whittaker has also completed a Draft Operable Unit 7 Feasibility Study to identify and select treatment technologies for both on-site and off-site groundwater. The work plan for Pilot Remediation of Saugus Aquifer Containment and Remediation in Operable Unit 7 was approved by DTSC on December 31, 2008 and the first phase of the plan was completed in 2013.

3.5.1.3 Hardness

In 2008, VWC 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 primary complaint from VWC 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 was the subject of a major Chloride Total Maximum Daily Load investigation which concluded with a commitment by the Purveyors to achieve surface water quality goals for in-stream discharge from the basin. VWC'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 softening technology that removes calcium and produces small calcium carbonate pellets which can be reused in a variety of industries. Since the inception of the demonstration project, VWC has collected customer feedback and technical/financial information that is being used to assess potential future expansion of treatment to other well sites. For much of 2011 and 2012, the project was offline while upgrades and modifications to equipment were conducted. The project resumed operation in December 2012 and was operated periodically in 2013 with additional upgrades to various components. The plant operated intermittently in 2014. Additional upgrades are being made in 2015 to enable the plant to resume normal operation.

3.5.2 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 2010 UWMP. Historical groundwater quality, including available 2014 data, is illustrated in **Figures 3-11 and 3-12**. These graphs show historical specific conductance (which is a measure of the salinity or amount of dissolved minerals with micromhos per centimeter (µmhos/cm) as the unit of measure) values for representative wells in the Valley with the DDW Secondary Maximum Levels ("Recommended Level" and "Upper Level") included for reference. Over the last 10 years, specific conductance values generally respond to wet periods by exhibiting a downward trend, followed by an increasing trend during a dry period.

In the Mint Canyon and Above Saugus WRP areas (**Figure 3-11**), specific conductance values increased in the early 2000s, followed by a downward trend in the mid-2000s, a result of the 2004 and 2005 wet period. This downward trend was followed by an upward trend in the late 2000s, a downward trend in 2010 through 2011 (Wells T7 and Pinetree 3) and an upward trend through 2013/2014 (Well U4, T7, and Pinetree 3). In 2014, specific conductance ranged from 900 to 1,600 µmhos/cm.

In Bouquet Canyon, historical variations and trends of salinity levels are more gradual than those in Mint Canyon and may be closely timed with periods of flow in Bouquet Creek (**Figure 3-11**). Specific conductance data for wells located in Bouquet Canyon have ranged from about 700 to almost 1,400 µmhos/cm historically. Specific conductance levels in 2014 were within the historical range at around 1,400 µmhos/cm as represented by SCWD's Guida Well.

Specific conductance values in the western areas of the Valley exhibited similar patterns and responses of specific conductance values to wet and dry periods as those observed in the eastern portions of the Valley (**Figure 3-12**). Specific conductance values in San Francisquito Canyon and Below Saugus WRP areas historically have ranged from about 650 to 1,600 µmhos/cm. In 2014, specific conductance values were within historical ranges and ranged from 900 to 1,500 µmhos,cm.

In Castaic Valley and Below Valencia WRP areas, specific conductance has historically ranged between 700 to 2,000 µmhos/com. At times the specific conductance appears to vary during wet and dry periods along with discharge from Castaic Lake. In 2014, specific conductance ranged from about 900 to 1,400 µmhos/cm which is within the historic range.

In summary, water quality in the Alluvium exhibits no long-term overall trends and, most notably, 2014 specific conductance in Alluvial groundwater is within historical ranges. There have been periodic fluctuations in some parts of the basin, where groundwater quality has generally inversely varied with precipitation and streamflow. The fluctuations often occur during dry and wet periods when low streamflow and recharge during dry periods result in increased salinity and high streamflow and recharge during wet periods results in decreased salinity levels. In 2014, of the 26 sampled alluvial wells throughout the Valley, none were found to be in exceedance of the Upper Limit DDW Secondary Maximum Level for Specific Conductance. Testing by the purveyors in accordance with DDW requirements demonstrates that groundwater meets acceptable drinking water standards.

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.

3.5.3 Groundwater Quality – Saugus Formation

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a source for 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**. Since 2000, several wells within the Saugus Formation have exhibited an 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. Since 2005, however, these levels have been steadily dropping or remaining within the recent 10-year range. 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.

3.5.4 Imported Water Quality

CLWA operates two surface 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 DDW. SWP water has different aesthetic characteristics than groundwater with lower dissolved mineral concentrations (total dissolved solids) of approximately 250 to 300 mg/l, and lower hardness (as calcium carbonate) of about 105 to 135 mg/l.

Historically, the SWP delivered only surface water from the Sacramento-San Joaquin River Delta. However, CLWA and other SWP users, in anticipation of drought, many years ago began "water banking" programs where SWP water could be stored or exchanged during wet years and withdrawn in dry years. During the dry-year periods, a greater portion of water in the SWP has been banked water. The banked water has met all water quality standards established by DWR under its anti-degradation policy for the SWP.

3.6 Recycled Water

Recycled water is available from two water reclamation plants operated by the Santa Clarita Valley Sanitation District. 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 Phase I of the project, which will ultimately deliver 1,700 afy of recycled water. Deliveries of recycled water began in 2003 for irrigation water supply at a golf course and in roadway median strips. In 2014, recycled water deliveries were about 470 af, generally consistent with recycled water deliveries that have ranged between about 310 and nearly 500 afy over the past ten years.

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 the updated Draft Recycled Water Master Plan (Kennedy/Jenks Consultants, 2002). 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. This is in addition to an expected recycled water use of approximately 4,800 af per year in the Newhall Ranch Specific Plan development using recycled water from the proposed Newhall Ranch Water Reclamation Plant.

In 2007, CLWA and the Purveyors 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 and the Purveyors prepared the preliminary design of the second phase of the Recycled Water Master Plan (Phase 2A) 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. The environmental documentation for this phase was completed in July 2011. This phase will have design capacity to increase recycled water deliveries by about 500 afy. CLWA and the retail water suppliers continue to explore opportunities to increase recycled water use consistent with the objectives presented in the 2010 UWMP.

More recently, planning and permitting to allow for the use of recycled water for irrigation and grading operations via water trucks was largely completed in 2014, and is ready for implementation at the appropriate time. Also during 2014, the Purveyors conducted a Water Resources Reconnaissance Study to evaluate alternatives for expanding local water supplies (Carollo, 2014). A number of opportunities were identified for further evaluation that included the use of recycled water.

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 subbasins 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 coordination 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 initially 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 were incorporated in the 2005 UWMP. The updated analysis of basin yield, completed in 2009, indicates that the 2008 Operating Plan will maintain river flows at higher levels than occurred prior to urbanization of the Valley; the resultant operating yield values for both the Alluvium and the Saugus Formation are incorporated in the 2010 UWMP.

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 streamflow in the Santa Clara River, into and out of the Santa Clarita Valley has been monitored at an upstream gage at Santa Clara River above Lang Railroad Station (Lang gage) and two downstream gages (County Line and SCR at Piru) (Figure 3-14). The Lang gage was reinstated in 2002 and shows a wide range of average annual streamflow into the basin; however the data from the gage has not always been very accurate. In 2010, Los Angeles County Department of Public Works (LADPW) removed the transducer which previously

collected streamflow data due to operational problems with the transducer and the location of the gage not being adequate to allow for accurate streamflow measurements. Between 2010 and 2012, LADPW have conducted manual measurements of streamflow, however, the measurements were not frequent enough to account for the range of streamflows that likely occurred. In 2013, CLWA had discussions with LADPW regarding the reinstallation or relocation of the Lang gage to a more suitable location and by June 2013, the gage was moved and operational to a nearby location on the Santa Clara River. The downstream gage (County Line gage) was moved in 1996 to its present location near Piru (SCR at Piru), about two miles downriver. The combined record (1953-2014) of these two downstream gages indicates an annual stream discharge of about 46,000 afy (Figure 3-15). These data gaged near the County line show notably higher flows from the Santa Clarita Valley into the uppermost downstream subbasin, the Piru subbasin, over the last 35 to 40 years.

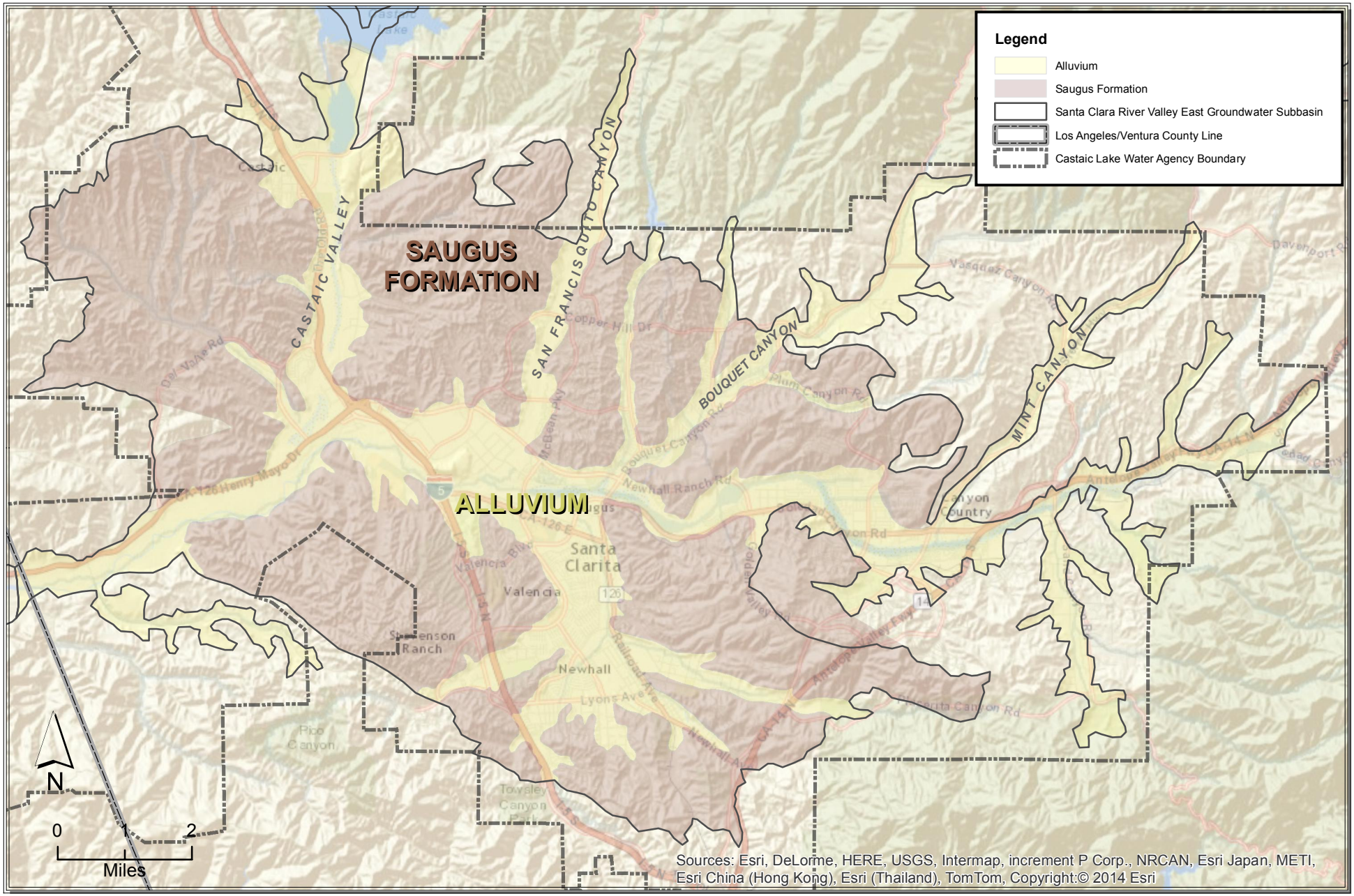

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Figure 3-1
Alluvium and Saugus Formation
Santa Clarita Valley Water Report

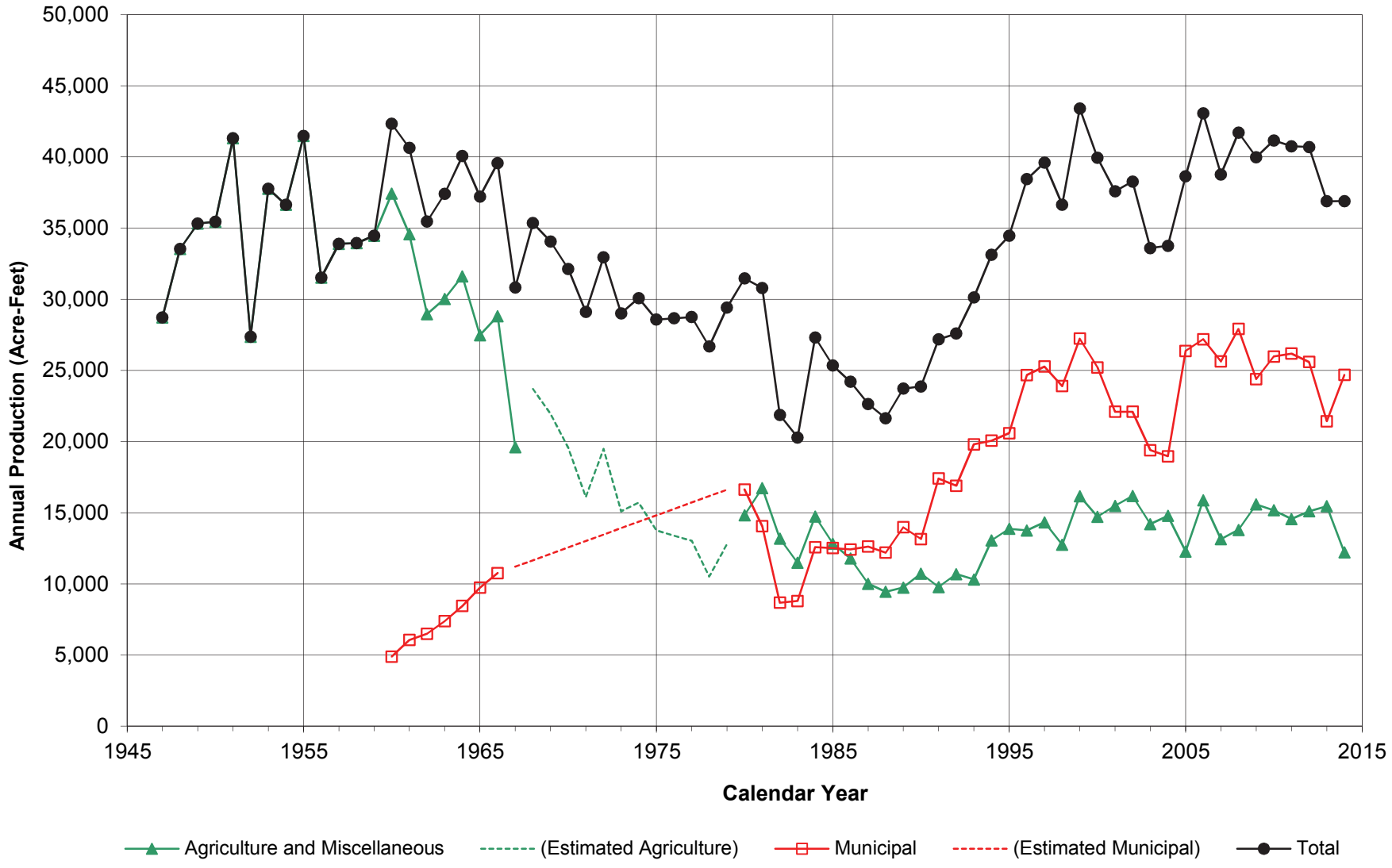

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Figure 3-2
Groundwater Production - Alluvium
Santa Clarita Valley Water Report

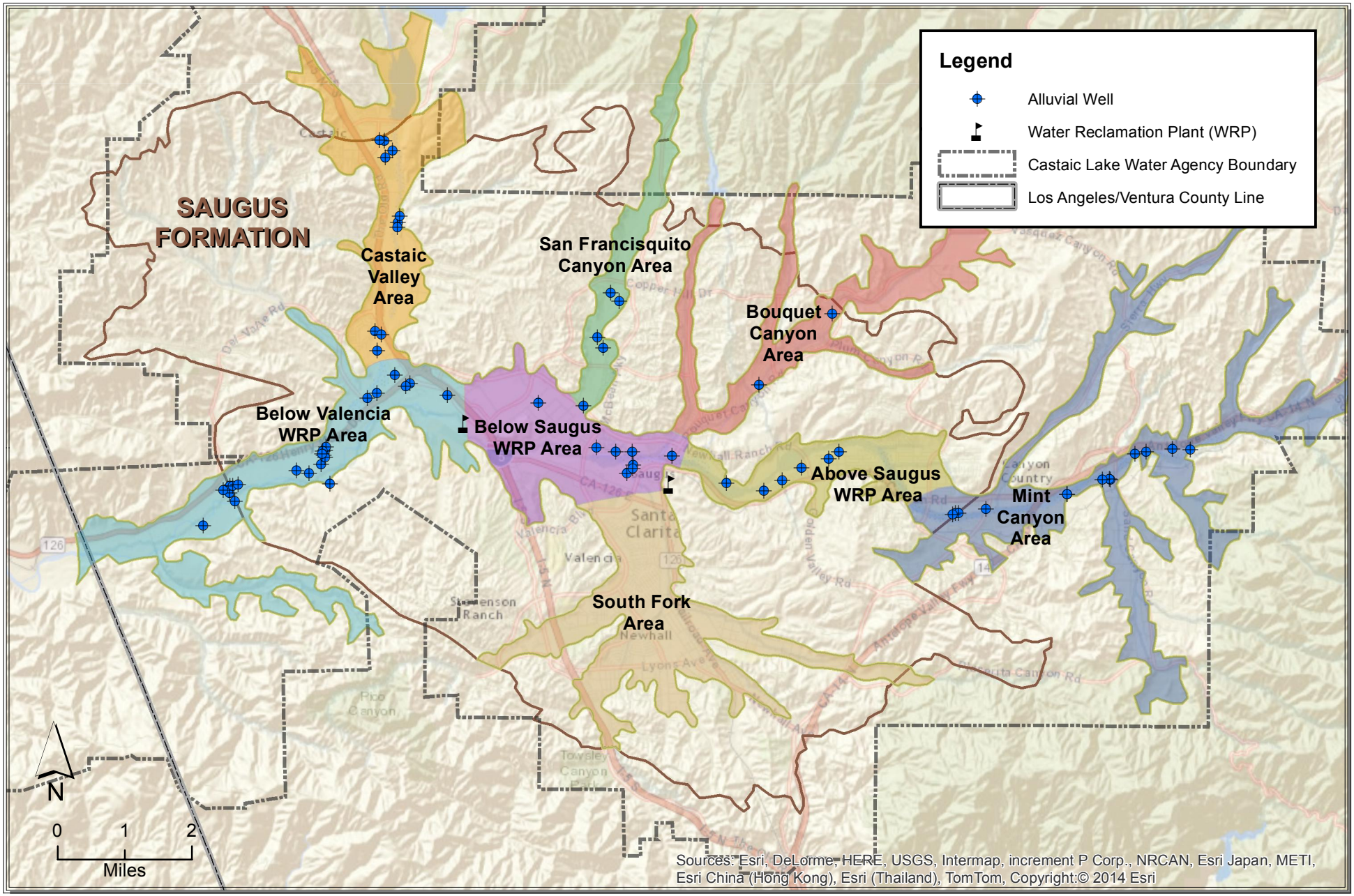

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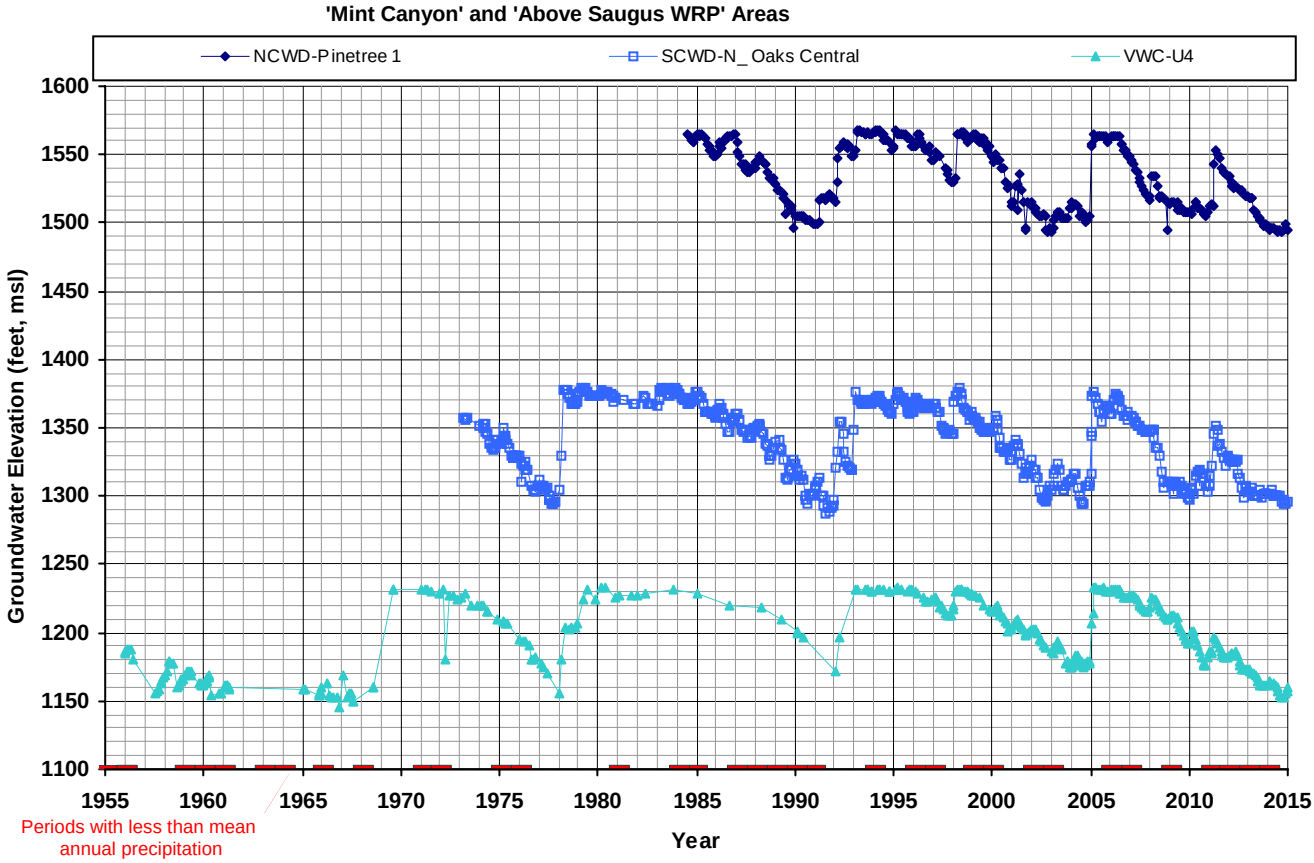
Figure 3-3
Alluvial Well Locations By Area
Santa Clarita Valley Water Report



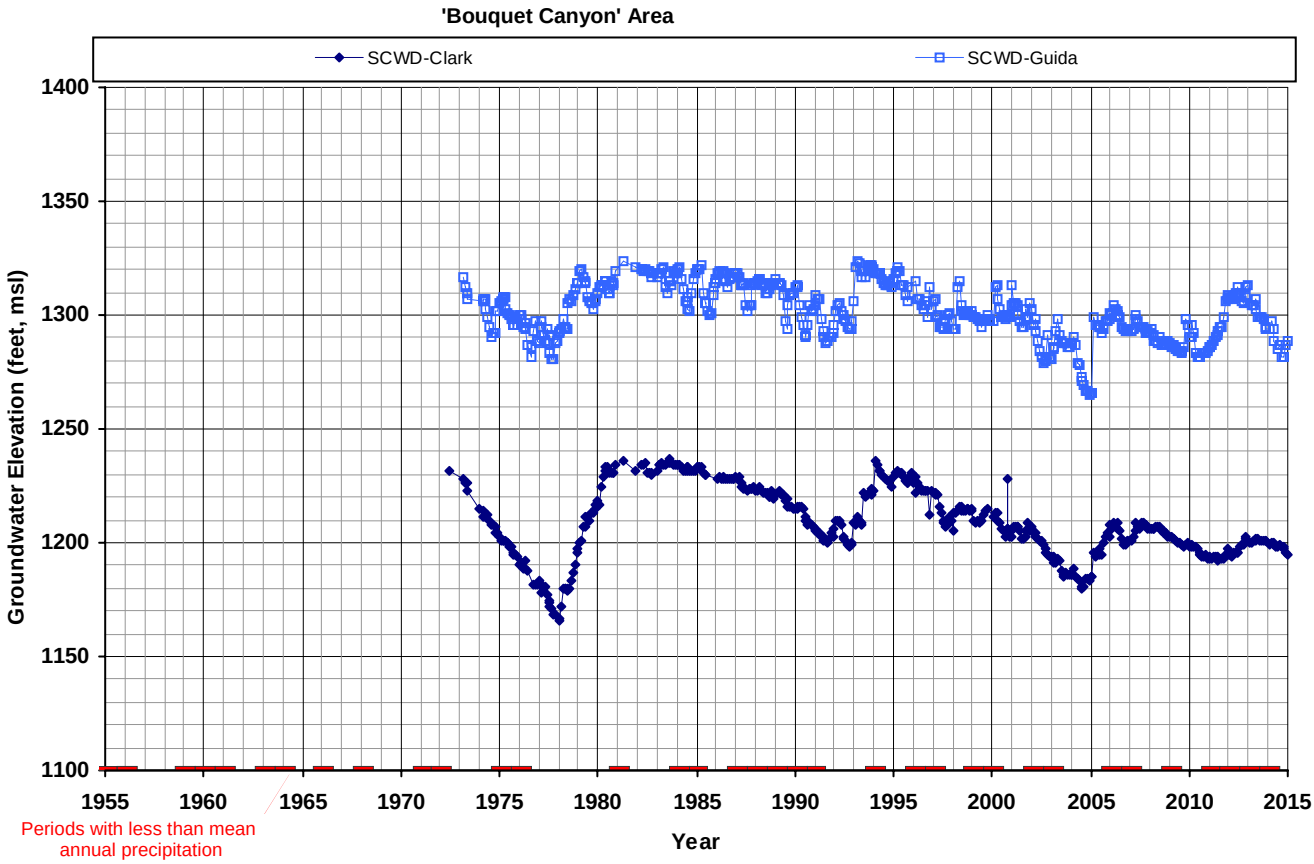


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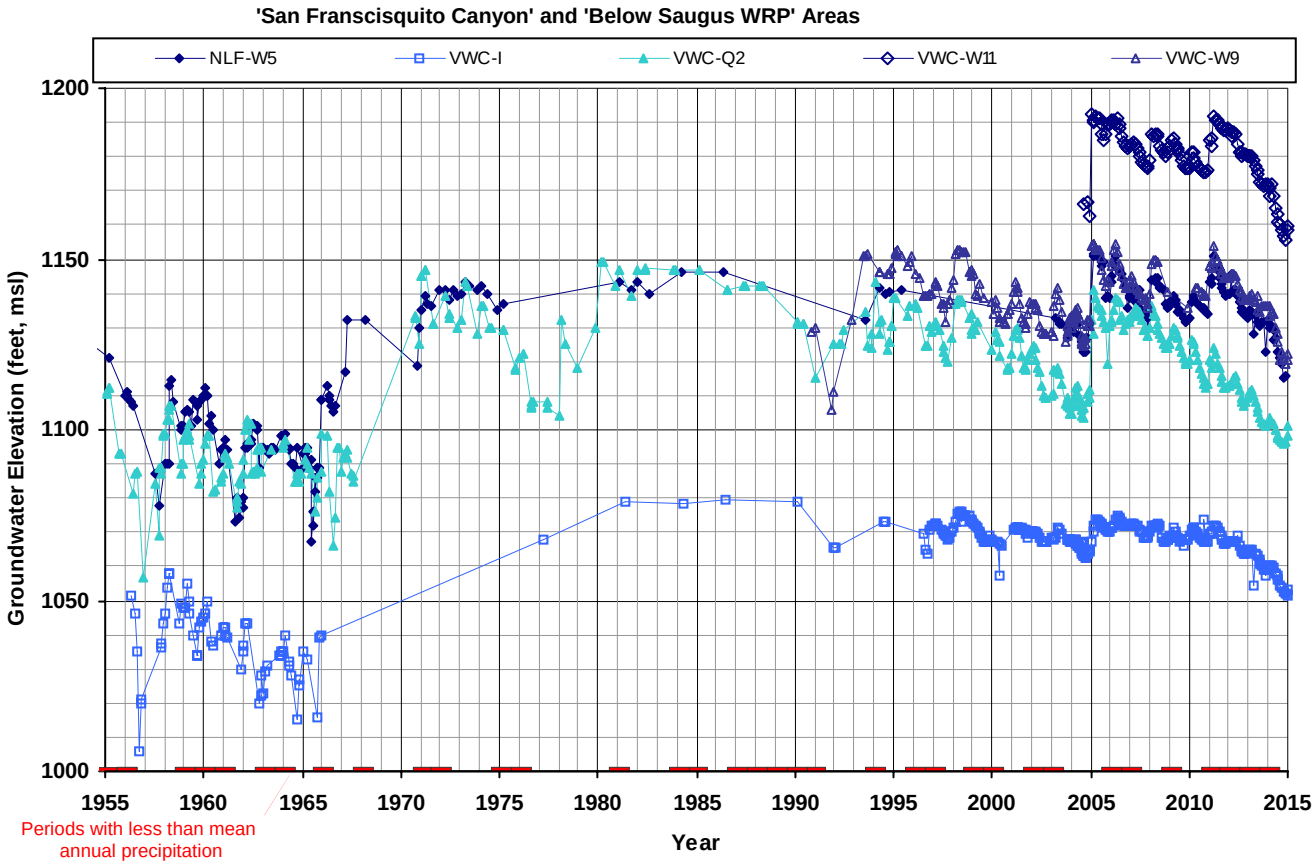
Figure 3-4
Groundwater Elevations in Eastern Santa Clarita Valley Alluvial Wells
Santa Clarita Valley Water Report



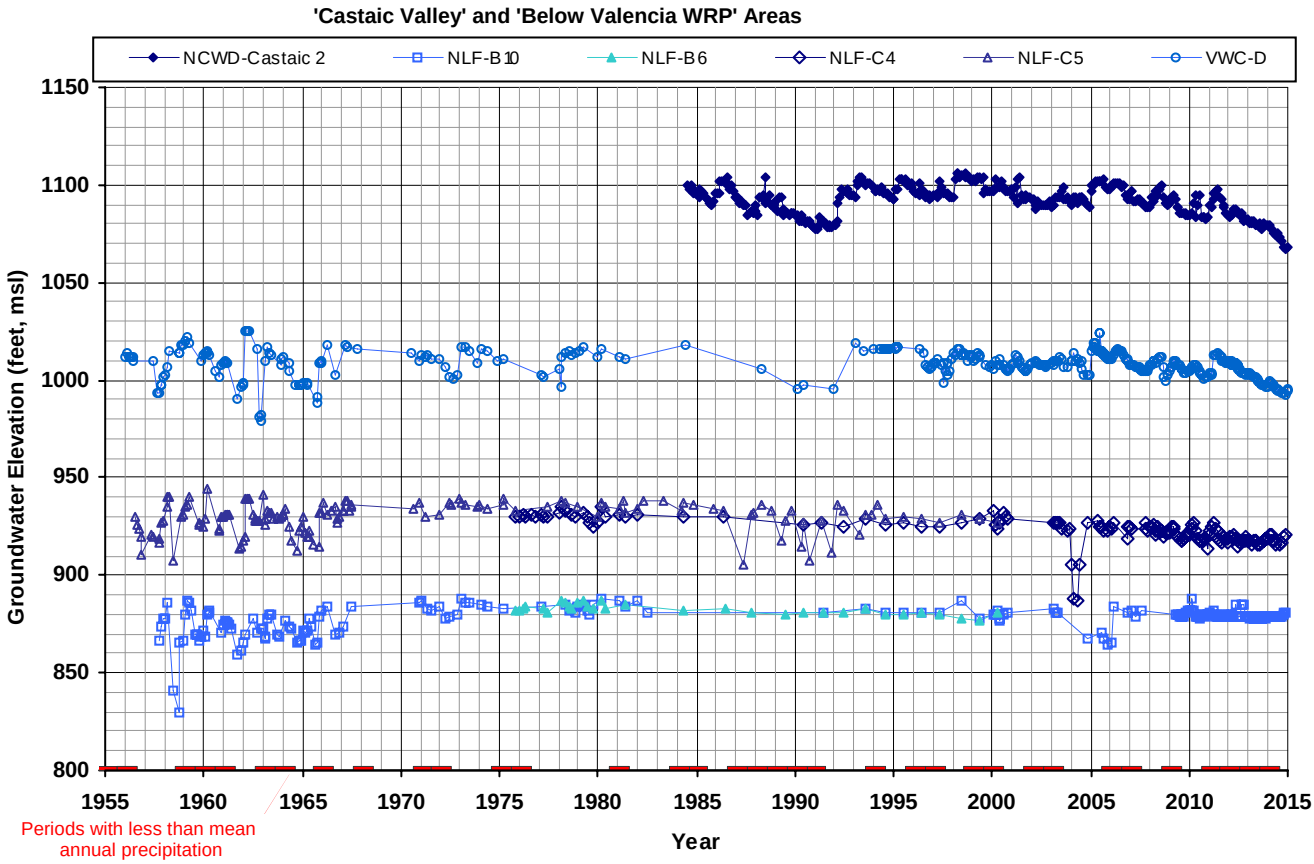


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Figure 3-5
Groundwater Elevations in Western Santa Clarita Valley Alluvial Wells
Santa Clarita Valley Water Report

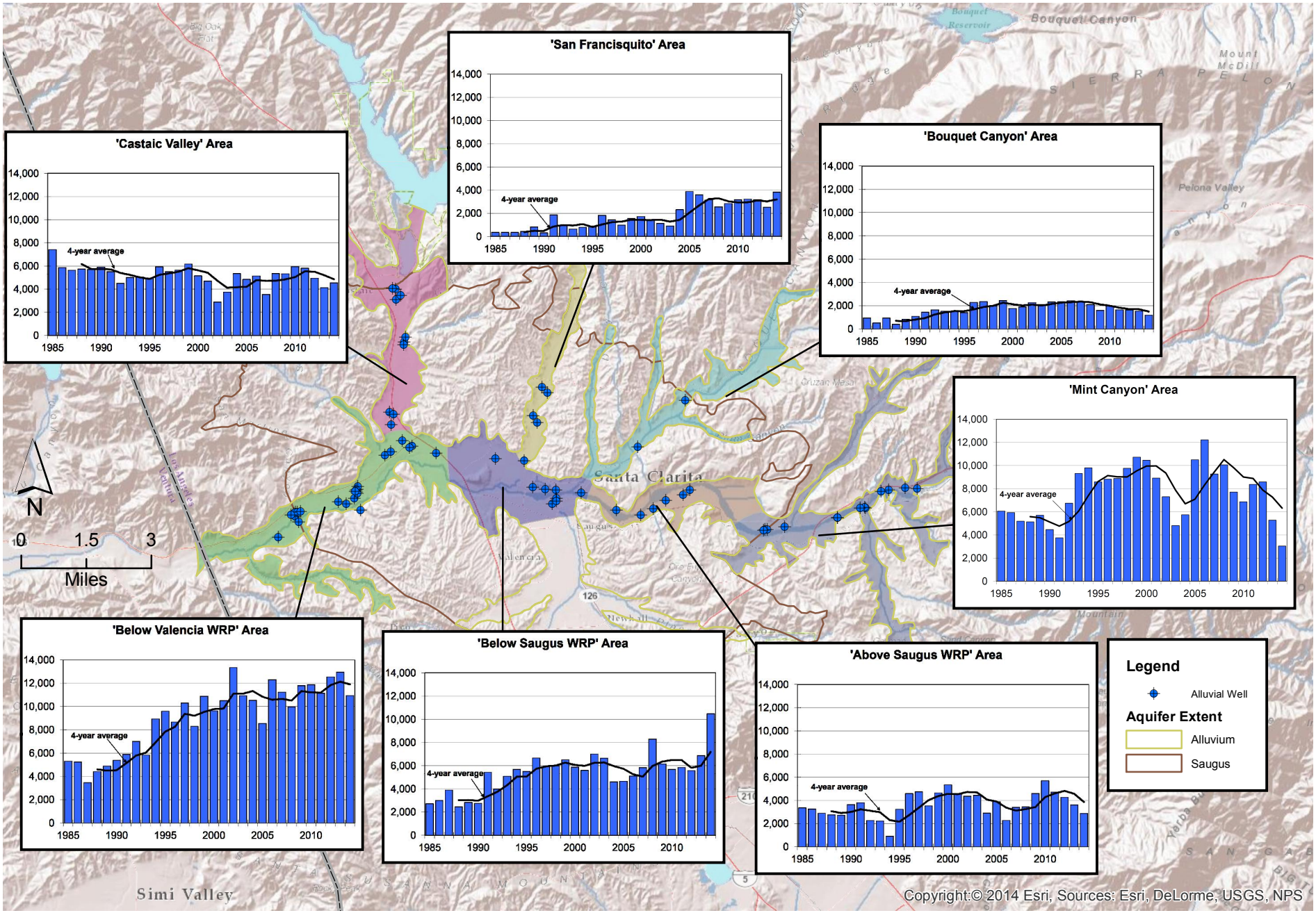

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Figure 3-6
Annual Groundwater Production from Alluvium by Area (Acre-feet)
Santa Clarita Valley Water Report

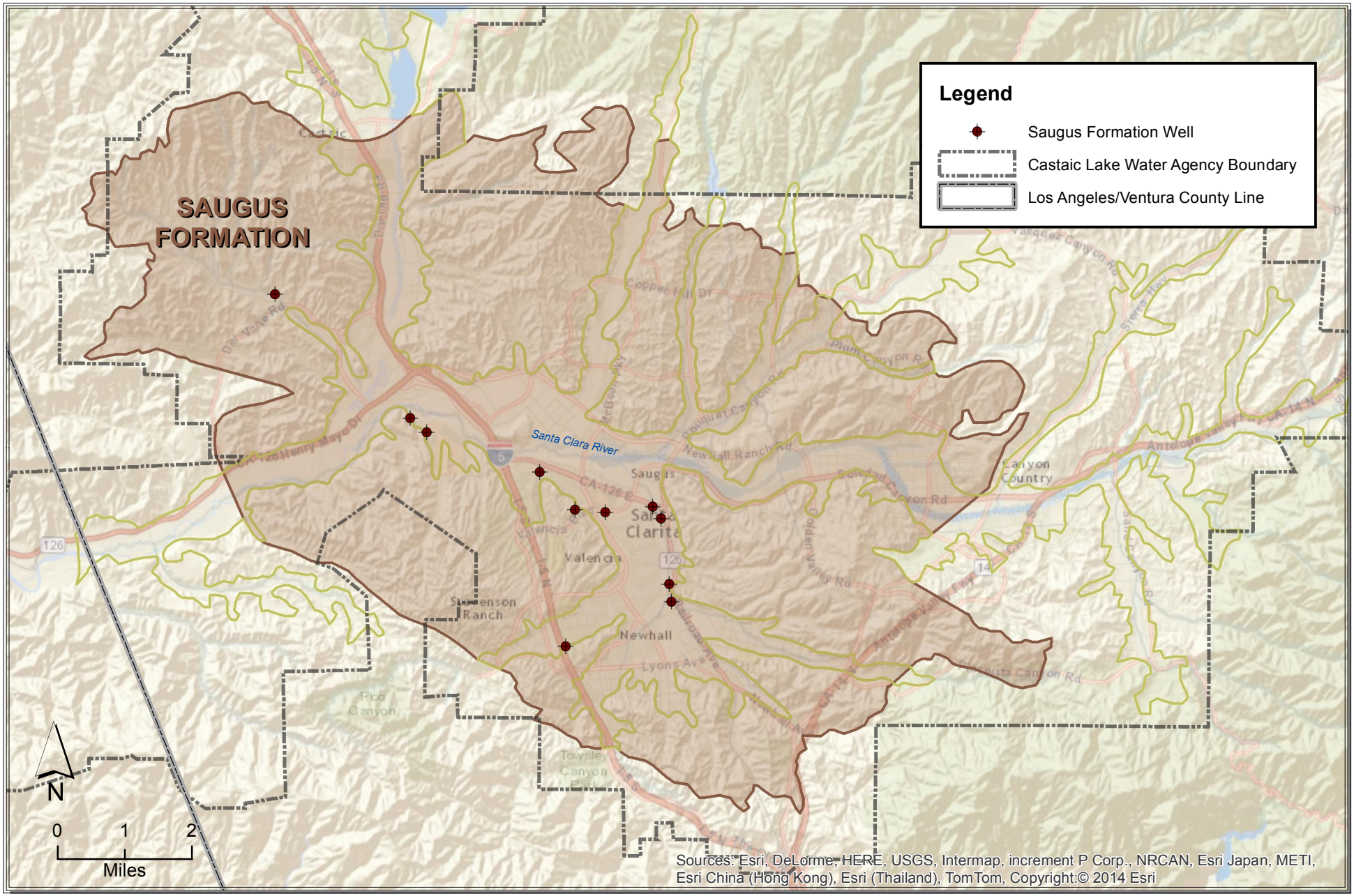

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Figure 3-7
Saugus Formation Well Locations
Santa Clarita Valley Water Report

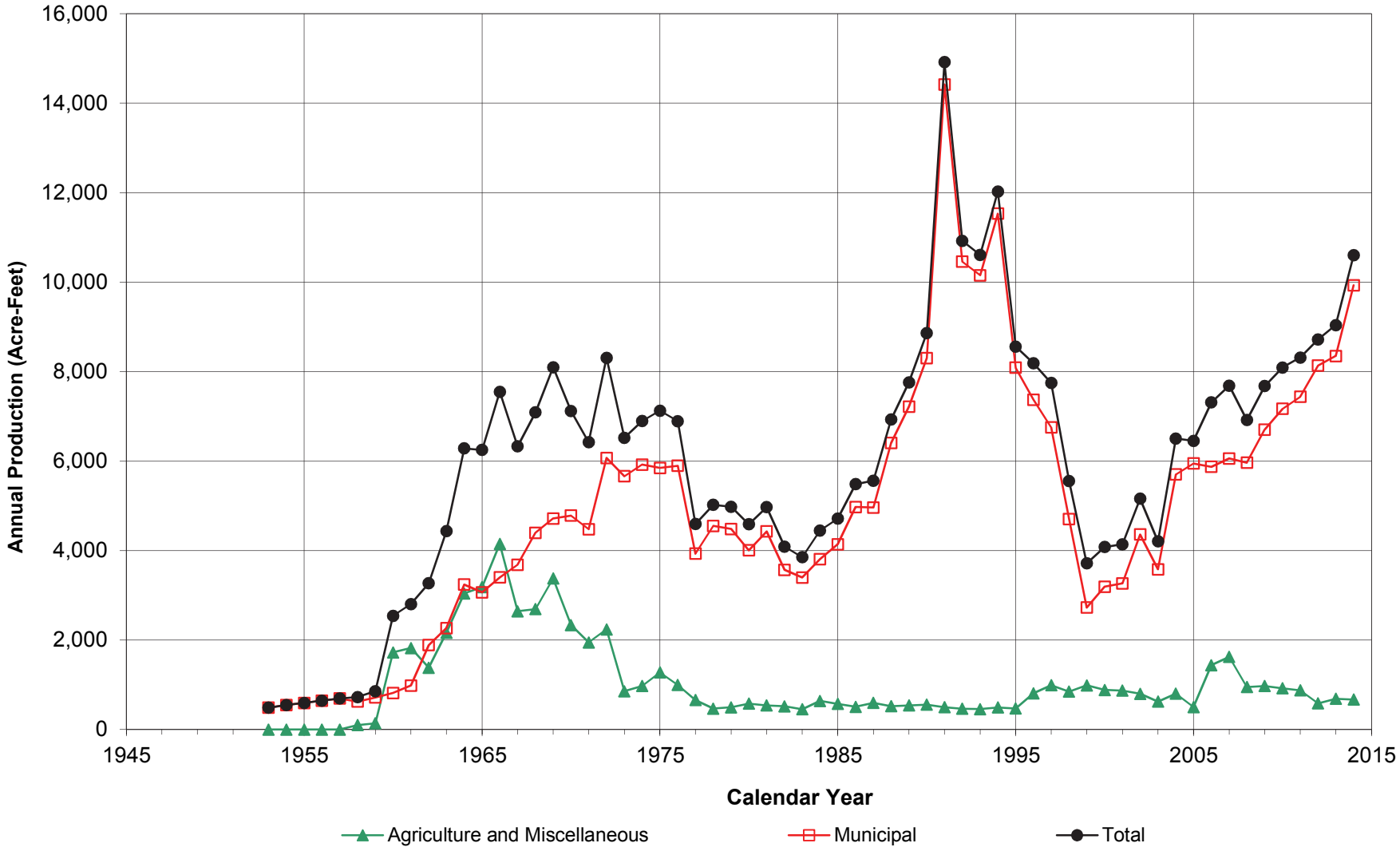

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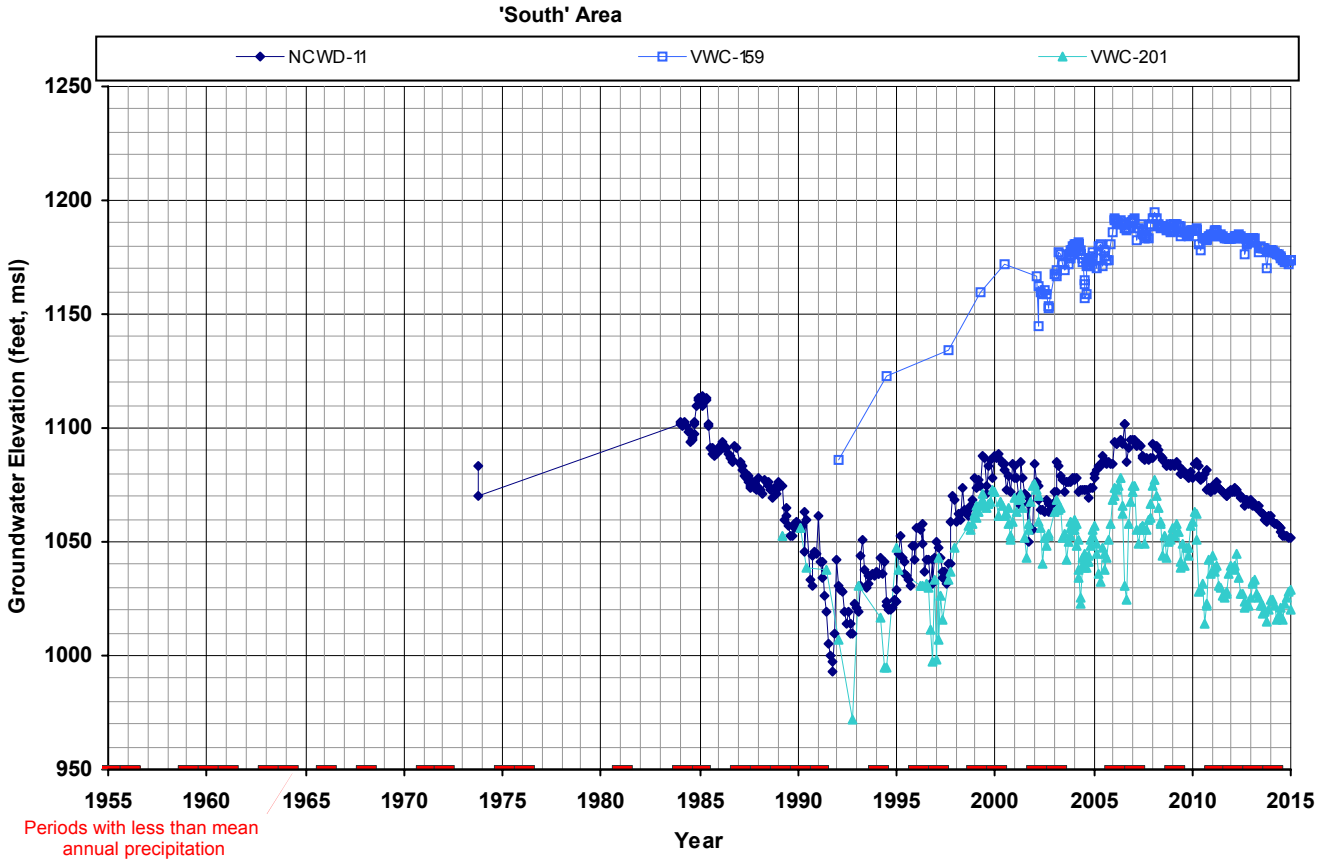
Figure 3-8
Groundwater Production - Saugus Formation
Santa Clarita Valley Water Report



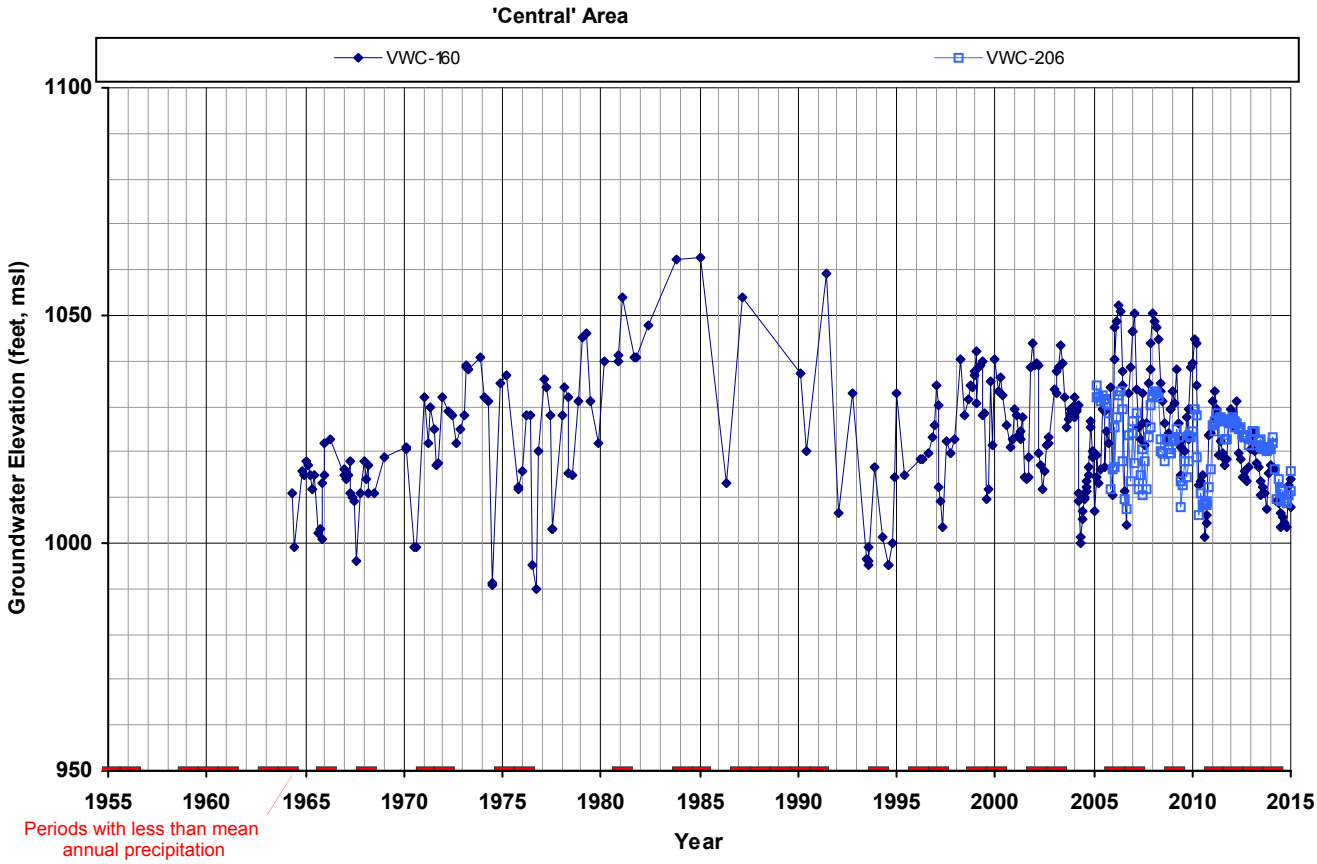


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Figure 3-9
Groundwater Elevations in Saugus Wells
Santa Clarita Valley Water Report

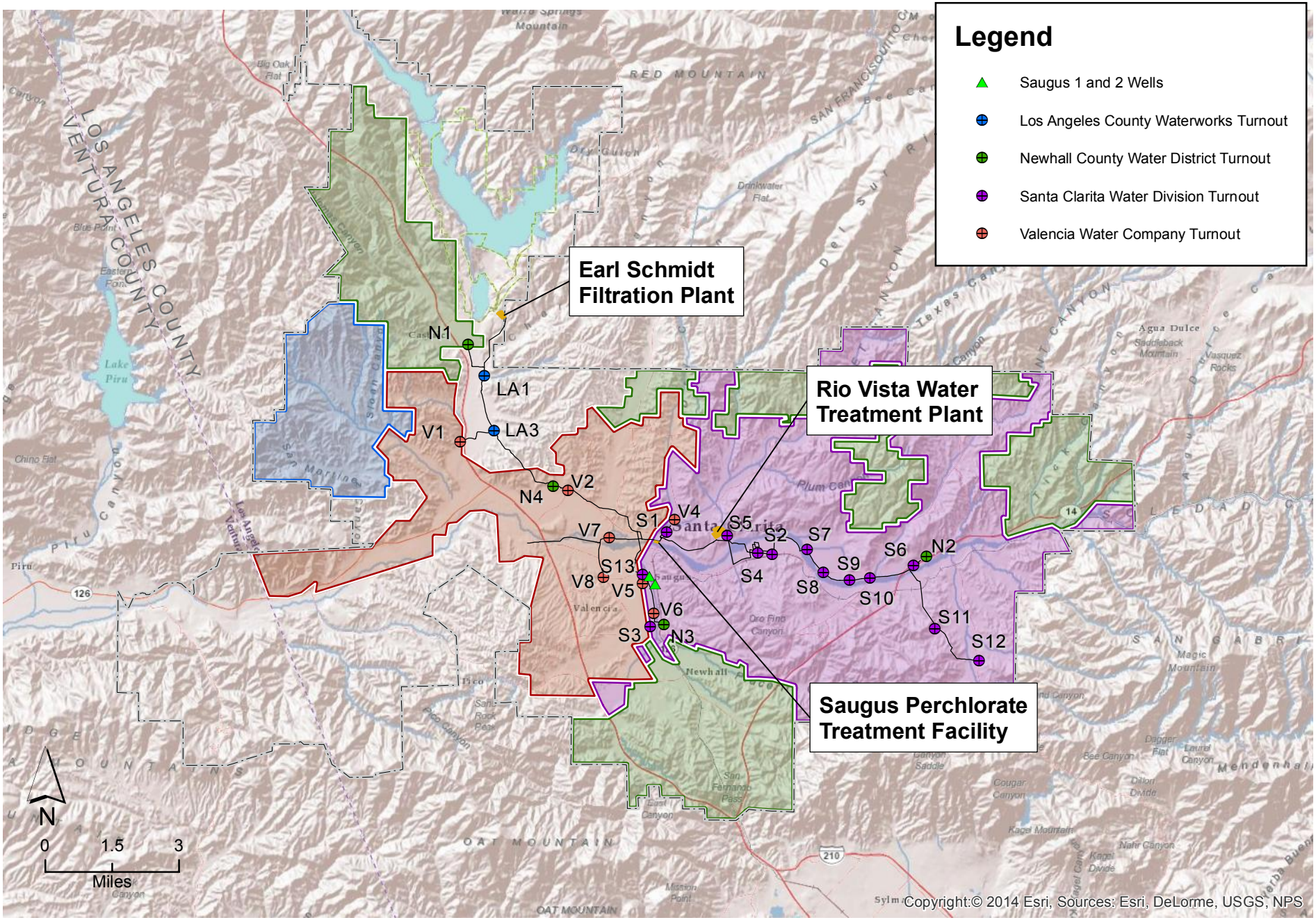

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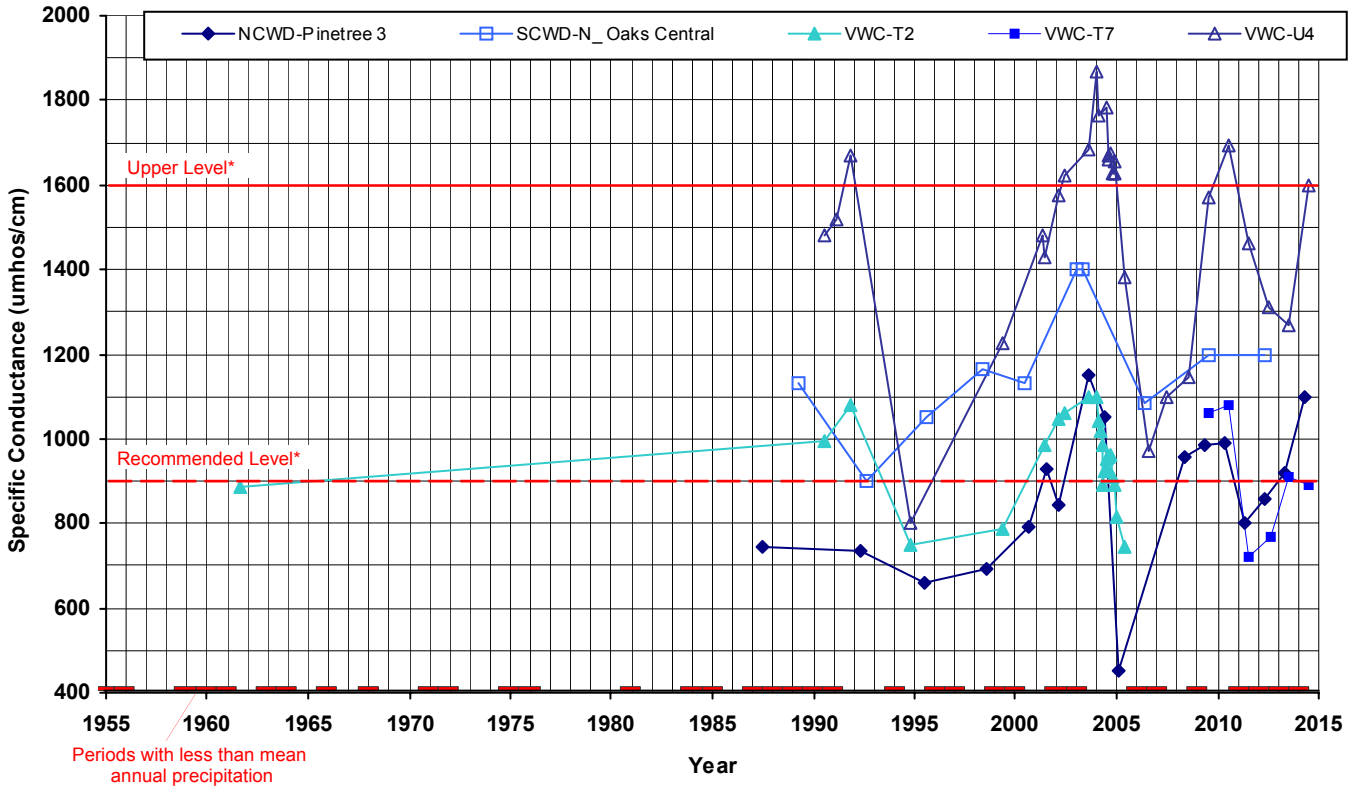
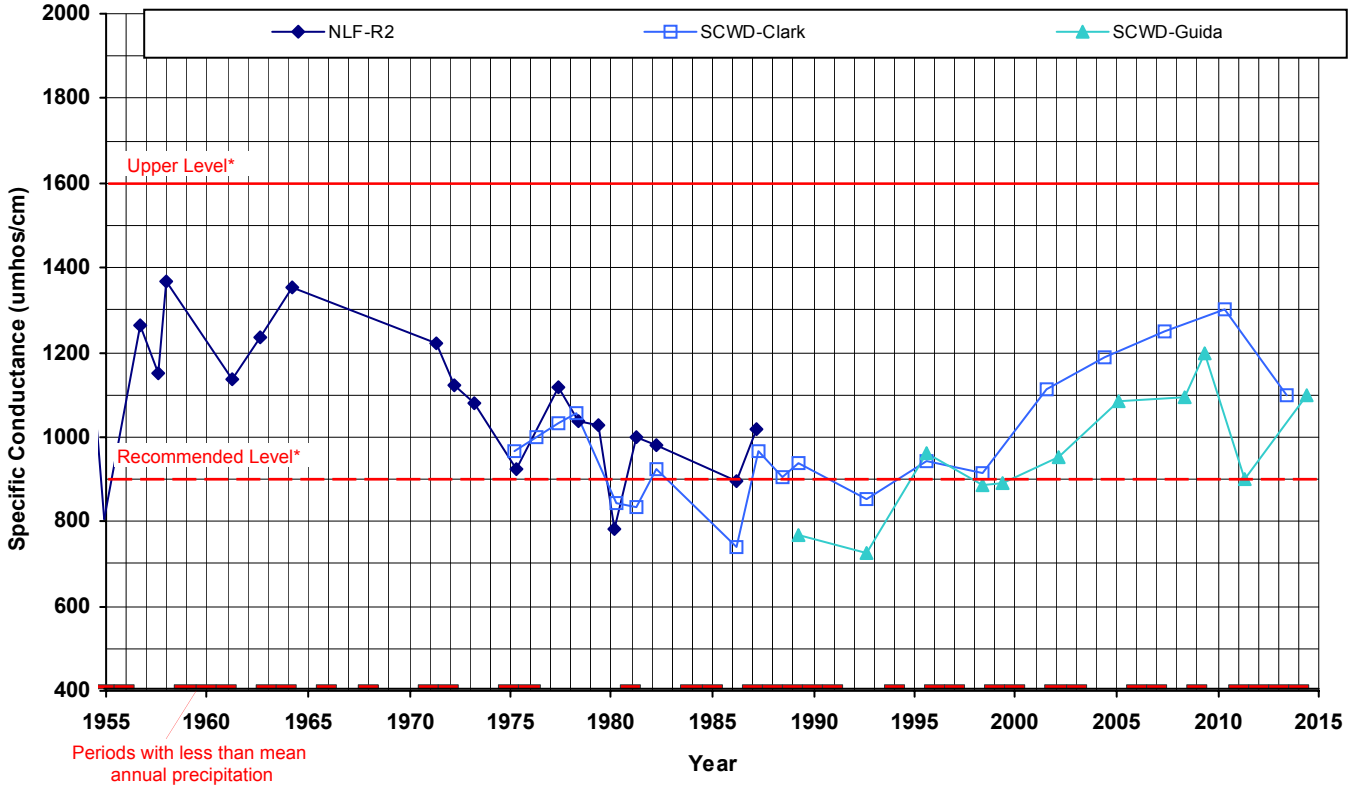
Figure 3-10
Treated Water Distribution System
Castaic Lake Water Agency
Santa Clarita Valley Water Report

'Mint Canyon' and 'Above Saugus WRP' Area Alluvial Wells (representative selection for area shown)



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



*Division of Drinking Water of the State Water Resources Control Board Secondary Maximum Contaminant Level

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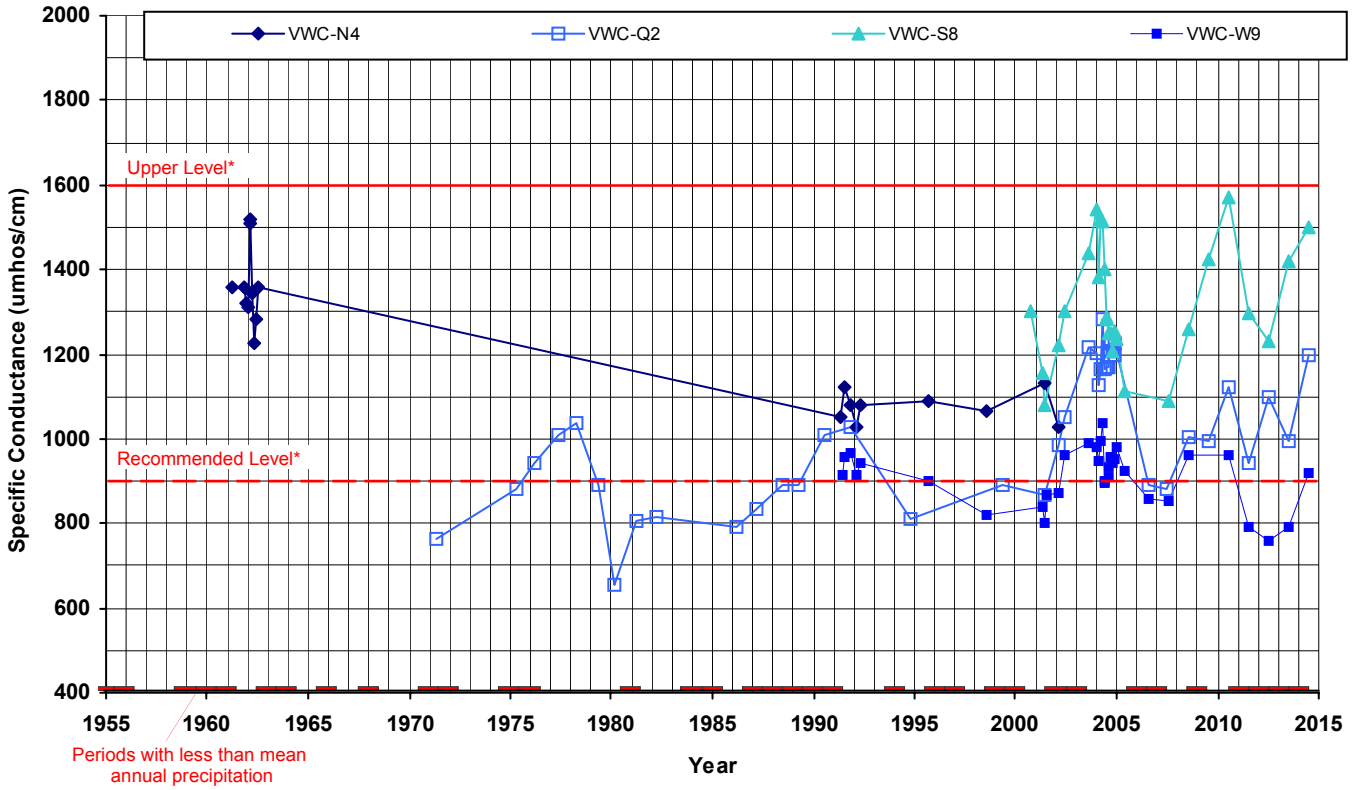
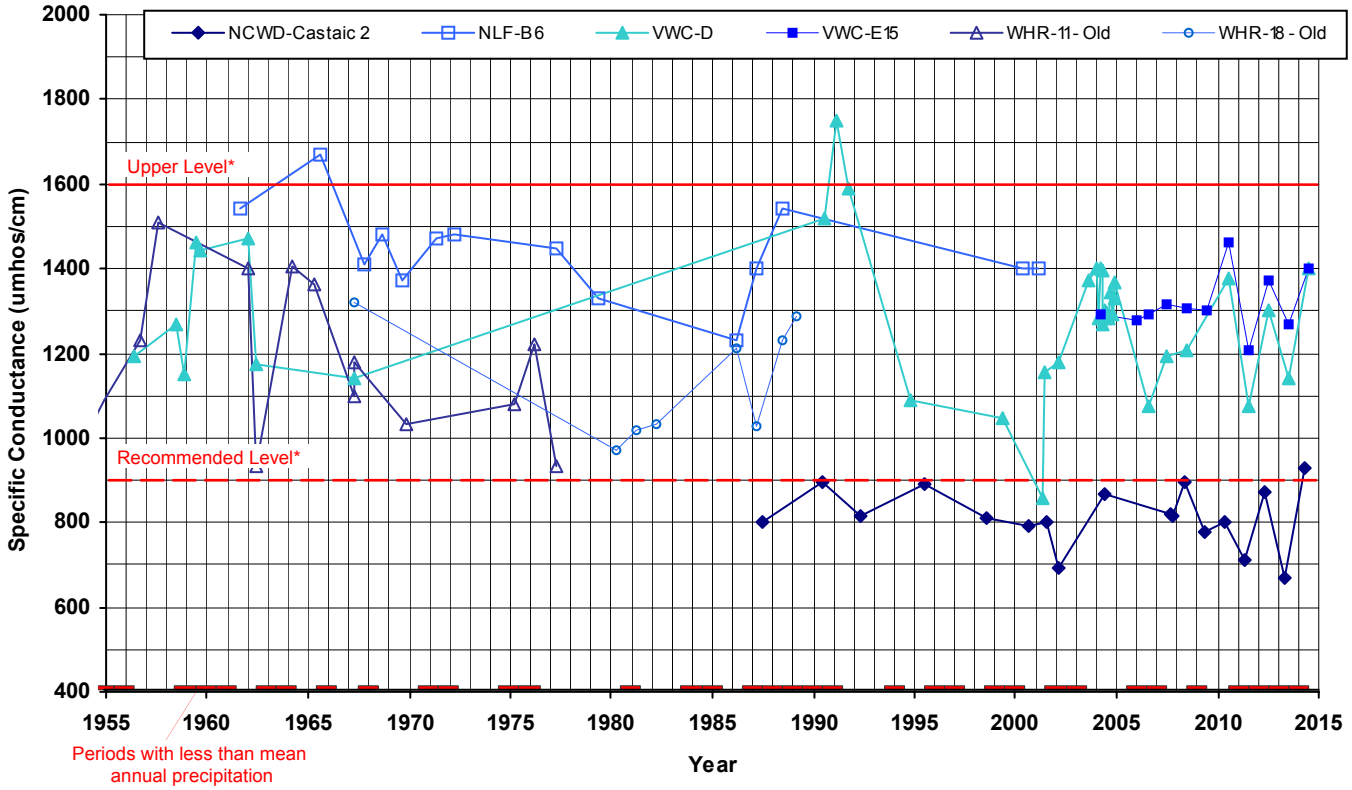
Figure 3-11
Groundwater Quality in
Eastern Santa Clarita Valley Alluvial Wells
Santa Clarita Valley Water Report

'San Franscisquito Canyon' and 'Below Saugus WRP' Area Alluvial Wells (representative selection for area shown)



'Castaic Valley' and 'Below Valencia WRP' Area Alluvial Wells
(representative selection for area shown)



*Division of Drinking Water of the State Water Resources Control Board Secondary Maximum Contaminant Level

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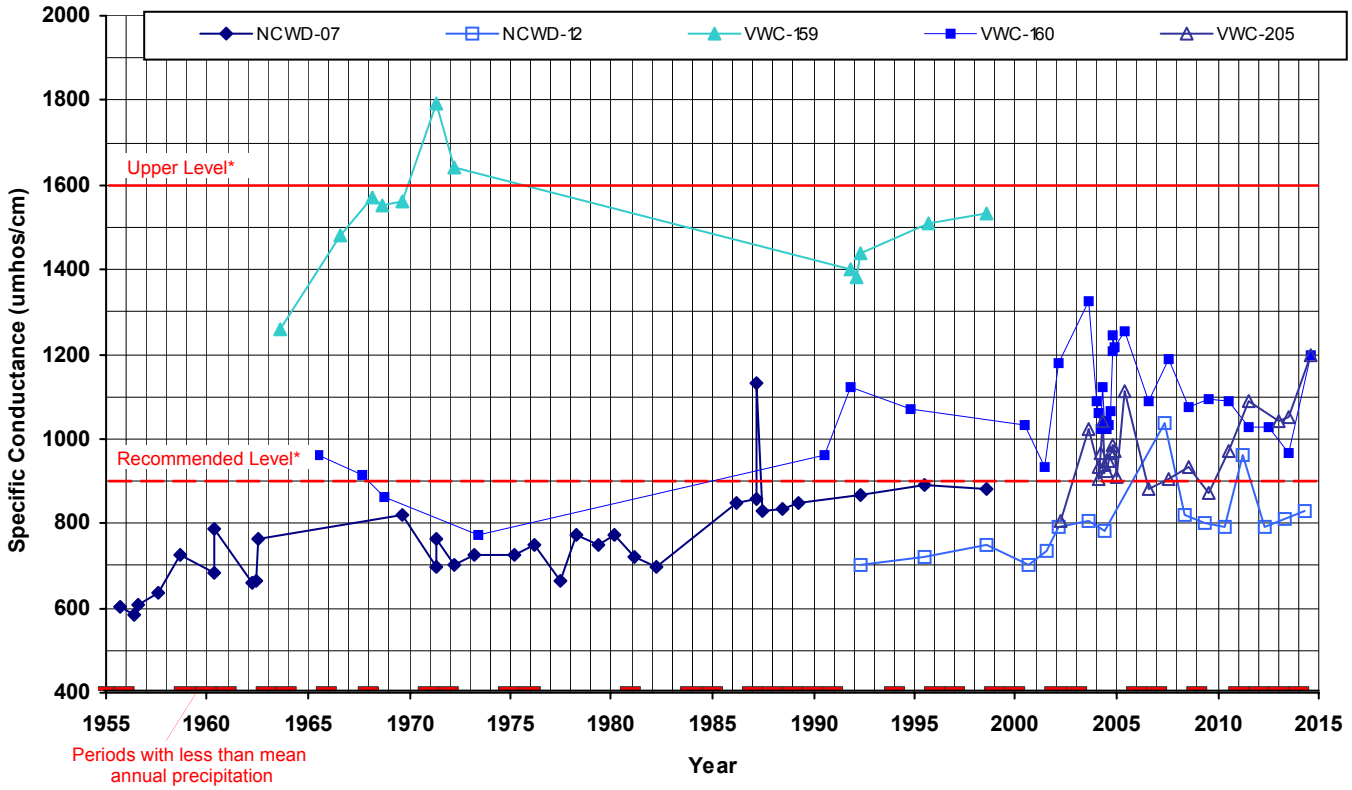
Figure 3-12
Groundwater Quality in
Western Santa Clarita Valley Alluvial Wells
Santa Clarita Valley Water Report



*Division of Drinking Water of the State Water Resources Control Board Secondary Maximum Contaminant Level

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Figure 3-13
Groundwater Quality in Saugus Wells
Santa Clarita Valley Water Report

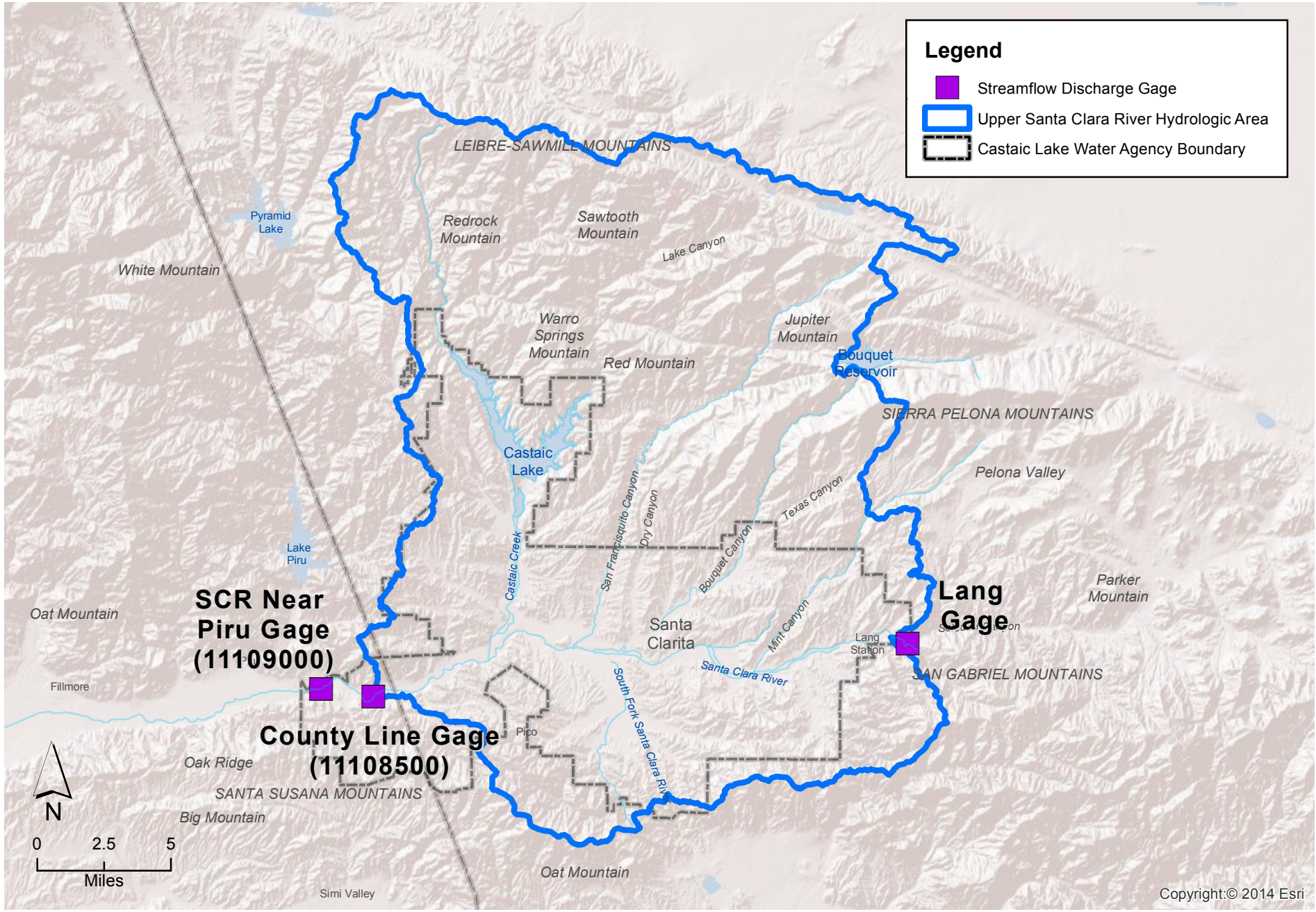

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Figure 3-14
Streamflow Discharge Gage Locations
Santa Clarita Valley Water Report

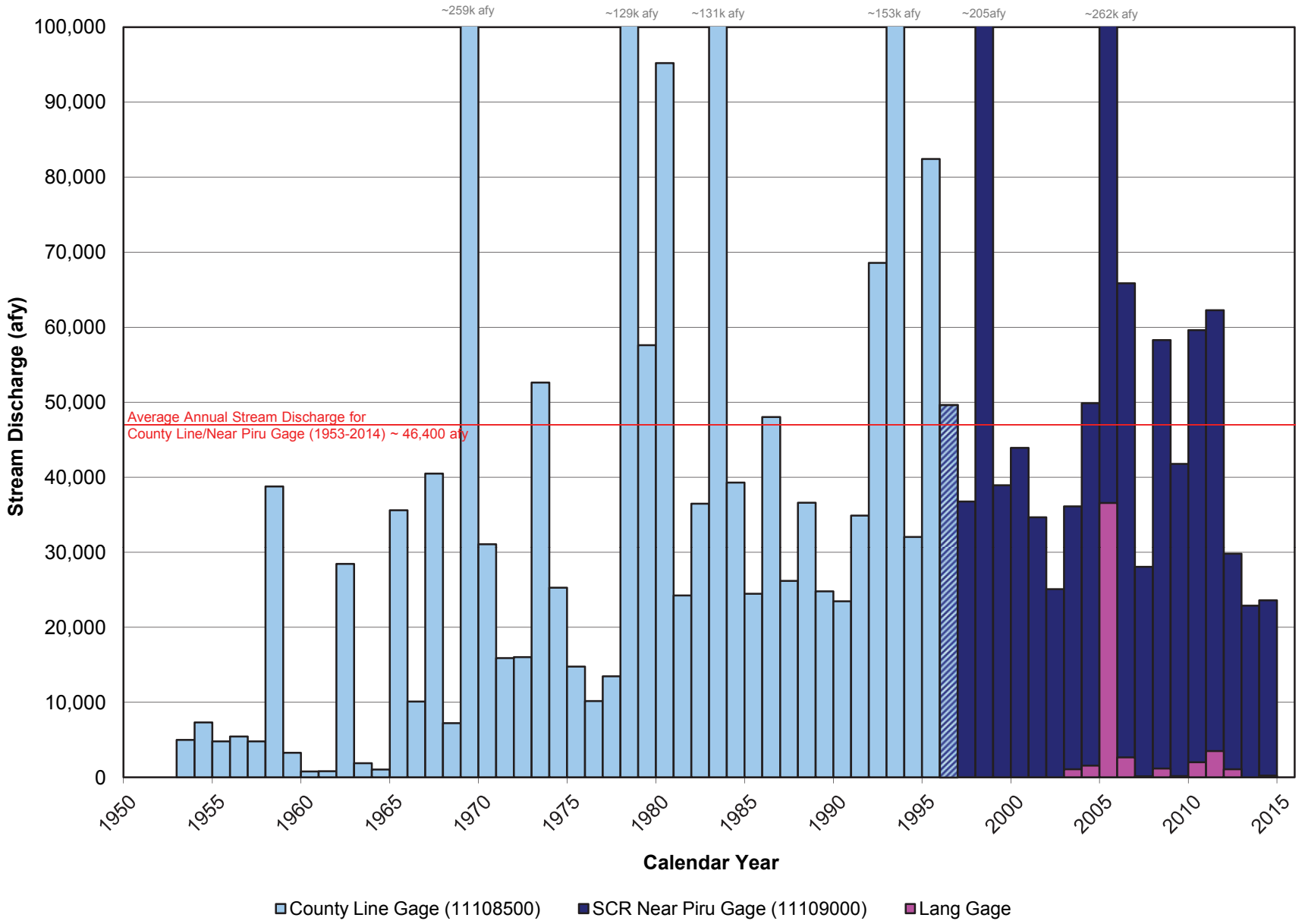

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Figure 3-15
Annual Stream Discharge
Santa Clarita Valley Water Report

4 SUMMARY OF 2014 WATER SUPPLY AND 2015 OUTLOOK

As discussed in the preceding chapters, total water demands in the Santa Clarita Valley were 81,100 af in 2014, or almost ten percent lower than in 2013. Of the total demand in 2014, nearly 68,200 af were for municipal water supply (a decrease of 5,300 af), and the balance (12,900 af, a decrease of about 3,200 af) was for agricultural and other uses, including estimated individual domestic uses. As detailed in Chapter 2, the total demand in 2014 was met by a combination of local groundwater, SWP and other imported water, and a small amount of recycled water.

4.1 2014 Water Demand

The water demand in 2014 was below the average projection in the 2010 UWMP, (92,400 af), and also below the short-term projected demand that was estimated in the 2013 Water Report (89,000 af). For a long-term illustration of demand, historical water use from 1980 through 2014 is plotted in **Figure 4-1** along with the currently projected municipal and agricultural water demands in the 2010 UWMP through 2050. Historically, the primary factor causing year-to-year fluctuations in water demands has been 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 dry periods, however, have resulted in decreases in demand due to conservation and water shortage awareness due to outreach by the water suppliers. The decline in water demand toward the end of the 1987 to 1992 drought is a good example. Similarly, over the recent multi-year dry period beginning in 2006, total water demands progressively declined from a historical high in 2007 to the lowest in nearly a decade in 2010. However, these low demand levels were also influenced in part from a decrease in the rate of growth in service connections that started in 2008.

Adding to these types of demand fluctuations are signs of improving broad economic conditions after a prolonged period of slow growth in new service connections. As reflected by the numbers of service connections in each Purveyor service area, growth in 2014 increased, with the addition of about 820 new service connections. This is the largest increase in new service connections since 2008. In addition, the Purveyors and the local community continue to be aware of current drought conditions. However, despite the continued growth in service connections, water use decreased by almost ten percent in 2014 as compared to 2013, and 2014 total water demand is similar to 2010/2011 levels.

The major factor in the current declining water use in the Valley is the State's ongoing drought and related water conservation measures. With the adoption of the 2010 UWMP, conservation goals were adopted to achieve a 20% reduction in water usage by the year 2020. As California began to experience its third consecutive year of drought conditions, on January 17, 2014, Governor Brown declared a drought state of emergency. In Spring 2014, with minimal reductions in water use observed statewide, the Governor signed an Executive Order on April 25, 2014, calling on the State to redouble its drought conservation efforts. On July 28, 2014, Resolution 2014-0038 mandating emergency water conservation measures became effective. Additionally, on April 1, 2015, with ongoing drought conditions throughout the state, and shortfalls in statewide interim conservation goals, the Governor mandated a 25% reduction in usage from 2013 levels and directed the SWRCB to develop emergency regulations to implement these reductions by June 1, 2015.

4.2 Projected 2015 Water Demand and Supplies

Despite the drier-than-average conditions in early 2015, total municipal water requirements in the first quarter of 2015 were lower than the first quarter of 2014 (and 2013) by more than 10 percent. Recognizing those early-year conditions, the potential impact of additional conservation, and continued growth in the Valley, total water demand in 2015 is estimated to be about 79,000 af.

It is expected that both municipal and agricultural water demands in 2015 will continue to be met with a mix of water supplies as in previous years, notably local groundwater, SWP and other supplemental imported water supplies, complemented by recycled water that will continue to supply a small fraction of total water demand.

On December 1, 2014, the initial allocation of water from the SWP for 2015 was 10 percent. On January 15, 2015, it was increased to 15 percent, and on March 2, 2015 it was increased to 20 percent; for CLWA, that equates to 19,040 af of its total Table A Amount of 95,200 af. Combined with local groundwater from the two aquifer systems (about 45,000 af), total Flexible Storage Account water (1,636 af), total carryover SWP water from 2014 (18,048 af), annual acquisition from Buena Vista Water/Rosedale-Rio Bravo Water Storage Districts (11,000 af), estimated withdrawal from Rosedale-Rio Bravo Water Banking Program (3,000 af), and recycled water (400 af), the total available water supplies for 2015 are about 98,100 af. CLWA plans to use banked supplies and conservation in 2015 to extend water resources if dry conditions

persist in 2016. Due to continuing water conservation efforts and diversified sources of water supply, CLWA and the Purveyors anticipate having more than adequate supplies to meet all water demands in 2015. Projected 2015 water supplies and demand are summarized in **Table 4-1**.

4.3 SWP Delivery Reliability

In August, 2007, a federal court ruled that certain operational changes were required of the SWP in order to protect the endangered Delta smelt. With the objective of protecting endangered fish such as the Delta smelt and spring-run salmon, the court order resulted in the preparation of new Biological Opinions (BO) requiring DWR to implement mitigation requirements with resultant impacts on SWP water supply reliability. The current SWP Delivery Reliability Report 2013 (DWR, 2014), maintains the restrictions on SWP operations according to the Biological Opinions of the U.S. Fish and Wildlife Service and the National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. In December 2010, a federal judge overruled most of the 2008 federal biological opinion and invalidated several of the criteria that reduced SWP's water supply. These matters were appealed to the U.S. Court of Appeals for the Ninth Circuit. The Ninth Circuit ruling upheld the Biological Opinions of the federal agencies. Therefore, the operational rules defined in these BOs continue to be legally required and were used by DWR in the analyses supporting its 2013 Delivery Reliability Report. The SWP Delivery Reliability Report 2013 also considers the impacts on SWP delivery reliability due to climate change, sea level rise, and vulnerability of the Delta's conveyance system and structure due to floods and earthquakes. With these factors, the Reliability Report projects that long-term reliability will be slightly less (at 58 percent) than the 2011 estimate of 60 percent, during normal year hydrology. Specifically, under existing conditions, the average annual delivery of Table A water is estimated at 1% more than the 2011 report; under future conditions, the average annual delivery is estimated at 2% less than the 2011 report. CLWA staff has assessed the impact of the current SWP Delivery Reliability Report on the CLWA reliability analysis contained in the Agency's 2010 UWMP that current and anticipated supplies are available to meet anticipated water supply needs through the year 2050. The preceding discussion of SWP supply should be considered 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 to maximize utilization of potable water supplies. As discussed in Chapter 5, CLWA and the retail water purveyors have worked with Los Angeles County and the City of Santa Clarita to aggressively implement water conservation in the CLWA service area. In terms of short-term water supply availability, however, CLWA and the retail water purveyors have determined that even with operational changes of the SWP 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. CLWA, the retail water Purveyors, Los Angeles County and the City of Santa Clarita have formed the Santa Clarita Valley Water Committee (formerly convened as the Santa Clarita Drought Committee). The specific purpose of the committee is to work collaboratively to manage the conjunctive use of the Valley's water supplies, respond to drought conditions and ensure the progressive implementation of water use efficiency programs in the Santa Clarita Valley.

4.4 Supplemental Water Supply Sources

In addition to the regular and previously banked water supplies described above and in Chapter 3 to meet projected demand in 2015, a residual of nearly 36,000 af of recoverable water remains stored in the Semitropic Groundwater Storage Bank in Kern County. In 2005, CLWA finalized an agreement with the Rosedale-Rio Bravo Water Storage District to bank up to 100,000 afy of surplus Table A Amount in that District's Water Banking Program. CLWA has banked 20,000 af in both 2005 and 2006, 8,200 af of water in 2007, 33,668 af of water in 2010, 1,006 af of water in 2011, and 6,031 af of water in 2012 (and recoverable amounts are itemized in **Table 4-1**). 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 Program in 2005 and 2006 on CLWA's behalf. At the end of 2014, CLWA maintains a recoverable total of more than 97,000 af in the Rosedale Rio-Bravo Water Banking Program. Pending the planned withdrawal of 3,000 af in 2015, the total water banked in this program will be reduced to about 94,000 af as shown in **Table 4-1**.

In 2011, CLWA opened a second program with RRBWSD which is a two-for-one exchange program where CLWA can recover one acre-foot of water for each two acre-feet delivered to RRBWSD. In 2011, CLWA delivered 15,602 af to the program and, after program losses, has 7,555 af of recoverable water. In 2012, CLWA delivered an additional 3,969 af to the RRBWSD

Table 4-1
2015 Water Supply and Demand
(acre-feet)

Projected 2015 Demand [1]		**79,000**
Available 2015 Water Supplies		
Local Groundwater		45,000
Alluvium [2]	*35,000*	
Saugus Formation [3]	*10,000*	
Imported Water		52,724
Table A Amount [4]	*19,040*	
Total Carryover from 2014 [5]	*18,048*	
Buena Vista/Rosedale-Rio Bravo[6]	*11,000*	
Flexible Storage Account (CLWA) [7]	*1,636*	
Flexible Storage Account (Ventura County)[7]	*0*	
Yuba Accord[8]	*0*	
Rosedale-Rio Bravo Water Banking Program Withdrawal	*3,000*	
Recycled Water		400
Total Available 2015 Supplies		**98,124**
Additional Dry Year Supplies [9]		
Semitropic Groundwater Storage Bank[10]		35,970
Rosedale-Rio Bravo Water Banking Program		94,176
2005/2006 Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement[11]	*22,000*	
2005/2006 Banking of Table A[12]	*35,006*	
2007/2010-2012 Rosedale Rio-Bravo Banking[13]	*37,170*	
Two-for-One Exchange Programs		10,009
2011/2012 Rosedale-Rio Bravo Water Storage District[14]	9,509	
2011 West Kern Water District[15]	500	
Total Additional Dry Year Supplies		**140,155**

1. Based on: Year-to-date demand through April 2015 and actual demand from 2014 with adjustment for conservation and anticipated growth.

2. The Alluvium represents 35,000 – 40,000 afy of available supply under local wet-normal conditions, and 30,000 – 35,000 afy under local dry conditions. Available supply in 2015 is shown to be reflective of dry-normal year sustainable production in Updated Basin Yield Analysis, August 2009. This available supply is achieved temporarily through redistribution of pumping to the central and western portions of the subbasin and a decrease in pumping from the easternmost areas of the subbasin.

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 2015 is shown to be reflective of current, limited capacity.

4. CLWA's SWP Table A amount is 95,200 af. The initial 2015 allocation on December 1, 2014 was 10 percent (9,520 af). On January 15, 2015 the allocation was increased to 15 percent (14,280 af) and on March 2, 2015 it was increased to 20 percent (19,040 af).

5. Of the 18,048 af of total available carryover, some may be returned to the SWP if the system reservoirs were to go into a 'spill' mode due to the carryover water in storage needing to be reassigned. As of the drafting of this report, no water has spilled in 2015. As the likelihood of significant increases in SWP reservoir storage for the year has diminished, it is assumed that the total amount of carryover would be available for 2015 supply.

6. 2015 annual supply from Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement.

7. CLWA can directly utilize up to 4,684 af of flexible 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 for a total of 6,060 af of flexible storage. In 2014, 4,424 af was recovered making 1,636 af available in 2015.

8. Yuba Accord Water is subject to availability and cost. Up to 850 af of non-SWP water supply may be 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). CLWA opted to take 445 af of Yuba water in 2014. CLWA will not take any Yuba water in 2015.

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. CLWA initially banked 24,000 af and 32,522 af in 2002 and 2003, respectively. This is the current balance after accounting for program losses, recovering 4,950 af in 2009/2010, and withdrawing 4,950 af in 2014 through Newhall Land's first priority extraction capacity (and giving Newhall Land 5,000 af of water in consideration for this use).

11. Water stored in Rosedale-Rio Bravo Water Banking Program back-credited for 2005 and 2006 pursuant to the Buena Vista/Rosedale-Rio Bravo Water Acquisition Agreement executed in 2007, not subject to losses.

12. Net recoverable water balance is 35,006 af comprising the following transactions:
    17,146 af after banking 20,000 af in 2005;
    17,860 af after banking 20,000 af in 2006.

13. Net recoverable water balance is 37,170 af comprising the following transactions:
    7,323 af after banking 8,200 af in 2007;
    29,132 af after banking of 33,668 af in 2010;
    810 af after banking of 1,006 af in 2011;
    5,729 af after banking of 6,031 af in 2012;
    recovery of 2,824 af in 2014;
    anticipated recovery of 3,000 af in 2015.

14. Net recoverable water balance is 9,509 af comprising the following transactions:
    7,555 af after exchanging 15,602 af in 2011;
    1,954 af after exchanging 3,969 af in 2012.

15. Net recoverable water balance is 500 af comprising the following transactions:
    2,500 af after exchanging 5,000 af in 2011;
    recovery of 2,000 af in 2014.

program and, after program losses, has 9,509 af of total recoverable water. CLWA also opened a two-for-one exchange program with the West Kern Water District in Kern County and delivered 5,000 af in 2011, resulting in a recoverable total of 2,500 af (less 2,000 af withdrawn in 2014 as shown in **Tables 4-1** and **3-2**). Total remaining recoverable water in all the Kern County storage banks at the end of 2014 is nearly 143,000 af and is projected to be about 140,000 af at the end of 2015. That component of overall water supply is separately reflected in **Table 4-1** because it is intended as a future dry-year supply; banked water to be withdrawn and used for 2015 water supply is an estimate at this point. No water was delivered into any of the banking programs in 2014. As described in detail in Chapter 3, there were extractions from the Rosedale-Rio Bravo, Semitropic and West Kern exchange programs in 2014.

4.5 Water Supply Strategy

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 the reliability of 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 conjunctively use 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 an individual Purveyor and the 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. Such is the case in 2014 and 2015. Due to the small amount of available SWP supplies, temporary decrease in Saugus Formation well capacity due to perchlorate concentrations in the vicinity of some Saugus Formation production wells, and drought impacts on groundwater levels in the eastern portion of the subbasin, groundwater pumping from the Alluvium will be more representative of dry year levels (about 35,000 afy). The pumping of approximately 35,000 af from the Alluvium will be accomplished by redistribution of pumping to the central and western portions of the subbasin. This redistribution of pumping is planned to be a short term measure to help meet projected demands in 2015.

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, implement 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, including increased recovery capacity at both the Semitropic Water Storage District and Rosedale-Rio Bravo Water Storage District Banking Programs and new and replacement wells in the Saugus Formation to increase groundwater recovery. Water consumers expect their needs will continue to be met with a high degree of reliability and quality of service. To that end, CLWA's and the water suppliers 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 2010 UWMP for a planning horizon over the next 36 years, in combination with conservation of non-essential demand during certain dry years, CLWA and the water suppliers believe implementing their water plan will successfully achieve this goal.

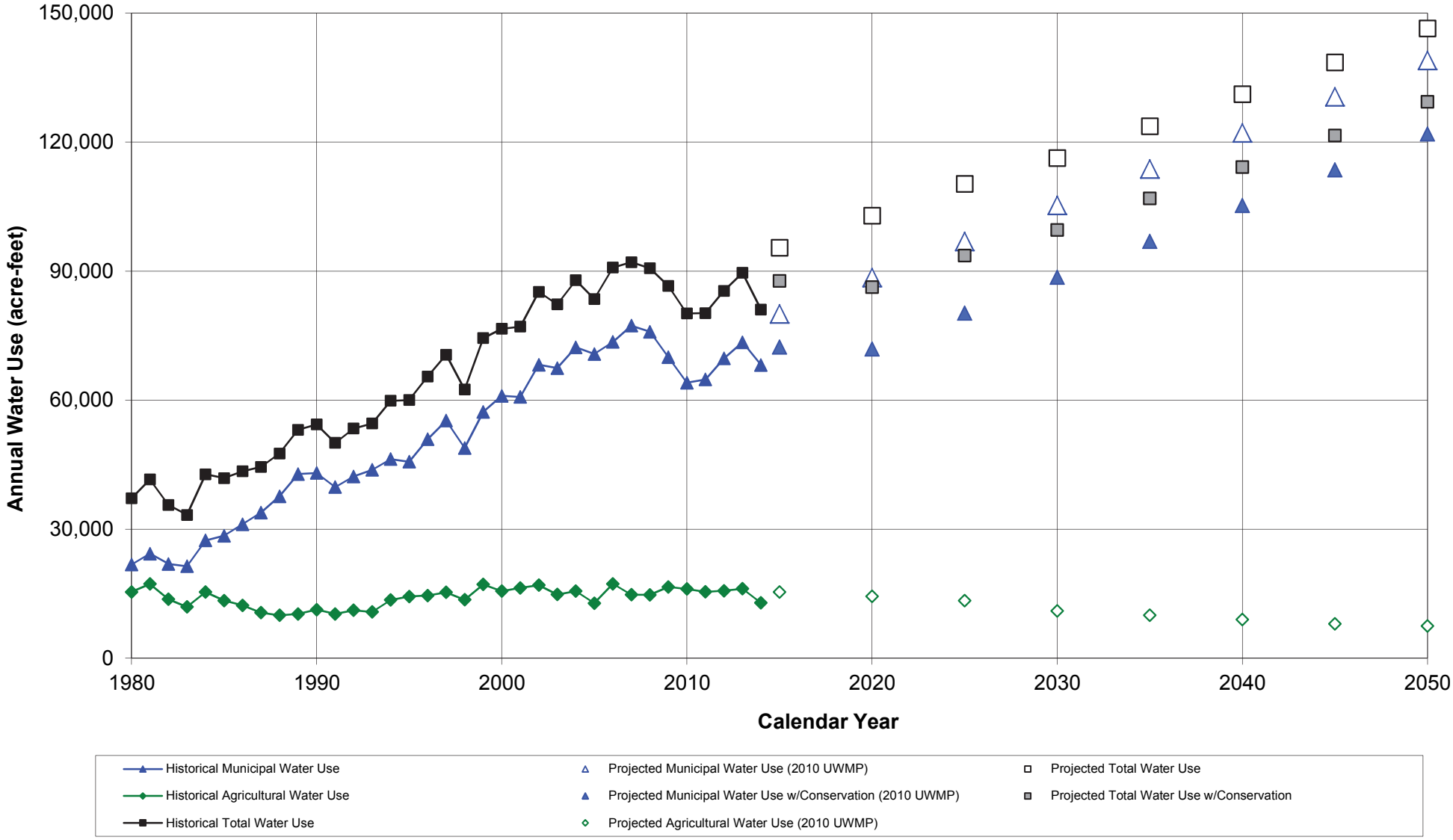

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Figure 4-1
Historical and Projected Water Use
Santa Clarita Valley Water Report

5 WATER CONSERVATION

5.1 Historical Conservation Efforts

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The urban water conservation Best Management Practices (BMPs) included in the MOU are intended to reduce California's long-term urban water demands. In 2001, the CLWA Board approved signing the CUWCC's MOU on behalf of both the wholesale and retail service areas (CLWA and SCWD), thus meeting one of the recommendations of the 2000 UWMP. Los Angeles County signed the MOU prior to the 2000 UWMP on behalf of all its Waterworks Districts; NCWD signed the MOU on its own behalf in September 2002 and VWC signed in 2006. In 2009, the CUWCC changed its policy to specify that each signatory had to join individually and that a wholesaler could no longer be a signatory on behalf of its retailers. SCWD therefore signed the MOU independently in 2011. CLWA and the retail water purveyors are subject to the Urban Water Management Planning Act, AB1420 and SB X7-7 requirements, in addition to the commitment of compliance with the BMPs as signatories to the MOU. In the CLWA service area, demand management is addressed at both the local (retail agency) and regional (Santa Clarita Valley-wide) levels.

The MOU and BMPs were revised by the CUWCC in 2008. The revised BMPs now contain a category of "Foundational BMPs" that signatories are expected to implement as a matter of their regular course of business. These include Utility Operations (metering, water loss control, pricing, conservation coordinator, wholesale agency assistance programs and water waste ordinances) and Public Education (public outreach and school education programs). The remaining "Programmatic" BMPs have been placed into three categories: Residential, Large Landscape, and Commercial, Industrial, Institutional (CII) Programs and are similar to the original quantifiable BMPs.

A key intent of the MOU revision was to provide retail water agencies with more flexibility in meeting requirements and allow them to choose program options most suitable to their specific needs. Therefore, as alternatives to the traditional Programmatic BMP requirements, agencies may also implement the MOU Flex Track or gallons per capita per day (GPCD) options. Under the Flex Track option, an agency is responsible for achieving water savings greater than or equal to those it would have achieved using only the BMP list items. The CUWCC has

developed three Flex Track Menus – Residential, CII, and Landscape – and each provides a list of program options that may be implemented in part or any combination to meet the water savings goal of that BMP. Custom measures can also be developed and require documentation on how savings were realized and the method and calculations for estimating savings.

The GPCD option sets a water use reduction goal of 18 percent reduction by 2018. The MOU defines the variables involved in setting the baseline and determining final and interim targets. The GPCD option and requirements track well with the requirements of SB X7-7. All three retail suppliers – SCWD, VWC and NCWD – have chosen to implement the GPCD compliance option.

As the water wholesaler for the region, CLWA is responsible for the implementation of a subset of the BMPs. However, CLWA in partnership with the Water Purveyors has taken a leadership role in the implementation and support of a number of the BMPs that extend beyond a wholesaler's responsibilities in the MOU. Additional detail on the water suppliers' conservation programs and compliance with the BMPs are presented below.

In 2007, VWC coordinated the development and execution of a MOU with CLWA and the other retail water purveyors to prepare a Santa Clarita Valley Water Use Efficiency Strategic Plan (SCVWUESP). The purpose of the effort was 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. The preparation of the SCVWUESP included input from stakeholders and the community at large. The SCVWUESP was completed in 2008 and provides a detailed study of existing residential and commercial water use, and recommends programs designed to reduce overall Valley-wide water demand by ten percent by 2030. The programs are designed to provide Valley residents with the tools and education to use water more efficiently. The seven programs identified in the SCVWUESP are:

1. HET Rebates (Single and Multi-Family)
2. Large Landscape Audits (with incentives)
3. CII Audits and Customized Incentives
4. Landscape Contractor Certification
5. HE Clothes Washer Rebates
6. New Construction Building Code
7. Valley-Wide Marketing

In addition to these seven programs, the SCVWUESP also identifies other key factors that will help reduce the Valley's overall water demand including passive conservation and new, more efficient building ordinances. The SCVWUESP was adopted in 2009, and by 2010, CLWA and the retail water purveyors were implementing the majority of the programs identified in the SCVWUESP in some form.

Finally, the SCVWUESP includes an Appendix with more aggressive water use efficiency measures designed to meet a potential twenty percent reduction in water use by 2020. This includes funding more active conservation programs, retrofit on resale ordinances, water rate reform, water budget based rates and a more aggressive recycled water program.
By implementing a portfolio of water use efficiency programs, Santa Clarita Valley water suppliers and their customers benefit in a number of ways:

- **Cost Avoidance for Purchased Water**: Although the Santa Clarita Valley has projected adequate water supply for the near future, the cost of water has risen dramatically and is expected to continue to rise. The best way to avoid purchasing expensive imported water is to use less through efficiency. The implementation of the SCVWUESP programs will result in increased efficiency.
- **Limited State Resources**: California's water resources are becoming increasingly stretched due to population, housing growth and decreased water supply from state water projects. Agencies need to stretch water supplies and increase efficiencies.
- **Drought Preparedness**: It is inevitable that southern California, as well as the state, will experience droughts in the future, similar in nature to current drought conditions. The big question is when and how severe the future droughts will be. One way to lessen the severity of a drought's effect on Santa Clarita Valley is to prepare in advance for this event by creating a community that operates at a high level of efficiency.
- **Reduce Carbon Footprint**: The production and delivery of water requires a tremendous amount of energy on both a statewide and local level. The Santa Clarita Valley can do its part to reduce greenhouse gases by using water more efficiently.
- **Reduced Wastewater Flows**: Sanitation plants and systems must be sized to meet historic and planned wastewater flows. Increasing the efficient use of water will result in a reduction of wastewater into the system.
- **Reduced Urban Runoff**: Achieving increased water use efficiency outdoors means less water running off landscaped areas into the streets, storm drains and ultimately into the

Santa Clara River. Education efforts and installation of efficient technologies will ensure that more of our valuable water is delivered to appropriate landscaping and less of it as urban runoff.

The water suppliers are administering, managing and financing the SCVWUESP programs. Since the adoption of the SCVWUESP in 2009, SB X7-7 was enacted, which requires a more aggressive demand reduction target of 20 percent by 2020. CLWA and the retail purveyors are currently developing an implementation plan that builds on the SCVWUESP while accelerating and expanding their goals to identify other opportunities that will help meet long-term goals such as those required by SB X7-7. As a result of these developments, the updated SCVWUESP is expected to be completed and adopted in 2015.

5.2 Recent Conservation Efforts

2014 was the 3rd consecutive calendar year of exceptional and extreme drought conditions for most of California, including the Santa Clarita Valley. On January 17, 2014, as a response to these continued conditions, the Governor of the State of California declared a drought emergency and asked that all California's take voluntary action to reduce their 2013 water use by 20%. In February, the Santa Clarita Valley Family of Water Suppliers approved the Water Conservation Action Plan the provided a series of water conservation guidelines that customers could implement to reduce their water use by 20%. In July, the SWRCB adopted emergency water conservation regulations that required water agencies to implement the actions of their water shortage contingency plans that imposed mandatory outdoor irrigation of ornamental landscapes or turf with potable water and prohibited the following actions:

- The application of potable water outdoor landscapes in a manner that causes runoff.
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle.
- The application of potable water to driveways and sidewalks.
- The use of potable water in a fountain or other decorative water feature except where the water is part of a recirculating system.

In August, the Santa Clarita Valley Water Committee declared a second phase of the Water Conservation Action Plan that formally recommended that local water retail agencies adopt the SWRCB Prohibitive Measures and Mandatory Outdoor Watering Restrictions which provided

restricted watering days for outdoor landscaping. Additionally, and as a result of the water conservation measures described in the Water Conservation Action Plan, the SCV Family of Water Suppliers put forth a valley wide communication plan that included outreach efforts by both CLWA and the retail water agencies.

5.3 Purveyor Specific Efforts

5.3.1 Valencia Water Company

In addition to the programs identified above, CLWA and the retail water suppliers have implemented a number of other conservation activities to meet the requirements of the SCVWUESP MOU and SB X7-7 goals. These activities include VWC's internal Water Conservation Plan drafted in 2013. The Water Conservation Plan provides a broad framework defining VWC's conservation policies as well as detailed conservation programs. The Water Conservation Plan is reviewed annually and updated every three years. Notable VWC programs include:

- **Water SMART Allocation and Tiered Rates Program** –provides customized monthly water allocations based on each customer's specific indoor and outdoor water needs. Additionally, the Water SMART Allocation and Tiered Rates Program couples the water allocation with tiered rates by establishing pricing signals that encourage the efficient uses of water and incentives to reduce the inefficient, excessive and wasteful uses of water.
- **Residential Water Tune-Up Program** – offers residential customers with a home water survey at no additional cost. A water use efficiency specialist will visit a customer's home and check for leaks, install water saving devices, and perform an irrigation system inspection. The specialist will also provide information pertaining to the Water SMART Allocation and Tiered Rates Program and additional conservation program opportunities.
- **HELIUM Rebates (High Efficiency Landscape Irrigation Upgrade Measures)** – provides customers with rebates and incentives for High Efficiency ("HE") irrigation improvements. Currently, VWC offers free nozzles via the www.freesprinklernozzles.com program and 50% rebates for the eligible HE nozzles, pressure regulated bodies, or master pressure regulation devices. VWC plans to add Drip Irrigation products to the HELIUM Program in 2014.

- **Water SMART Irrigation and Garden Care Workshops** – provides customers with a $20 credit for attending the workshop. The Workshop provides information on easy-to-implement, no cost, solutions for improved irrigation efficiency. Topics include watering to the weather, cycle and soak irrigation scheduling, and when, where, and how to use Drip Irrigation.
- **High Consumption Notification Program** – provides courtesy letters to customers with water consumption significantly greater than their monthly Water SMART Allocation. The letter informs customers that there are solutions available to assist them with their water conservation goals. Customers receiving the High Consumption Notification letter are encouraged to participate in the Residential Tune-Up Program.
- **Turf Replacement Program** – VWC participates with the other Valley water purveyors in a turf replacement program.
- **Water Conservation Works Program** – for commercial customers, VWC offers free facility surveys, rebates for HE plumbing and landscape irrigation retrofits.
- **VWC Customized Drought Reports** – VWC developed customized drought reports that provided customers with actual 2013 water use figures, their 20% drought reduction targets, weekly water savings estimates and tools and tips to achieve their goals. Additionally, VWC developed an online tracking tool that enabled customers to track their performance throughout the year.

5.3.2 Santa Clarita Water Division

SCWD developed a general Water Conservation Plan (WCP) in April 2009 to complement the SCVWUESP adopted by the CLWA Board of Directors in February 2009 and a specific Santa Clarita Water Division Water Use Efficiency Strategic Plan in 2012. In both plans, SCWD recognized the need to implement the urban water conservation BMPs as described by the CUWCC and identify additional conservation measures that could accelerate savings in the SCWD service area. Both plans identified the elements, processes, costs, staff resources and activities to further promote conservation and further complement the SCVWUESP. The plans also identified activities not addressed in the regional plan. SCWD is implementing all of the Foundational BMPs as required in the revised MOU and UWMP Act. The Programmatic BMPs are being implemented through a GPCD approach.

5.3.3 Newhall County Water District

NCWD has taken a number of steps to comply with SB X7-7 and help NCWD customers efficiently use water which meets the requirements of the SCVWUESP. NCWD participates in multiple public outreach events every year promoting water use efficiency within the community and has implemented a variety of programs. These programs include the following:

- **Residential Sprinkler Nozzle Program** - provides rebates to customers who replace standard irrigation spray nozzles with high efficiency nozzles.
- **Customized Water Efficiency Program** – provides rebates to customers who demonstrate a process or product that conserves water.
- **Turf Replacement Program** – NCWD participates with other Valley water purveyors in a turf replacement rebate program.
- **Water Efficiency Target (W.E.T.) Program** – provides customers a customized water usage "target" each month through their water bill to measure against their actual usage. If their usage is over their W.E.T., there will be various programs and opportunities for the customer to identify ways to reduce their usage and meet their target.

5.4 2014 Water Reductions

The residents, businesses, and city and county government agencies have responded to the calls for conservation by significantly reducing their water 2014 water use by 5,282 ac-ft (1.721 billion gallons) compared to 2013. Water savings by water purveyor included:

- **VWC – 2,446 ac-ft (797 million gallons)**
- **SCWD – 2,066 ac-ft (673 million gallons)**
- **NCWD – 716 ac-ft (233 million gallons)**
- **LAC36 – 54 ac-ft (17 million gallons)**

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