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# 2020 Urban Water Management Plan for
# Santa Clarita Valley Water Agency
(Los Angeles County Waterworks District No. 36/Cooperating Agency)

VOLUME 1 FINAL

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# Santa Clarita Valley Water Agency 2020 Urban Water Management Plan FINAL

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Prepared for

Santa Clarita Valley Water Agency
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KJ Project No. 2044228*00

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# Section 1: Introduction, Plan Preparation, Plan Adoption and Lay Description

## 1.1 Overview

This document comprises the Urban Water Management Plan 2020 (UWMP or Plan) for the Santa Clarita Valley Water Agency (SCV Water) service area. The 2015 UWMP was prepared for the Castaic Lake Water Agency (CLWA) service area which, at the time, included four retail water purveyors: the Santa Clarita Water Division (SCWD), a division of CLWA, Newhall County Water District (NCWD), Valencia Water Company (VWC) and Los Angeles County Waterworks District 36 (LACWWD 36).

On January 1, 2018, pursuant to state legislation (SB 634, Chapter 833 2017), CLWA and NCWD, merged together to become a new special act entity called SCV Water. Later in January 2018, VWC was dissolved and its assets were transferred to SCV Water. At present, SCV Water is made up of three water divisions: Newhall Water Division (NWD), Santa Clarita Water Division (SCWD) and Valencia Water Division (VWD). SCV Water also continues to serve LACWWD 36. This Plan was developed as an individual UWMP for the SCV Water service area. This section describes the general purpose of the Plan, discusses Plan implementation and provides general information about SCV Water and service area characteristics.

## 1.2 Purpose

An Urban Water Management Plan (UWMP) is a planning tool that generally guides the actions of urban water suppliers. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which "…describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (Wat. Code, § 10631, subd. (d)). The identification of such opportunities and the inclusion of those opportunities in a plan's general water service reliability analysis neither commits an urban water supplier to pursue a particular water exchange/transfer opportunity, nor precludes it from exploring exchange/transfer opportunities not identified in its plan. Before an urban water supplier is able to implement any potential future sources of water supply, detailed project plans are prepared and approved, financial and operational plans are developed and required environmental analysis is completed.

"A plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers." (*Sonoma County Water Coalition v. Sonoma County Water Agency* (2010) 189 Cal. App. 4th 33, 39.) It should not be viewed as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty and planning projections may change in response to a number of factors. "[L]ong-term water planning involves expectations and not certainties. The California Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required in the early stages of the planning process are replaced by firm assurances of water supplies at later stages." (*Id.*, at 41.) From this perspective, it is appropriate to look at the UWMP as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions such as:

- What are the potential sources of supply and what amounts are estimated to be available from them?
- What is the projected demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How do the projected supply and demand figures compare and relate to each other?

Using these "framework" questions and resulting answers, SCV Water will pursue feasible and cost-effective options and opportunities to develop supplies and meet demands.

As further detailed in this Plan, SCV Water will continue to explore enhancing and managing supplies from existing sources such as the State Water Project (SWP) as well as other options. These include groundwater extraction, water exchanges and transfers, water conservation, water recycling, brackish water desalination, and water banking/conjunctive use. Additional specific planning efforts may be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, potential environmental impacts, and how each option would affect customers.

The California Urban Water Management Planning Act (Act) requires preparation of a plan that, among other things:

- Accomplishes water supply planning over a 20-year period in five-year increments. (SCV Water is exceeding the requirements of the Act by developing a plan which spans thirty years.)
- Identifies and quantifies existing and projected water supplies and water supply opportunities, including recycled water, for existing and future demands, in normal, single-dry and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.

Additionally, Senate Bill 7 of Special Extended Session 7 (SBx7-7) was signed into law in November 2009, which called for a 20 percent reduction in per capita water use statewide by 2020. SBx7-7, otherwise referred to as the Water Conservation Act of 2009, requires each urban retail water supplier to develop an urban water use target to help the state collectively achieve the 20 percent reduction. Beginning in 2016, retail water suppliers were required to comply with the water conservation requirements in SBx7-7 in order to be eligible for State water grants or loans. In compliance with the legislation, this Plan describes the methodology used to calculate SCV Water's baseline water use and an updated 2020 water use target. In addition, this Plan demonstrates that SCV Water complied with its target reduction by December 31, 2020.

A number of changes to the California Water Code (CWC) have been enacted since 2015 which apply to the preparation of the 2020 Plan updates. Major changes include:

- UWMP Submittal Date, CWC Section 10621(f)

- Five consecutive dry-year water reliability assessment
- Quantify Distribution System Water Loss, CWC Section 10631(d)(3)(A)(C)
- Consistency with Groundwater Sustainability Plans, CWC Section 10631(b)(4)(A)
- Seismic Risk Assessment and Mitigation Plan, CWC Section 10632.5(a)
- Energy Use Information, CEC 10631.2(a)
- Drought Risk Assessment, CWC Section 10635
- Additional Water Shortage Contingency Plan requirements, CWC Section 10632

A checklist to ensure compliance of this Plan with the Act requirements is provided in Appendix B.

It is the stated goal of SCV Water to deliver a reliable and high-quality water supply to its customers, even during dry periods. Based on conservative water supply and demand assumptions over the next thirty years during normal and dry water years, the 2020 UWMP shows how SCV Water will successfully achieve this goal over the planning horizon.

### 1.2.1 Relationship to Water Shortage Contingency Plan

Concurrent with the 2020 UWMP update, SCV Water also updated its Water Shortage Contingency Plan (WSCP) consistent with CWC Section 10632 and Section 10635. The CWC requires that the WSCP be prepared and submitted with the UWMP. The WSCP outlines SCV Water's action plan for a drought or a water supply shortage and specifies opportunities to reduce demand and augment supplies under such conditions. The WSCP was adopted as a stand-alone document and is referenced in this Plan and is included as an attachment in Appendix J. Section 9 of the Plan provides additional detail as to how SCV Water has planned to respond to various potential catastrophic interruptions as well as regional power outages.

## 1.3 Basis for Preparing a Plan

In accordance with the CWC, urban water suppliers providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water per year (AFY), are required to prepare an UWMP every five years. The 2020 UWMP must be adopted by SCV Water's Board of Directors and submitted to DWR by July 1, 2021.

## 1.4 Implementation of the Plan

SCV Water has a long-term contract with the State of California, through DWR, to acquire and distribute SWP Water to its customers, including LACWWD 36. This Plan is required for SCV Water. LACWWD 36, is not required to prepare an UWMP because they do not provide water to more than 3,000 customers or supply more than 3,000 acre-feet (AF) of water annually; however, LACWWD 36 participated in the development of the Plan on a cooperating basis. This subsection provides an overview of the framework within which the Plan has been prepared, including agency coordination, public outreach and resource maximization.

### 1.4.1 Public Water Systems

Public water systems (PWS) are the systems that provide drinking water for human consumption, which are regulated by the State Water Resources Control Board Division of Drinking Water (SWRCB DDW). PWS are required to electronically file Annual Reports to the Drinking Water Program with the SWRCB DDW, which include water usage and other information.

### 1.4.2 Agencies Serving Multiple Service Areas/Public Water Systems

Table 1-1 provides the names and PWS numbers of each PWS that is covered by this UWMP.

**TABLE 1-1 RETAIL PUBLIC WATER SYSTEM**

[DWR Table 2-1]

| Public Water System Number | Public Water System Name | Number of Municipal Connections 2020 | Volume of Water Supplied 2020 (AF) |
|---|---|---|---|
| 1910247 | Castaic (NWD) | 9,720 | 10,779 |
| 1910096 | Newhall (NWD) | | |
| 1910250 | Pinetree (NWD) | | |
| 1910255 | Tesoro (NWD) | | |
| 1910017 | SCWD | 32,179 | 27,672 |
| 1910240 | VWD[(a)] | 30,271 | 26,283 |
| 1910185 | LACWWD 36[(b)] | 1,372 | 1,262 |
| **Total** | | **73,542** | **65,996** |

Notes:

(a) Includes 468 acre-feet (AF) of recycled water.

(b) LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

### 1.4.3 Fiscal or Calendar Year

A calendar year is the type of year that is used for reporting. The type of year should remain consistent throughout the Plan. DWR prefers that agencies report on a calendar year basis in order to ensure UWMP data is consistent with data submitted in other reports to the State. All data in this Plan is reported in calendar years, and in AF.

### 1.4.4 Coordination During Preparation of the Plan

SCV Water coordinated the preparation of this Plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. In addition, water resource specialists with expertise in water resource management were retained to assist in preparing the details of the Plan. Coordination for this Plan is summarized in Table 1-2.

### TABLE 1-2 SUMMARY OF AGENCY COORDINATION

| Agency | Participated in UWMP Development | Received Email Link to the Draft | Commented on Draft | Attended UWMP Public Workshops | Contacted for Assistance | Sent Notice of Intent to Adopt |
|---|---|---|---|---|---|---|
| Acton Town Council | | X | | | | |
| Affordable Clean Water Alliance (ACWA) | | | X | | | |
| Agua Dulce Town Council | | X | | | | |
| Building Industry Association Los Angeles/Ventura Chapter (Diana Coronado) | | X | X | | | |
| California Department of Fish and Wildlife (Erinn Wilson, Karen Drewe, Kelly Schmoker, Mary Ngo, Ruby Kwan-Davis, Victoria Tang) | | X | | | | |
| California Department of Toxic Substances Control (Jose Diaz) | | X | | | | |
| California Department of Water Resources (Brian Moniz, Jennifer Wong) | | X | | | | |
| California State Water Resources Control Board (Samuel Boland-Brien) | | X | | | | |
| Canyon Country Advisory Committee (Alan Ferdman) | | X | X | X | | |
| Canyon Country Advisory Committee (Rick Drew) | | X | | X | | |
| Castaic Area Town Council | | X | | | | |
| Citizens Climate Lobby Santa Clarita Chapter (Cher Gilmore) | | X | X | | | |
| City of Santa Clarita (Ken Striplin, Heather Merenda, Kristina Jacob, Oliver Cramer, Robert Newman, James Chow) | | X | | | | |
| City of Santa Clarita (Jason Crawford, Jason Smisko, Tom Cole) | | X | | | | X |
| College of the Canyons (Jia-Yi Cheng-Levine) | | X | | | | |
| County of Ventura Resource Management Agency (Kimberly Prillhart) | | X | | | | X |
| Fernandeno Tataviam Band of Mission Indians (Kimia Fatehi) | | X | | | | |
| Five Point (Alex Herrell, Matt Carpenter) | | X | | X | | |
| Five Point (Johanna Palmer, Sandy Sanchez) | | X | | | | |

| Agency | Participated in UWMP Development | Received Email Link to the Draft | Commented on Draft | Attended UWMP Public Workshops | Contacted for Assistance | Sent Notice of Intent to Adopt |
|---|---|---|---|---|---|---|
| Friends of the Santa Clara River (James M. Danza) | | X | X | | | |
| Los Angeles County Department of Public Works (Armond Ghazarian, Bruce Hamamoto, Dan Lafferty, Evelyn Ballesteros, Giles Coon, Jessica Bunker, Josh Svensson, Julian Juarez, Kari Eskridge, Ken Zimmer, Marcela Benavides, Matt Frary, Russ Bryden, TJ Kim, Virginia Maloles-Fowler, Youn Sim, Youssef Chebabi) | | X | | | | |
| Los Angeles County Department of Public Works (Mark Pestrella) | | X | | | | X |
| Los Angeles County Department of Regional Planning (Amy Bodek, Josh Huntington, Mark Herwick ) | | X | | | | X |
| Los Angeles County Department of Regional Planning (Gina Natoli, Mitch Glaser, Rob Glaser) | | X | | | | |
| Los Angeles County Sanitation Districts (Ann Heil, Lysa Gaboudian, Martha Tremblay, Raymond Tremblay) | | X | | | | |
| Los Angeles County Supervisor Kathryn Barger District 5 (Stephanie English) | | X | | | | |
| Los Angeles County Waterworks Districts (Adam Ariki) | | X | | | | |
| Los Angeles Regional Water Quality Control Board (Celine Gallon, Ginachi Amah, Ivar Ridgeway, Jenny Newman, Renee Purdy) | | X | | | | |
| Los Angeles Sanitation & Environment (SCV Sanitation District) (Robert C. Ferrante) | X | X | X | | X | X |
| Members of the Public (see Appendix H) | | X | X | X | | |
| Natural Resource Conservation Service (Roger Haring) | | X | X | | | |
| Santa Clarita Organization for Planning and Environment (Lloyd E. Carder II) | | X | X | X | | |
| SCV Chamber of Commerce | | X | | | | |
| SCV Economic Development Corporation (Holly Schroeder) | | X | | | | |
| SCV Water Board Members | X | X | X | X | | |
| Sierra Club Angeles Chapter (Sandra Cattell) | | X | X | X | | |

| Agency | Participated in UWMP Development | Received Email Link to the Draft | Commented on Draft | Attended UWMP Public Workshops | Contacted for Assistance | Sent Notice of Intent to Adopt |
|---|---|---|---|---|---|---|
| State Senator Scott Wilk (Kris Hough) | | X | | | | |
| The Nature Conservancy (E.J. Remson) | | X | | | | |
| United Water Conservation District (Maryam Albor Bral, Robert Richardson) | | X | | | | |
| United Water Conservation District (Mauricio E. Guardado, Jr.) | | X | | | | X |
| Valley Industry Association (Kathy Norris) | | X | | | | |
| Watersheds Coalition of Ventura County (Lynn Rodriguez) | | X | | | | |

### 1.4.5 Plan Adoption

SCV Water began preparation of this Plan in August 2020. The final version of the Plan was adopted by the Agency Board on June 16, 2021 and submitted to DWR within 30 days of Board approval. This Plan includes all information necessary to meet the requirements of Water Conservation Act of 2009 (Wat. Code, §§ 10608.12-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656).

### 1.4.6 Public Outreach

SCV Water has encouraged the active involvement of diverse social, cultural, and economic elements of the population and community throughout the SCV Water service area prior to and during preparation of the Plan. Among other outreach efforts, three public workshop sessions were held to solicit input on the outline and approach for preparing the Plan. Interested public agencies and other stakeholders were informed about the development of the Plan and the schedule of public activities. Notices of workshops were published in the local press and on the SCV Water website. Copies of the Plan were made available at the SCV Water office and website, and were sent to the City of Santa Clarita, the County of Los Angeles, and interested parties as identified in Table 1-2. SCV Water staff also convened meetings with various parties to gather data concerning planned development and the probable implementation of approved development.

SCV Water contracted with a local public outreach and stakeholder engagement firm to coordinate preparation of the Plan with the local community and stakeholders. SCV Water notified the cities and counties within its service area of the opportunity to provide input regarding the Plan. Table 1-3 presents a timeline for public participation during the development of the Plan. Copies of public outreach materials, including paid advertisements, newsletters, website and social media postings, news articles and invitation letters are provided in Appendix H and additional information is available on the website: https://yourscvwater.com/uwmp/.

**TABLE 1-3 PUBLIC PARTICIPATION TIMELINE**

| Public Workshops and Hearings | Date | Focus of Workshop/Hearing |
|---|---|---|
| 1st Public Workshop | November 18, 2020 | Presentation on UWMP requirements, timeline for the update, Water supply characteristics, introduction to climate change in the UWMP, next steps. |
| 2nd Public Workshop | February 17, 2021 | Results overview of population and demand study, SBx-7, drought risk assessment |
| 3rd Public Workshop | March 22, 2021 | Results overview of seismic analysis, reliability analysis |
| Public Hearing Part 1 | May 27, 2021 | Review of Public Draft 2020 UWMP, review of public comments on Public Draft 2020 UWMP |
| Public Hearing Part 2 Plan Adoption | June 16 , 2021 | Adoption of Final 2020 UWMP during final public hearing |
| Plan Submittal | July 1, 2021 | File 2020 UWMP with DWR, upon adoption and by July 1, 2021 deadline |

The components of public outreach included:

- Local Media (local newspaper articles and paid advertisements)
- Social Media (Facebook, Twitter, and Instagram)
- Community-Based Outreach (see Table 1-2 for details)
- Public Workshops and Hearings (see Table 1-3 for details)
- City/County Outreach (see Table 1-2 for details)
- Public Availability of Documents (see Table 1-3 for details)

### 1.4.7 Resources Maximization

Several documents have been developed to enable SCV Water to maximize the use of available resources and minimize use of imported water. These documents include:

- 2005, 2010 and 2015 CLWA UWMPs,
- CLWA's 2017 Water Supply Reliability Plan Update,
- 2014/2018 Integrated Regional Water Management Plan for the Upper Santa Clara River
- 2014 Salt and Nutrient Management Plan,
- 2019 Santa Clarita Valley Water Report,
- DWR's 2019 State Water Project Delivery Capability Report (2019 DCR),
- Recycled Water Master Plan Update (RWMP Update) (2016),
- 2015 update of the Santa Clarita Valley Water Use Efficiency Strategic Plan (WUESP),
- 2009 Basin Yield Analysis by Luhdorff and Scalmanini Consulting Engineers and GSI Water Solutions, Inc.,
- 2010 CLWA Data Document[1],
- 2003 Groundwater Management Plan (GWMP),
- Santa Clara River Valley East Subbasin Groundwater Sustainability Plan,

[1] SCV Water periodically updates its Data Document as the basis for establishing its facility capacity fees.

- PFAS Groundwater Treatment Implementation Plan (Kennedy Jenks 2021), and
- Technical Memorandum on Population and Demand Projections (Maddaus 2021).

Section 4 of this Plan describes in detail the current and projected water resources available to SCV Water for the thirty-year period covered by the Plan. A complete references list is provided in Section 10 of this Plan.

## 1.5 Water Management within SCV Water's Service Area

SCV Water was formed on January 1, 2018 when CLWA, which included SCWD and NCWD, merged to become a single agency pursuant to state legislation (SB 634, Chapter 833 2017). Later in January 2018, VWC was dissolved and its assets were transferred to SCV Water. The SCV Water service area is shown on Figure 1-1. The formation of SCV Water occurred through a collaborative process. Until the merger, CLWA served as the regional wholesaler to the Santa Clarita Valley, encompassing a service area of 195 square miles in Los Angeles and Ventura Counties. SCV Water now serves the same service area and is made up of three water divisions with separate but interconnected distribution systems: NWD, SCWD and VWD. Those divisions cover nearly the entire City of Santa Clarita and unincorporated portions of Los Angeles County. In addition, SCV Water serves LACWWD 36 whose service area includes the Hasley Canyon and the Val Verde communities in the Los Angeles County unincorporated area. LACWWD 36, which is in the SCV Water service area, relies primarily on its own groundwater. SCV Water provides imported water as a supplemental supply.

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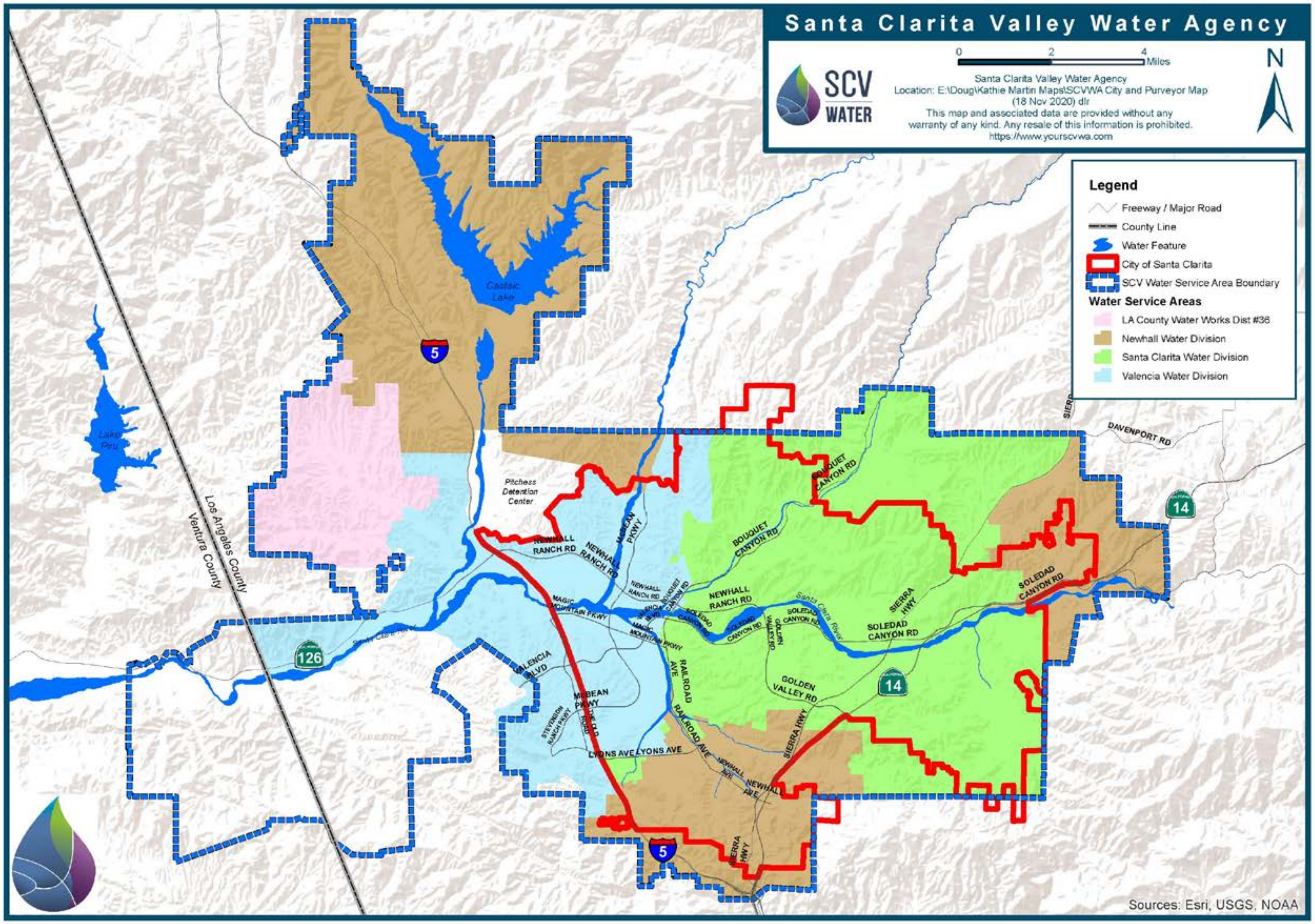
# FIGURE 1-1 SCV WATER SERVICE AREA



Adequate planning for, and the procurement of, a reliable water supply is a fundamental function of SCV Water. The agency's water supplies are made up of approximately equal amounts of imported water and local groundwater, as well as a small portion of recycled water.

SCV Water has a long-term SWP Water supply contract (SWP Contract) with DWR for 95,200 acre-feet (AF) of SWP Table A Amount[2]. However, the availability of SWP supply is variable. It fluctuates from year to year depending on precipitation, regulatory restrictions, legislative restrictions and operational conditions and is subject to substantial curtailment during dry years. A more detailed discussion of factors having the potential to affect SWP deliveries is provided in Section 4 of this Plan.

The primary additional imported supply is surface supply from the Buena Vista Water Storage District (Buena Vista or BVWSD) and the Rosedale-Rio Bravo Water Storage District (Rosedale-Rio Bravo or RRBWSD) in Kern County. This supply, which is developed from Buena Vista's high flow Kern River entitlements, was first delivered to CLWA in 2007 and is available as a firm annual supply delivered to SCV Water through SWP facilities. SCV Water is also able to manage some of the variability in its SWP supplies under certain provisions of its SWP Contract, including the use of flexible storage at Castaic Lake, as well as through its participation in several groundwater banking/exchange programs in Kern County.

All imported water is delivered to Castaic Lake through SWP facilities. From Castaic Lake, which serves as the terminal reservoir of the SWP's West Branch, the water is treated at either SCV Water's Earl Schmidt Filtration Plant or Rio Vista Water Treatment Plant and delivered to the SCV Water service area through transmission lines owned and operated by SCV Water.

SCV Water can meet over half of the Valley's urban demand with imported water, the balance of demands is primarily met with local groundwater and a small amount of recycled water. Supply reliability findings of this UWMP are summarized in Section 1.8.

## 1.6 Climate

The climate in SCV Water's service area is generally semi-arid and warm. Summers are dry with temperatures as high as 110°F. Winters are somewhat cool with temperatures as low as 20°F. Average rainfall over the last century has been about 17.6 inches per year. The region is subject to wide variations in annual precipitation and also experiences periodic wildfires. The region's recent climate conditions are presented in Table 1-4. Historic precipitation is shown in Figure 1-2.

[2] Table A is a schedule of annual water amounts as set forth in long-term SWP delivery contracts. Table A defines the annual volume of Water that can be requested by an SWP contractor in a given year under regular contract provisions without consideration of surplus SWP Water deliveries or other supplies available to an SWP contractor.

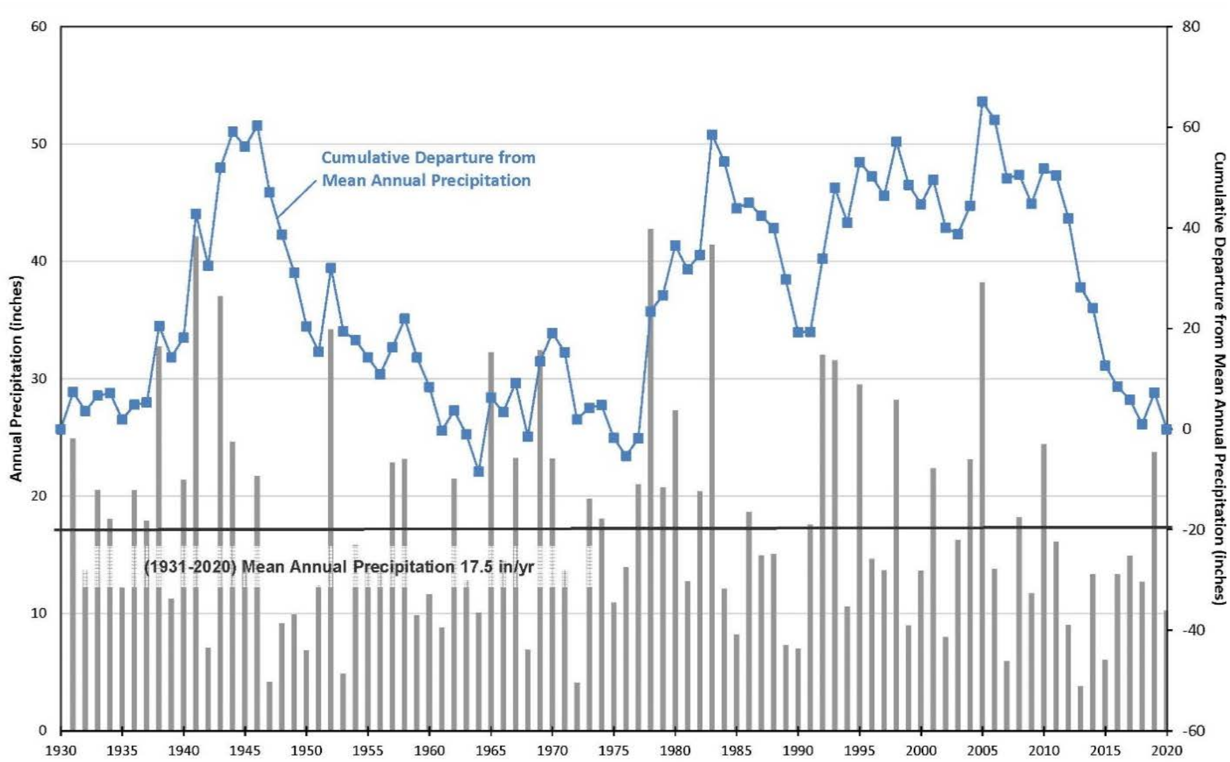
## TABLE 1-4 EVAPOTRANSPIRATION AND TEMPERATURE DATA

| Month | Standard Monthly Average ETo (inches) | Average Temperature (degrees Fahrenheit) | |
|---|---|---|---|
| | | Max | Min |
| January | 3.13 | 66.3 | 43.9 |
| February | 3.28 | 67.0 | 42.5 |
| March | 5.06 | 72.4 | 45.9 |
| April | 6.26 | 76.2 | 48.8 |
| May | 7.11 | 79.2 | 52.6 |
| June | 8.00 | 87.3 | 57.9 |
| July | 8.68 | 93.4 | 62.9 |
| August | 8.45 | 94.1 | 63.1 |
| September | 6.48 | 90.7 | 60.6 |
| October | 5.04 | 82.2 | 54.1 |
| November | 3.58 | 73.5 | 47.5 |
| December | 2.71 | 64.3 | 42.3 |

Source: California Irrigation Management System (CIMIS) monthly data from 2007 to 2019 for Santa Clarita Station No. 204, Los Angeles Basin. https://wwwcimis.Water.ca.gov/.

ETo = evapotranspiration

## FIGURE 1-2 ANNUAL PRECIPITATION AND CUMULATIVE DEPARTURE FROM MEAN




Note: Annual precipitation at Newhall Fire Station #73 Gage.
Source: 2019 Santa Clarita Valley Water Report

## 1.7 Potential Effects of Climate Change

A topic of increasing importance for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. With a range of potential scenarios and impacts, climate change increases uncertainty of future demand conditions and local and imported water supply conditions thereby posing additional water management challenges.

California is described as one of the most "climate-challenged" regions in North America, in the Fourth Climate Change Assessment (Climate Assessment), completed in 2018 in coordination with the California Energy Commission, California Natural Resources Agency and State Office of Planning and Research. This Climate Assessment includes updated climate projections and supports findings that the State will experience greater impacts from climate change in the future, including shifting hydrology. Among the technical reports prepared for the Climate Assessment is a report on the *Mean and Extreme Climate Change Impacts on the State Water Project* (Wang et al., 2018).

Primary climate change impacts projected by global climate models to impact the State and Santa Clarita Valley region include warming air temperatures and changes in precipitation patterns, with more frequent and intense heavy precipitation events on the one hand and more frequent and more severe droughts on the other hand, among other impacts. While studies related to the region are conclusive regarding the anticipated increase in extreme events, there is disagreement whether average precipitation changes will be towards wetter or drier conditions. Impacts outside the Santa Clarita Valley, but nevertheless of high importance include rising sea levels and declining snowpack. These conditions impact the availability and reliability of both local and imported water supplies.

Recent findings indicate that higher temperatures will lead to dryer conditions, and an increased occurrence of dry years and multiple dry years resulting in more frequent and more intense droughts. Drought risks are anticipated to be some of the greatest vulnerabilities to water supplies and demands, resulting in among other things reductions in groundwater recharge, reduced runoff and surface water flows, and reduced local and imported water supply reliability. Additionally, warmer temperatures and changes in precipitation patterns are anticipated to result in increasing water needs.

With a broad range of uncertainty that the State and Santa Clarita Valley face in its water supplies and demands, optimizing water resource management includes identifying combinations of resource management strategies for future scenarios of local and imported water supply and demand conditions. This UWMP includes projections of water demands over the planning period, as well as existing and future water supply sources to continue to reliably serve the Santa Clarita Valley. The effects of climate change have been accounted for in this UWMP, including in demand projections and the projected availability and reliability of water supplies. Additional details are provided in Sections 2, 4, and 7 of this Plan. Locally and statewide, climate change impacts in relation to water resources as well as energy, public health and other areas of potential impact, are assessed and incorporated in many different planning documents including the following:

- Upper Santa Clara River Integrated Regional Water Management Plan

- City of Santa Clarita Climate Action Plan
- Los Angeles Countywide Sustainability Plan
- State Water Project Delivery Capability Report
- California's Fourth Climate Change Assessment
- SCV-GSA Groundwater Sustainability Plan (in progress)

The Agency also acknowledges that wildfires are of an increasing concern within the State and particularly within the Santa Clarita Valley. While they may not have a significant impact on local water supplies, they do have the potential to impact recharge conditions and also impact water quality to surface water supplies. This is a situation that the Agency will continue to monitor, and will be addressed in the currently developed Local Hazard Mitigation Plan. With additional studies and monitoring, the impacts of climate change related to wildfires will be further documented and included in future UWMP updates.

## 1.8 Fundamental Findings of the Urban Water Management Plan

As set forth in this Plan, SCV Water has evaluated the long-term water needs (water demand) within its service area and has compared these needs against existing and potential water supplies. Demand projections are based on applicable population projections and county and city land use plans, and account for conservation as well as climate change impacts and other relevant factors. Results indicate that the total projected water supplies available to the SCV Water service area over the 30-year projection during normal, single-dry, and multiple-dry year (5-year drought) periods are sufficient to meet the total projected water demands throughout the Valley (see Section 7); provided that SCV Water continues to utilize available SWP Table A Amounts, and will continue to incorporate conjunctive use (coordinated use of surface water and groundwater), water conservation, water transfers, recycled water, and water banking as part of the total water supply portfolio and management approach to long-term water supply planning and strategy. These water management elements are addressed throughout this Plan.

# Section 2: Water Use Characterization

## 2.1 Overview

This section describes historical and projected population in the SCV Water service area, as well as historic and current water usage and the methodology used to project future demands within SCV Water service area. LACWWD 36 demands and population are also described for purposes of providing regional completeness.

In order to estimate demand out to 2050 (assumed year of designated land use-buildout), population and water use projections were made based upon existing land uses and planned land use development compiled for the service area, including the City of Santa Clarita and County of Los Angeles land use plans. In addition, weather and water conservation effects on water usage were considered in the evaluation.

Several factors can affect demand projections, including:

- Land use revisions
- New regulations
- Consumer choices
- Economic conditions
- Transportation needs
- Water service costs
- Environmental factors
- Conservation programs
- Building and plumbing codes

The foregoing factors affect the amount of water needed, as well as the timing of when it is needed and available.

An analysis was performed that combined growth projections with water use data to forecast total water demand in future years. Water uses were broken out into specific categories as defined in the UWMP Act, and assumptions made about each to more accurately project future water use. Three separate data sets were collected and included in the analysis: historical water use by land use type, current population and projected population. The demand projections in the Plan include econometric modeling and plumbing code changes and assume that water conservation programs identified in the 2015 Water Use Efficiency Strategic Plan (WUESP) will be implemented. Additionally, climate change impacts on demands were assessed and incorporated in the demand projections. These projections were documented in the 2021 Maddaus Technical Memorandum (MWM 2021), which serves as the final land-use based demand forecast for SCV Water and which supports this Plan. This memorandum is provided in Appendix F.

## 2.2 Demographics and Socioeconomics

Water service is provided to residential, commercial, industrial, institutional, recreational, and agricultural customers and for environmental and other uses, such as fire protection and landscaping.

The total demand for water supplies is expected to continue to rise within the Santa Clarita Valley area (along with most of California) because of population growth, planned development, economic activity, environmental and water quality needs, and regulatory requirements. The demand projections included in this Plan are primarily based on current land use and future development within SCV Water service area.

In addition to land use changes, other factors including social, economic, and demographic factors may also affect water management and planning. Table 2-1 shows the breakdown of demographic and socioeconomic indicators for the City of Santa Clarita. Of the total Santa Clarita Valley population, approximately 70 percent live within the City limits, and the remainder live in unincorporated County areas. Demographic characteristics of the City are considered to be generally representative of the SCV Water service area.

**TABLE 2-1 DEMOGRAPHIC AND SOCIOECONOMIC STATISTICS FOR THE SCV WATER SERVICE AREA**

| Demographic Category | Value |
|---|---|
| **Age and Sex** | |
| Persons under 5 years, percent | 7.0% |
| Persons under 18 years, percent | 25.8% |
| Persons 65 years and over, percent | 11.7% |
| Female persons, percent | 50.1% |
| **Race and Hispanic Origin** | |
| White alone, percent | 71.0% |
| Black or African American alone, percent | 3.9% |
| American Indian and Alaska Native alone, percent | 0.8% |
| Asian alone, percent | 11.1% |
| Native Hawaiian and Other Pacific Islander alone, percent | 0.1% |
| Two or More Races, percent | 5.9% |
| Hispanic or Latino, percent | 33.5% |
| White alone, not Hispanic or Latino, percent | 47.9% |
| **Housing** | |
| Owner-occupied housing unit rate, 2015-2019 | 70.0% |
| Median value of owner-occupied housing units, 2015-2019 | $537,000 |
| Median gross rent, 2014-2018 | $2,647 |
| **Families & Living Arrangements** | |
| Persons per household, 2015-2019 | 3.06 |

| Demographic Category | Value |
|---|---|
| **Education** | |
| High school graduate or higher, percent of persons age 25 years+, 2015-2019 | 90.5% |
| Bachelor's degree or higher, percent of persons age 25 years+, 2015-2019 | 36.8% |
| **Economy** | |
| In civilian labor force, total, percent of population age 16 years+, 2015-2019 | 67.9% |
| Median household income (in 2018 dollars), 2015-2019 | $99,666 |
| Persons in poverty, percent | 8.2% |

Note: Categories and values presented in this table reflect those provided at: https://www.census.gov/quickfacts/fact/table/santaclaritacitycalifornia/PST045219 ; 2010-2019 data.

## 2.3 Land Uses in the Service Area

Land use for the SCV Water service area is based on the 2012 Santa Clarita Valley Area Land Use Plan that is part of the One Valley-One Vision (OVOV) joint planning effort between the City of Santa Clarita and the Los Angeles County Department of Regional Planning. In addition, input was provided by local land use planning agencies to better reflect current and projected land use conditions. The build out of the land use designations in the OVOV was assumed to occur in the year 2050.

In general, urban land uses are concentrated within central portions of the Valley, particularly in and around the City boundaries where there is better access to infrastructure, roads and public facilities. Open space and rural residential uses are found between more developed areas and the National Forest lands that occupy the mountain ranges to the north, east, and south of Valley communities. This distribution of land uses helps minimize encroachment into hillside areas as well as preserve open space near the Santa Clara River to protect water quality and provide scenic views, recreational trails, and habitat preservation.

## 2.4 Population

### 2.4.1 Historical Population

The methodology for estimating the historical populations of areas served by SCV Water is prescribed by DWR[3]. The method enables those suppliers whose service areas are not fully contained in existing city boundaries to obtain service area population from a data source such as a regional planning agency or an association of governments (such as Southern California Association of Governments, SCAG), assuming that their estimates use the State Department of Finance (DOF) or U.S. Census Bureau data as a basis.

Historical and existing population for the purposes of this UWMP was determined in multiple steps, building on previous population and demand assessment efforts. A 2016 analysis (MWM 2016) provided an updated land-use based growth analysis, based on 2010 Census and the MWM 2014 Population Assessment prepared for the 2015 UWMP and WUESP. The assessment utilized 2010 Census-based estimates for residential dwelling units land use types. The population was estimated by taking the number of single-family (SF) and multi-family (MF) accounts in a given year

[3] See Appendix A in "*Methodologies for Calculating Baseline and Compliance per Capita Urban Water Use*" *(DWR 2016).*

and multiplying by a persons per household (PPH) factor for the number of people living at each type of account, confirmed by the review of the census blocks and verified by high resolution aerial images, and then summing the result. Using a PPH factor, identified and anchored to the 2000 and 2010 Census, annual historical populations were calculated back to 1995. Recent year values were ground-truthed against new account data. Final results were summarized in a 2021 Technical Memorandum (MWM 2021). A summary table of total historical population for the Santa Clarita Valley is shown in Table 2-2.

**TABLE 2-2 SUMMARY OF CURRENT AND HISTORICAL POPULATION IN THE SCV WATER SERVICE AREA**

| Year | SCV WATER | LACWWD 36[b][c] | Total SCV Water Service Area |
|---|---|---|---|
| 1995 | 161,234 | n/a | 161,234 |
| 2000 | 186,236 | 3,512 | 189,748 |
| 2005 | 236,518 | 4,755 | 241,273 |
| 2010 | 253,183 | 5,046 | 258,229 |
| 2015 | 265,075 | 6,000 | 271,075 |
| 2020[a] | 280,192 | 9,000 | 289,192 |

Notes:
(a) 2020 population based on SCV Water estimate.
(b) Detailed land use information was not available for LACWWD 36. Therefore, population for LACWWD 36 assessed using the OVOV growth rate (WUESP and MWM, 2016) for 2000 to 2015. Growth rate for SCV Water population between 2015 and 2020 was applied to estimate 2020 LACWWD 36 population.
(c) LACWWD 36 included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

### 2.4.2 Population Projections

Valley-wide population projections are based on the land use dwelling unit projections using buildout estimates and the PPH estimates presented in technical memoranda prepared by MWM (2016 and 2021) and GSI (2020). New development units estimated by the City and calculated in the OVOV balance assume average PPH values derived for SCWD and NWD based on the March 2016 analysis (which was based on the 2010 Census and 2014 population assessment). A weighted average of the SCWD and NWD PPH was taken using each division's 2015 population. For County area developments of Northlake, Sloan Canyon Spring Canyon, Tapia and Tesoro del Valle, projections assume NWD PPH as derived in the 2016 MWM analysis. The NLF/FivePoint Project PPH was determined in a 2020 technical analysis (GSI 2020) and the resulting population as presented in that report was used in this analysis. Additionally, accessory dwelling units were assumed to have 1 PPH but not to represent an additional account, being located within a single-family account's property. The projections are shown in Table 2-3.

Based on these results, the population in the SCV Water service area is projected to grow at an average annual rate of approximately 1.3 percent per year over the 30-year planning period to 2050 (buildout).

**TABLE 2-3 PROJECTED POPULATION[a]**

| Year | SCV WATER | LACWWD 36 | Valley-Wide |
|---|---|---|---|
| 2025 | 321,323 | 10,757 | 332,100 |
| 2030 | 349,549 | 12,504 | 362,100 |
| 2035 | 378,267 | 14,258 | 392,500 |
| 2040 | 395,902 | 16,005 | 411,900 |
| 2045 | 404,323 | 17,756 | 422,100 |
| 2050 | 412,743 | 19,506 | 432,200 |

Notes:
(a) MWM, 2021

### 2.4.3 Comparison to City and County Planning

OVOV is a joint planning effort by the City of Santa Clarita and Los Angeles County representing the buildout of the entire Santa Clarita Valley, including the Canyon Country, Newhall, Saugus and Valencia areas of the City and the County communities of Stevenson Ranch, Castaic, Val Verde, Agua Dulce and the future Westside Communities Development Project (formerly referred to as Newhall Ranch). OVOV includes both City and County jurisdictions in its planning effort, which includes the development of a General Plan and associated EIR. Based on a detailed analysis of the OVOV Planning Area conducted by traffic analysis zones, the population of the Santa Clarita Valley at full buildout was determined to be approximately 460,000 to 482,000 residents, as shown in Table 2-4. The OVOV projections indicate a 1.6 to 1.8 percent annual growth rate of population for the Santa Clarita Valley. In comparison, the total population projected for the SCV Water service area in 2050 is approximately 432,200 residents. This represents a 1.3 percent average annual growth rate.

**TABLE 2-4 POPULATION COMPARISON**

| Year | Total SCV Water Service Area[a] | OVOV[b] |
|---|---|---|
| 2025 | 332,100 | 330,000 - 338,250 |
| 2030 | 362,100 | 356,000 - 367,000 |
| 2035 | 392,500 | 382,000 - 395,750 |
| 2040 | 411,900 | 408,000 - 424,500 |
| 2045 | 422,100 | 434,000 - 453,250 |
| 2050 | 432,200 | 460,000 - 482,000 |

Notes:
(a) See Table 2-3.
(b) OVOV General Plan Environmental Impact Report (EIR).

The estimated total SCV Water service area buildout population includes undeveloped parcels in the existing SCV Water service area, LACWWD 36, and proposed future annexations into the SCV Water service area. Both the OVOV area and the Santa Clarita Valley planning area (defined by SCAG) are slightly larger than the SCV Water service area and factor into differences in population projections shown in Table 2-4. Additionally, the OVOV Plan assumed a single PPH figure for each residential land use in the entire Santa Clarita Valley; this Plan uses a weighted average of the SCWD and NWD PPH using each division's 2015 population. As a result, some of the purveyors' PPH figures are less than the valley-wide figure used for the OVOV Plan.

## 2.5 Non-Potable Versus Potable Water Use

A small portion of water demands in the SCV Water service area is met with recycled water and there are plans to expand recycled water use. In accordance with guidance provided in DWR's UWMP Guidebook 2020, potable and non-potable uses are reported separately and/or clearly identified in this UWMP. In this Plan, non-potable water use and recycled water use are used interchangeably.

## 2.6 Past, Current, and Projected Water Use by Sector

Water use in the SCV Water service area is categorized into the following sectors:

- Single-Family Residential: A single family dwelling unit, generally a single lot containing a single home.
- Multi-Family Residential: Multiple dwelling units contained within one building or a complex of several buildings.
- Commercial: Businesses that provide or distribute a product or service. Most water use in this sector reflects water use for retail businesses.
- Industrial: This type of water user is primarily a manufacturer or processor of materials.
- Institutional: This category includes water users dedicated to public service and includes governmental facilities, hospitals and public schools.
- Irrigation: Water connections supplying water solely for landscape irrigation.
- Other: Miscellaneous water uses, such as construction and fire service.
- Recycled Water: Recycled water supplies serve non-potable uses in the SCV Water service area and are described in detail in Section 5.
- Distribution System Losses: This water use category captures non-revenue water, including real and apparent losses.

### 2.6.1 Historical Water Use

Predicting future water use requires accurate historic water use patterns and water usage records. The historical use of all water supplies used to meet municipal water requirements, including the use of local groundwater, imported water supplies and recycled water, are summarized in Table 2-5 and Table 2-6 shows the breakdown of potable versus non-potable, starting in 2003 when recycled water use began. Figure 2-1 illustrates historical water use, which shows an increasing trend in Santa Clarita Valley water demand between 1995 and 2007, followed by a slight downward trend through 2020. The decline in water use since 2007 is likely due to a combination of factors including economic conditions, water conservation efforts, and increased water use efficiency over that timeframe.

Current water use by sector is shown in Section 2.8.

## TABLE 2-5 HISTORICAL WATER USE IN SCV WATER SERVICE AREA (AF)[a]

| Year | SCV Water | LACWWD 36[b] | Total |
|---|---|---|---|
| 1995 | 45,196 | 477 | 45,673 |
| 1996 | 49,614 | 533 | 50,147 |
| 1997 | 53,388 | 785 | 54,173 |
| 1998 | 48,280 | 578 | 48,858 |
| 1999 | 56,596 | 654 | 57,250 |
| 2000 | 60,188 | 800 | 60,988 |
| 2001 | 59,784 | 907 | 60,691 |
| 2002 | 67,156 | 1,069 | 68,225 |
| 2003 | 66,272 | 1,175 | 67,447 |
| 2004 | 71,062 | 1,234 | 72,296 |
| 2005 | 69,568 | 1,200 | 70,768 |
| 2006 | 72,837 | 1,289 | 74,126 |
| 2007 | 76,086 | 1,406 | 77,492 |
| 2008 | 74,546 | 1,354 | 75,900 |
| 2009 | 68,731 | 1,243 | 69,974 |
| 2010 | 62,925 | 1,141 | 64,066 |
| 2011 | 63,633 | 1,172 | 64,805 |
| 2012 | 68,447 | 1,265 | 69,712 |
| 2013 | 72,164 | 1,296 | 73,460 |
| 2014 | 66,936 | 1,242 | 68,178 |
| 2015 | 53,515 | 976 | 54,491 |
| 2016 | 56,916 | 1,050 | 57,966 |
| 2017 | 62,461 | 1,094 | 63,555 |
| 2018 | 64,011 | 1,209 | 65,220 |
| 2019 | 59,098 | 979 | 60,077 |
| 2020 | 64,734 | 1,262 | 65,996 |

Source: 2019 Santa Clarita Valley Water Report (July 2020) and 2020 data provided by SCV Water and LACWWD 36.

Notes:

(a) Total potable and non-potable water use.

(b) LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

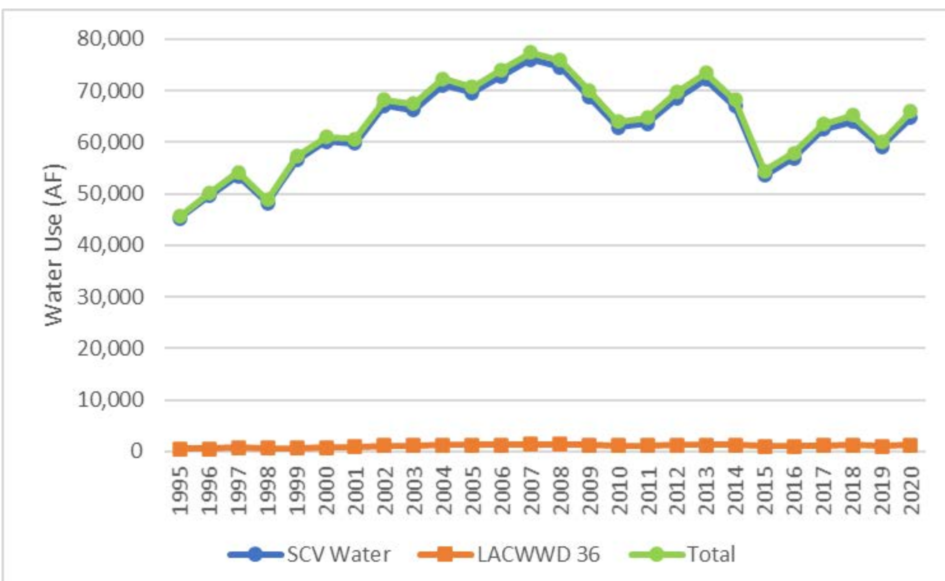
### TABLE 2-6 HISTORICAL WATER USE IN SCV WATER SERVICE AREA – POTABLE VERSUS NON-POTABLE (AF)

| Year | Potable | Non-Potable[(a)] | Total |
|---|---|---|---|
| 2003 | 67,397 | 50 | 67,447 |
| 2004 | 71,876 | 420 | 72,296 |
| 2005 | 70,350 | 418 | 70,768 |
| 2006 | 73,707 | 419 | 74,126 |
| 2007 | 77,022 | 470 | 77,492 |
| 2008 | 75,589 | 311 | 75,900 |
| 2009 | 69,646 | 328 | 69,974 |
| 2010 | 63,730 | 336 | 64,066 |
| 2011 | 64,432 | 373 | 64,805 |
| 2012 | 69,284 | 428 | 69,712 |
| 2013 | 73,060 | 400 | 73,460 |
| 2014 | 67,704 | 474 | 68,178 |
| 2015 | 54,041 | 450 | 54,491 |
| 2016 | 57,459 | 507 | 57,966 |
| 2017 | 63,054 | 501 | 63,555 |
| 2018 | 64,868 | 352 | 65,220 |
| 2019 | 59,619 | 458 | 60,077 |
| 2020 | 65,528 | 468 | 65,996 |

Source: 2019 Santa Clarita Valley Water Report (July 2020) and 2020 data provided by SCV Water and LACWWD 36.

Note:
(a) To date, non-potable water has only been used within the VWD service area.

### FIGURE 2-1 HISTORICAL WATER USE (AF)




Source: 2019 Santa Clarita Valley Water Report (July 2020) and 2020 data provided by SCV Water and LACWWD 36.

Note: Water use shown here includes potable and non-potable (recycled water) use. Recycled water makes up less than 1 percent of total use.

### 2.6.2 Distribution System Water Loss

New legislation requires that the 2020 UWMP include an analysis of and report on distribution system water losses for each of the five years preceding the plan update. Water losses represent a combination of apparent losses and real losses. For the SCV Water system, water losses are currently still reported by water division (VWD, NWD, and SCWD), until a consolidated permit has been obtained from the Division of Drinking Water (DDW). Distribution system water loss is presented accordingly, below. Water loss data is unavailable for LACWWD 36.

**TABLE 2-7 DISTRIBUTION SYSTEM WATER LOSS – VWD[a]**

| Reporting Period Start Date (Month/Year) | Volume of Water Loss (AF) |
|---|---|
| January 2015 | 606[b] |
| January 2016 | 581[b] |
| January 2017 | 1,650[b] |
| July 2018 | 1,823[b] |
| July 2019 | 2,314[b] |

Notes:
(a) Water loss volumes are based on reporting and estimates for the VWC system, now VWD.
(b) Taken from the field “Water Losses” from the AWWA Worksheet.

**TABLE 2-8 DISTRIBUTION SYSTEM WATER LOSS – NCWD [a]**

| Reporting Period Start Date (Month/Year) | Volume of Water Loss (AF) |
|---|---|
| January 2015 | 655[b] |
| July 2016 | 201[b] |
| July 2017 | 294[b] |
| July 2018 | 231[b] |
| July 2019 | 274[b] |

Notes:
(a) Water loss volumes are based on reporting and estimates for the NWCD system, now NWD.
(b) Taken from the field “Water Losses” from the AWWA Worksheet.

**TABLE 2-9 DISTRIBUTION SYSTEM WATER LOSS – SCWD [a]**

| Reporting Period Start Date (Month/Year) | Volume of Water Loss (AF) |
|---|---|
| July 2014 | 715[a] |
| July 2016 | 2,201[a] |
| July 2017 | 1,645[a] |
| July 2018 | 2,785[a] |
| July 2019 | 2,317[a] |

Notes:
(a) Taken from the field “Water Losses” from the AWWA Worksheet.

## 2.7 Projected Water Use

The demand projections for the SCV Water service area have been estimated through 2050. For this UWMP, a land use-based approach was used (which incorporates information from a population-based approach) because such an approach can further reflect assumptions regarding how future development is planned. It can also demonstrate how water usage patterns have evolved from what they were in the past as the Santa Clarita Valley approaches buildout.

### 2.7.1 Potable Water Use Projections

Potable water use projections are based on a combination of SCV Water and LACWWD 36 demands. For SCV Water's three water divisions (NWD, SCWD, and VWD), the potable demand forecast was determined from land-use-based estimates from 2020 through 2050 (buildout). The land use-based estimates were determined in a land use analysis that compiled data from planned development contracts and the OVOV General Plan, including developments described in Section 2.4.2. In general, the land use analysis leveraged the following information:

- Estimated dwelling units provided by City of Santa Clarita and Los Angeles County Planning Department,
- Land use-based GIS map shape files from City of Santa Clarita and Los Angeles County planners for determining the appropriate number of dwelling units and non-residential building area,
- Queries from GIS maps to determine dwelling units were multiplied by persons per household from the U.S. Census appropriate to each retailer's service area,
- Monthly billing data by customer category (single-family, multi-family, non-residential, etc.),
- Climate and economic adjustment factors for normalizing demands, and
- Future demand factors.

The LACWWD 36 potable demand projections relied on a population-based approach using OVOV-based population estimates. Based on these estimates for SCV Water and LACWWD 36, potable demand projections were developed using a Least Cost Planning Decision Support System Model (DSS Model) which incorporates econometric-based adjustments to better develop an accurate forecast through the year 2050. The DSS Model accounts for existing and future potable water consumption by water customers and estimated passive and active water conservation savings. Demand adjustments include accounting for climate change, drought rebound, weather normalization, work-at-home trends, and overwatering/irrigation equipment efficiency degradation.

In addition, recent legislation provides that, where available, demand projections "shall" display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area. If such information is reported, the assessment will provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. The UWMP must indicate the extent that the demand projections consider savings from codes, standards, ordinances, or transportation and land use plans (referred to as savings from passive conservation).

The demand forecast conducted for this Plan accounts for savings from passive conservation and active conservation. Passive conservation savings focus on plumbing code change impacts on indoor fixtures and include the following laws, codes and regulations:

- National Plumbing Code (also known as the Energy Policy Act or EPAct) – Passed in 1992, has long required more efficient plumbing fixtures to be for sale throughout the United States.

- Assembly Bill (AB) 715 – California Plumbing Code includes the new California Code of Regulations (CCR) Title 20 Appliance Efficiency Standards requiring High Efficiency Toilets and High Efficiency Urinals to be exclusively sold in the state by January 1, 2014.

- SB 407 and SB 837 – SB 407 addresses plumbing fixture retrofits on resale or remodel, requiring single family residential property owners of pre-1994 buildings or dwelling units to replace existing plumbing fixtures with water conserving fixtures by 2017 and multi-family and commercial property owners of pre-1994 buildings to replace fixtures by 2019. It also requires all owners to upgrade existing buildings upon any remodel initiated after January 1, 2014 and authorizes the enactment of local ordinances for greater water savings. SB 837 (enacted in 2011) requires that sellers of real estate property disclose on their Real Estate Transfer Disclosure Statement whether their property complies with these requirements. Both laws are intended to accelerate the replacement of older, low efficiency plumbing fixtures, and ensure that only high efficiency fixtures are installed in new residential and commercial buildings.

- 2019 CALGreen and 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations – Fixture characteristics in the DSS Model are tracked in new accounts, which are subject to the requirements of the 2019 California Green Building Code and 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations adopted by the California Energy Commission (CEC) on September 1, 2015. The CEC 2015 appliance efficiency standards apply to the following new appliances, if they are sold in California: showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, public lavatory faucets, commercial pre-rinse spray valves, urinals, and toilets. The DSS Model accounts for plumbing code savings due to the effects these standards have on showerheads, faucet aerators, urinals, toilets, and clothes washers.

- AB 1881 – State Model Water Efficient Landscape Ordinance adopted by the City of Santa Clarita effective January 1, 2010; improves efficiency in Water use in new and existing urban irrigated landscapes.

The conservation savings analysis includes SCV Water's current active water conservation measures and also passive water savings such as indoor plumbing code measures as follows:

- Fixture Retrofit on Resale or Water Account Change*
- New Development Submetering*
- Landscape & Irrigation Codes*
- Water Waste Implementation
- AMI
- Smart Controller Rebates
- Irrigation Incentives
- Irrigation Check-Ups
- Pool Cover Rebates
- Residential Check-Ups
- Hot Water on Demand Rebate

- Real Water Loss Reduction
- Education
- Water Smart Workshop Credit
- Landscape Transformation Incentives
- CII Check-Ups
- CII HET and HEU Rebates
- High Efficiency Fixture Giveaway
- Schools Retrofits

This active conservation methodology is an update from SCV Water's 2016 Water Use Efficiency Strategic Plan (WUESP) and the 2015 UWMP analysis.

Table 2-10 provides a summary of the projected total water use for the SCV Water service area. Table 2-11 and Table 2-12 show current and projected water use by water use sector, through 2050.

Additional details of the demand projections analysis are provided in the 2021 Maddaus Technical Memorandum (MWM 2021).

### 2.7.2 Non-Potable Water Use Projections

Non-potable demands, i.e., recycled water demands were also estimated as part of the 2021 MWM Water Demand Study. Demand projections were based on volumes and schedules for recycled water use reported in the 2016 Recycled Water Master Plan, updates provided by SCV Water, and new estimates for the Westside Communities. Recycled water supply projections were estimated based on the amount of wastewater produced at the local water treatment plants and then calculating the projected indoor water use available for recycled water supply.

In comparison, the potential recycled water demand estimates exceed total projected recycled water supply. A major reason for this is a lag in supply as new development builds out to generate new recycled water. As such, future recycled water use is limited by supply availability. Therefore, non-potable water use accounted for in total demand tables (Table 2-10 and Table 2-12) reflect recycled water use volumes that are projected to be met by recycled water supply. The difference, which would be met with potable water supplies, is captured as "make-up" water in demand tables below.

Additional details on recycled water use are presented in Section 5.

### TABLE 2-10 SUMMARY OF PROJECTED WATER USE (AF)[a][b]

| Water Use Type | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| SCV Water | | | | | | |
| Potable[c] | 72,900 | 76,100 | 81,600 | 84,800 | 87,500 | 89,900 |
| Non-Potable[d] | 2,300 | 4,100 | 5,500 | 6,900 | 7,900 | 9,000 |
| LACWWD 36[e] | | | | | | |
| Potable | 1,300 | 1,400 | 1,600 | 1,800 | 2,000 | 2,200 |
| Non-Potable | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total Use[f]** | **76,400** | **81,700** | **88,700** | **93,600** | **97,500** | **101,000** |

Notes:

(a) Based on MWM 2021.

(b) Values rounded to the nearest hundred. Due to rounding, total use values may not equal sum of individual line items.

(c) Demands include savings from plumbing code and standards, and active conservation. Demands account for estimated increase from climate change.

(d) Projected non-potable water use based on available supply. Additional details in Section 5.

(e) LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP. Demands account for passive conservation but do not include active conservation savings. SCV Water efforts that target LACWWD 36 customers are included in SCV Water active conservation savings.

## TABLE 2-11 LACWWD 36 CURRENT AND PROJECTED WATER USE BY USE TYPE (AFY)[a][b][c]

| Year | Single-Family Residential | Multi-Family Residential | Commercial | Industrial | Institutional | Irrigation | Other | Non-Revenue Water[d] | Non-Potable Water | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020[e] | 1,300 | | | | | | | | 0 | **1,300** |
| 2025 | 1,000 | 21 | 4 | 0 | 100 | 0 | 4 | 200 | 0 | **1,300** |
| 2030 | 1,100 | 24 | 5 | 0 | 100 | 0 | 4 | 200 | 0 | **1,400** |
| 2035 | 1,300 | 28 | 6 | 0 | 100 | 0 | 5 | 300 | 0 | **1,600** |
| 2040 | 1,400 | 32 | 7 | 0 | 100 | 0 | 6 | 300 | 0 | **1,800** |
| 2045 | 1,500 | 35 | 7 | 0 | 100 | 0 | 6 | 300 | 0 | **2,000** |
| 2050 | 1,700 | 39 | 8 | 0 | 100 | 0 | 7 | 300 | 0 | **2,200** |

Notes:

(a) Values rounded to the nearest hundred. Due to rounding, total use values may not equal sum of individual line items.

(b) 2020 values based on actual use. Projections for 2025 to 2050 from MWM 2021.

(c) LACWWD 36 is included for purposes of providing regional completeness; however, it is not required to prepare an UWMP.

(d) Non-revenue Water (NRW) may include unbilled authorized consumption as well as water that is "lost" before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies).

(e) 2020 water use was not available by sector for LACWWD 36 at the time of the writing of this UWMP. Volume shown for 2020 reflects total 2020 water use.

## TABLE 2-12 SCV WATER CURRENT AND PROJECTED WATER USE BY USE TYPE(a)(b)

| Year | Single-Family Residential(c) | Multi-Family Residential(d) | Commercial | Industrial | Institutional | Irrigation | Other | Recycled Water Demand Make-Up Water(e) | Non-Revenue Water(f) | Non-Potable Water(g) | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 34,300 | 7,000 | 5,300 | 1,900 | 2,400 | 12,100 | 400 | 0 | 900 | 500 | **64,700** |
| 2025 | 32,700 | 8,300 | 5,100 | 1,800 | 1,800 | 12,800 | 2,100 | 2,300 | 6,000 | 2,300 | **75,200** |
| 2030 | 34,700 | 8,900 | 5,500 | 1,800 | 2,100 | 12,800 | 2,100 | 2,400 | 5,800 | 4,100 | **80,200** |
| 2035 | 36,200 | 10,500 | 5,800 | 2,100 | 2,100 | 13,400 | 2,400 | 2,900 | 6,200 | 5,500 | **87,100** |
| 2040 | 37,500 | 11,000 | 6,300 | 2,300 | 2,000 | 13,200 | 3,700 | 2,200 | 6,600 | 6,900 | **91,800** |
| 2045 | 38,400 | 11,200 | 6,800 | 2,500 | 2,000 | 13,100 | 5,000 | 1,500 | 7,000 | 7,900 | **95,500** |
| 2050 | 39,100 | 11,500 | 7,300 | 2,700 | 2,000 | 12,900 | 6,300 | 800 | 7,400 | 9,000 | **98,800** |

Notes:

(a) Values rounded to the nearest hundred. Due to rounding, total use values may not equal sum of individual line items.

(b) 2020 values based on actual use. Projections for 2025 to 2050 from MWM 2021.

(c) Includes existing and new indoor and new outdoor single family residential uses.

(d) Includes existing and new indoor and new outdoor multi-family residential uses.

(e) Volume of projected recycled water demand that is in excess of projected supply and anticipated to be met with potable water sources.

(f) Non-revenue water (NRW) may include unbilled authorized consumption as well as water that is “lost” before it reaches the customer. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies).

(g) Non-potable water use is discussed in more detail in Section 5.

## 2.8 Characteristic Five-Year Water Use

Table 2-13 summarizes the projected total water demands for the next five years without drought conditions, i.e., "unconstrained demand."

**TABLE 2-13 CHARACTERISTIC 5-YEAR WATER DEMANDS (AF)[(a)(b)]**

| Water Demands | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| SCV Water | | | | | |
| Potable | 67,300 | 68,200 | 68,600 | 69,300 | 70,600 |
| Non-Potable | 1,400 | 2,200 | 3,800 | 4,200 | 4,600 |
| LACWWD 36 | | | | | |
| Potable | 1,100 | 1,200 | 1,200 | 1,200 | 1,300 |
| Non-Potable | 0 | 0 | 0 | 0 | 0 |
| **Total Demand** | 69,800 | 71,600 | 73,700 | 74,800 | 76,400 |

Notes:
(a) Values rounded to the nearest hundred.
(b) Annual projections provided by MWM.

## 2.9 Water Use for Lower Income Households

The UWMP Act requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county general plan in the service area of the supplier.

Housing elements rely on the Regional Housing Needs Allocation (RHNA) generated by the State Department of Housing and Community Development (HCD) to allocate the regional need for housing to the regional Council of Governments (COG) (or a HCD for cities and counties not covered by a COG) for incorporation into housing element updates. Before the housing element is due, the HCD determines the total regional housing need for the next planning period for each region in the state and allocates that need. The COGs then allocate to each local jurisdiction its "fair share" of the RHNA, broken down by income categories – very low, low, moderate and above moderate – over the housing element's planning period.

The City of Santa Clarita and the County last updated their housing elements in 2008, and it covers the planning period 2008-2014. These elements incorporate the formally transmitted Los Angeles County housing allocation that was incorporated into the Final RHNA approved by the SCAG Regional Council on October 4, 2012 (SCAG 2013). The allocation for very low and low income classes as defined by the California Health and Safety Code were the following for the City of Santa Clarita:

- Very Low – 9.98%
- Low – 6.75%

The SCAG 6th Cycle FINAL RHNA Allocation Plan was adopted in 2021, however data is unavailable on the very low and low income household distribution in that report. As such, percentages from the 2013 RHNA are still used in this UWMP.

Neither the SCAG RHNA nor the City of Santa Clarita and County housing elements further classify the allocation of low income households into single-family and multi-family residential housing units. For this reason, it is not possible to project water use for lower income households by this specific land use category. However, to remain consistent with the intent and requirements of the UWMP Act, the water use projections for very low and low residential income households based on the income category were identified and their classification percentage was applied to the purveyors' demand projections with the plumbing code and Active Conservation as shown in Table 2-14 below.

Neither the City of Santa Clarita nor the County will deny or condition approval of water services, or reduce the amount of services applied for by any proposed development unless one of the following occurs:

- City of Santa Clarita and/or the County specifically find that SCV Water does not have sufficient Water supply.
- City of Santa Clarita and/or the County is subject to a compliance order issued by the State Division of Drinking Water (DDW) that prohibits new Water connections.
- The applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

**TABLE 2-14 LOWER INCOME WATER DEMANDS (AF) (a)(b)**

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| **SCV Water** | | | | | | |
| Total Residential Potable Demand(c) | 41,000 | 43,600 | 46,800 | 48,500 | 49,600 | 50,600 |
| Very Low(d) | 4,100 | 4,400 | 4,700 | 4,800 | 5,000 | 5,000 |
| Low(e) | 2,800 | 2,900 | 3,200 | 3,300 | 3,300 | 3,400 |
| *Subtotal* | 6,900 | 7,300 | 7,800 | 8,100 | 8,300 | 8,500 |
| **LACWWD 36** | | | | | | |
| Total Residential Potable Demand(c) | 1,000 | 1,100 | 1,300 | 1,400 | 1,600 | 1,700 |
| Very Low(d) | 100 | 100 | 100 | 100 | 200 | 200 |
| Low(e) | 100 | 100 | 100 | 100 | 100 | 100 |
| *Subtotal* | 200 | 200 | 200 | 200 | 300 | 300 |
| **Total (Very Low and Low Income)(f)** | **7,000** | **7,500** | **8,000** | **8,400** | **8,600** | **8,800** |

Notes:
(a) Values rounded to the nearest hundred.
(b) Based on 2012 Adopted SCAG RHNA; distribution for very low income (9.98%) and low income (6.75%).
(c) Total potable demand for single family and multi-family residential customers (Table 2-10).
(d) 9.98% of total residential demand. Already accounted for in total demand projections.
(e) 6.75% of total residential demand. Already accounted for in total demand projections.
(f) Due to rounding, total use values may not equal sum of individual line items.

## 2.10 Other Factors Affecting Water Usage

The demand projections presented above account for numerous factors that are anticipated to impact demands over the planning period, including but not limited to changes in land use, passive conservation savings, active conservation savings, and climate change. Additional adjustment factors were also incorporated to account for weather normalization, drought rebound, and work-at-home trends in recent year demands. Additional details on the land-use based analysis, conservation savings accounting, and demand adjustment factors are provided in the 2021 Maddaus Technical Memorandum (MWM 2021).

# Section 3: SBX7-7 Baseline, Targets, and 2020 Compliance

This Section describes methodologies used to calculate targets and demonstrates compliance with 2020 target water use reductions for SCV Water. The Water Conservation Act of 2009 (SBx7-7) is one of four bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). The Water Conservation Act of 2009 provided the regulatory framework to support the goal of achieving a statewide reduction in urban per capita water use as described in the 20x20 Water Conservation Plan (DWR, 2010). Consistent with SBx7-7, each retail water supplier determined and reported baseline water consumption and establish water use targets in gallons per capita per day (GPCD). In the 2020 UWMP, each retail water supplier is required to demonstrate compliance with its established 2020 target.

SBx7-7 reporting for the Santa Clarita Valley began with the 2010 UWMP and continued in the 2015 UWMP for each of the CLWA retailers. In the 2015 CLWA UWMP, retailers demonstrated compliance with interim water use targets individually. Since then, CLWA, which included SCWD and NCWD merged to become SCV Water, and shortly thereafter VWC was incorporated into SCV Water. With this 2020 UWMP, SCV Water is reporting on water use reduction and SBx7-7 compliance as a whole. SBx7-7 calculations for the SCV Water service area, for this 2020 UWMP, were performed based on guidance for mergers outlined in Appendix P of the Final Draft DWR UWMP Guidebook (March 2021). The guidance allows for calculation and reporting of baselines and targets for a new service area (annexed/merged and existing) as one entity.

## 3.1 Existing and Target Per Capita Water Use

SCV Water first reported its Base Daily Water Use in the 2010 UWMP, required for each of its then individual retail purveyors (NCWD, VWC, and SCWD). As mentioned above, this calculation is being updated for the 2020 UWMP to demonstrate compliance for the merged SCV Water service area. The Base Daily Water Use calculation is based on gross water use and is on a ten-year average ending no earlier than 2004 and no later than 2010, or a 15-year average if ten percent of 2008 demand was met by recycled water. Base Daily Water Use accounts for all water sent to retail customers, excluding:

- Recycled water
- Water sent to another water agency
- Water that went into storage

In this 2020 UWMP, SCV Water will set a new 2020 water use target (herein called the Compliance Water Use Target). There are four methods for calculating the Compliance Water Use Target:

1. Eighty percent of the urban water supplier's baseline per capita daily water use

2. Per capita daily water use estimated using the sum of the following:

    a. For indoor residential water use, 55 GPCD water use as a provisional standard. Upon completion of DWR's 2016 report to the Legislature reviewing progress toward achieving the statewide 20 percent reduction target, this standard may be adjusted by the Legislature by statute.

    b. For landscape irrigated through dedicated or residential meters or connections, Water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in section 490 et seq. of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992.

    c. For commercial, industrial, and institutional (CII) uses, a ten percent reduction in Water use from the baseline CII Water use by 2020.

3. Ninety-five percent of the applicable state hydrologic region target as stated in the state's April 30, 2009, draft 20 by 2020 Water Conservation Plan. SCV Water is located within the South Coast Hydrologic Region (target for this region is 149 GPCD).

4. Reduce the 10 or 15-year Base Daily Per Capita Water Use a specific amount for different Water sectors:

    a. Indoor residential Water use to be reduced by 15 GPCD or an amount determined by use of DWR's "Best Management Practice (BMP) Calculator".

    b. A 20 percent savings on all unmetered uses.

    c. A 10 percent savings on baseline CII use.

    d. A 21.6 percent savings on current landscape and Water loss uses.

SCV Water chose method number 1, which was the 80% of the baseline per capita daily water use.

An Interim Water Use Target is set as a halfway point between the Base Daily Water Use GPCD and the 2020 Compliance Water Use Target GPCD, however compliance with meeting this Interim Water Use Target is not required for the 2020 UWMP. All of the purveyors met the 2015 Interim Water Use Targets. Please refer to the 2010 and 2015 UWMPs for the specific details of these calculations.

Finally, the selected Compliance Water Use Target must be compared against what DWR calls the "Maximum Allowable GPCD". The Maximum Allowable GPCD is based on 95 percent of a 5-year average base gross water use ending no earlier than 2007 and no later than 2010. The Maximum Allowable GPCD is used to determine whether a supplier's 2015 and 2020 per capita water use targets meet the minimum water use reduction requirements of SBx7-7. If an agency's Compliance Water Use Target is higher than the Maximum Allowable GPCD, the agency must instead use the Maximum Allowable GPCD as its target. As shown below, the Maximum Allowable GPCD does not apply to any of the water retailers herein.

In accordance with Appendix P of the Final Draft DWR UWMP Guidebook, the baseline per capita water use was re-calculated for the entire SCV Water service area. Table 3-1 provides the data used to re-calculate the Base Daily Per Capita Water Use in GPCD, and the 10-year and 5-year base periods for the entire SCV Water service area. Table 3-2 provides the data used to determine whether the Agency's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement of five percent. If the 2020 target is greater than the 5-year value, the target is reduced to this value. These tables show that the 2020 targets do not exceed these minimum values. Per SBx7-7 requirements, the 2015 interim targets were therefore set to the mid-point between the 10-year baseline per capita Water use and the 2020 target.

**TABLE 3-1 SCV WATER BASE DAILY PER CAPITA WATER USE**

| Base Period Year | Calendar Year | Distribution System Population | Annual System Gross Water Use (AFY) | Annual Daily Per Capita Water Use (GPCD) | 10-Year Average (GPCD) | 5-Year Average (GPCD) |
|---|---|---|---|---|---|---|
| 1 | 1995 | 161,234 | 45,196 | 250 | | |
| 2 | 1996 | 164,417 | 49,614 | 269 | | |
| 3 | 1997 | 168,825 | 53,388 | 282 | | |
| 4 | 1998 | 173,802 | 48,280 | 248 | | |
| 5 | 1999 | 179,260 | 56,596 | 282 | | |
| 6 | 2000 | 186,236 | 60,188 | 289 | | |
| 7 | 2001 | 196,619 | 59,829 | 272 | | |
| 8 | 2002 | 206,400 | 67,151 | 290 | | |
| 9 | 2003 | 215,779 | 66,219 | 274 | | 270 |
| 10 | 2004 | 227,823 | 70,642 | 277 | 273 | 268 |
| 11 | 2005 | 237,065 | 69,113 | 260 | 274 | 261 |
| 12 | 2006 | 242,464 | 71,820 | 264 | 274 | 253 |
| 13 | 2007 | 247,194 | 75,435 | 272 | 273 | |
| 14 | 2008 | 248,909 | 74,235 | 266 | 275 | |
| 15 | 2009 | 250,624 | 68,403 | 244 | 271 | |
| 16 | 2010 | 254,548 | 62,589 | 220 | 264 | |
| Period Selected | | | | | **275** | **270** |

Notes:
(a) Shaded cells show calendar years used in selected 5-year average.

### 3.1.1 Urban Water Use Targets for SBX7-7 Reduction

As explained above, SBx7-7 requires that the Agency identify its demand reduction targets for years 2015 and 2020 by utilizing one of four options and the Agency chose Option 1 which is 80% of the baseline GPCD Water use (i.e., a 20% reduction).

This results in the 2020 GPCD target (Compliance Water Use Targets) for the Agency as shown in Table 3-2.

### TABLE 3-2 SCV WATER COMPONENTS OF TARGET DAILY PER CAPITA WATER USE

| Period | Value | | Unit | |
|---|---|---|---|---|
| 10-year period selected for baseline GPCD | First Year | 1999 | Last Year | 2008 |
| 5-year period selected for maximum allowable GPCD | First Year | 2003 | Last Year | 2007 |
| Highest 10-year Average | 275 | | GPCD | |
| Highest 5-year Average | 270 | | GPCD | |
| Compliance Water Use Target (20% Reduction on 10yr) | 220 | | GPCD | |
| Minimum Water Use Reduction Requirement (5% Reduction 5yr) | 261 | | GPCD | |
| **2020 Target** | **220** | | GPCD | |
| **2015 Interim Target** | **248** | | GPCD | |
| **Methodology Used** | **Option #1** | | | |

## 3.1.2 2020 Target Compliance

In the 2020 UWMP, SCV Water must demonstrate compliance with the target established for 2020. Compliance is done through the review of the SBx7-7 Verification Tables and SBx7-7 Compliance tables submitted with the 2020 Plan (included as Appendix D).

Table 3-3 summarizes the Agency's compliance GPCD for 2020. LACWWD 36 is not required to prepare an UWMP and is therefore not required to show compliance with SBx7-7, however, the District's conservation is reported to show its contribution to overall conservation efforts.

### TABLE 3-3 2020 BASE DAILY PER CAPITA WATER USE AND 2020 SBX7-7 COMPLIANCE

| | SCV WATER | LACWWD 36[(c)] |
|---|---|---|
| 2020 Distribution System Population[(a)] | 280,192 | 9,000 |
| 2020 Annual System Gross Water Use (AFY)[(b)] | 64,266[(d)] | 1,262 |
| 2020 Annual Daily Per Capita Water Use (GPCD) | 205 | 125 |
| 2020 Goal | 220 | NA |
| **Goal Met?** | **YES** | **NA** |

Notes:
(a) From MWM, 2021.
(b) Actual 2020 data provided by SCV Water.
(c) LACWWD 36 is not required to prepare an UWMP and is therefore not required to show compliance with SBx7-7 however it is reported to show the District's contribution to overall conservation efforts.
(d) Excludes 468 AF of delivered recycled water.

# Section 4: Water Resources

## 4.1 Overview

This section describes the water resources available to SCV Water through 2050, the next thirty (30) years. SCV Water's existing water resources include imported supplies, local groundwater, recycled water (discussed further in Section 5) and water from existing groundwater banking programs. Planned supplies include new groundwater production as well as additional banking programs. Table 4-1 summarizes actual water supplies used in 2020, by supply source. It is important to note that 2020 was a dry year, resulting in use of banking and exchange program supplies to make up for reduced availability of select imported supplies. Additionally, 2020 supply utilization reflects temporary groundwater pumping conditions resulting from water quality impacts on groundwater supplies. Supplies used in 2020 are not indicative of available future water supplies. Existing and planned supplies are described in this Section, and supply reliability analyses under various hydrologic conditions are presented in Section 7.

**TABLE 4-1 SUMMARY OF WATER SUPPLIES USED IN 2020 (AF)**
[DWR TABLE 6-8]

| | **2020[(a)]** |
|---|---|
| Existing Groundwater | |
| Alluvial Aquifer | 7,571 |
| Saugus Formation | 9,761 |
| **Total Groundwater[(b)]** | **17,332** |
| Recycled Water | |
| **Total Recycled** | **468** |
| Imported Water | |
| State Water Project | 14,587 |
| Buena Vista-Rosedale | 11,000 |
| Yuba Accord Water | 284 |
| **Total Imported** | **25,871** |
| Existing Banking and Exchange Programs[(c)] | |
| Rosedale Rio-Bravo Bank | 1,600 |
| Semitropic Bank | 5,000 |
| Rosedale Rio-Bravo Exchange | 14,451 |
| Antelope Valley East Kern Water Agency Exchange | 1,406 |
| West Kern Exchange | 500 |
| **Total Bank/Exchange** | **22,957** |
| **Total Water Usage** | **66,630** |

Notes:
(a) Actual 2020 supplies utilized. These values are not indicative of available future supplies. The projected availability of future supplies under various hydrologic conditions is detailed in Section 7.
(b) Reflects temporary greater pumping of Saugus Formation to mitigate for lost Alluvial Aquifer pumping pending installation of PFAS treatment described in Tables 4-7A, 4-8A, and in Tables 4-7B, 4-7C, 4-8B and 4-8C in Appendix E. Additional details on water quality impacts to groundwater supply availability provided in Section 4.3 and Section 6.
(c) Banking and exchange programs used to firm supplies due to dry SWP conditions and reduced access to local groundwater caused by PFAS and perchlorate impacts. Banking and exchange programs not used do not reflect a normal year long term water supply.

The term "dry" is used throughout this section and in subsequent sections concerning water resources and reliability as a measure of supply availability. As used in this Plan, dry years are those years when supplies are the lowest and demands are the highest, which occurs primarily when precipitation is lower than the long-term average precipitation. The impact of low precipitation in a given year on a particular source of supply may differ based on how low the precipitation is, or whether the year follows a high-precipitation year or another low-precipitation year. For the SWP, a low-precipitation year may or may not affect supplies, depending on how much water is in SWP storage at the beginning of the year. Also, dry conditions can differ geographically. For example, a dry year can be local to the Valley area (thereby affecting local groundwater replenishment and production), local to northern California (thereby affecting SWP water deliveries), or statewide (thereby affecting both local groundwater and the SWP). When the term "dry" is used in this Plan, statewide drought conditions are assumed, affecting both local groundwater and SWP supplies at the same time.

## 4.2 Imported Water Supplies

SCV Water's imported water supplies consist primarily of SWP supplies, which were first delivered to SCV Water (CLWA at the time) in 1980. From the SWP, SCV Water also has access to water from Flexible Storage Accounts in Castaic Lake, which are planned for dry-year use, but are not strictly limited as such. More detail on SWP supplies is provided in Section 4.2.1. In addition to its SWP supplies, SCV Water has an imported surface supply from the Buena Vista Water Storage District (BVWSD) and Rosedale Rio-Bravo Water Storage District (RRBWSD) in Kern County, which was first delivered to SCV Water (CLWA at the time) in 2007. More information on this supply is provided in Section 4.2.2. Additionally, Newhall Land and Farming Company (Newhall Land or NLF) (now also referred to as Five Point) has a water transfer supply from a source in Kern County, referred to as Nickel Water that for planning purposes is anticipated to be available beginning in 2035. More information on this supply is provided in Section 4.2.3.2 below.

### 4.2.1 State Water Project Supplies

#### 4.2.1.1 SWP Facilities

The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. Today, the SWP includes 28 dams and reservoirs, 26 pumping and generating plants and approximately 660 miles of aqueducts. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the aqueduct then divides into the East and West Branches. SCV Water takes delivery of its SWP water at Castaic Lake, a terminal reservoir of the West Branch. From Castaic Lake, SCV Water delivers its SWP supplies to its customers through an extensive transmission pipeline system.

#### 4.2.1.2 SWP Water Supply Contract Amendments

**SWP Contract Extension**

The Department of Water Resources (DWR) provides water supply from the SWP to 29 SWP Contractors (Contractors) in exchange for Contractor payment of all costs associated with providing that supply. DWR and each of the Contractors entered into substantially uniform long-term water supply contracts (Contracts) in the 1960s with 75-year terms. The first Contract terminates in 2035, and most of the remaining Contracts terminate within three years after that. SCV Water is one of the 29 Contractors that have an SWP Contract with DWR.

The majority of the capital costs associated with the development and maintenance of the SWP is financed using revenue bonds. These bonds have historically been sold with 30-year terms. It has become more challenging in recent years to affordably finance capital expenditures for the SWP because bonds used to finance these expenditures are limited to terms that only extend to the year 2035, less than 15 years from now. To ensure continued affordability of debt service to Contractors, it was necessary to extend the termination date of the Contracts to allow DWR to continue to sell bonds with 30-year terms.

Public negotiations to extend the Contracts took place between DWR and the Contractors during 2013 and 2014. An Agreement in Principle (AIP) was reached and was the subject of analysis under the requirements of the California Environmental Quality Act (CEQA) (Notice of Preparation dated September 12, 2014). On December 11, 2018, the DWR Director approved the Water Supply Contract Extension Project. In accordance with CEQA, DWR also filed its Notice of Determination for the project with the Governor's Office of Planning and Research. In addition, DWR filed an action in Sacramento County Superior Court to validate the Contract Extension Amendments (https://Water.ca.gov/Programs/State-Water-Project/Management/Water-Supply-Contract-Extension). After CEQA was completed and contract language was finalized, DWR and 22 contractors have executed the Extension Amendment, including SCV Water, which executed the amendment in February 2019. The Extension Amendment would extend the contracts through 2085 or the period ending with the latest maturity date of any bond issued to finance the construction costs of Project facilities, whichever is longer. The amendment will improve the project's overall financial integrity and management. The Extension Amendment is the subject of a validation action and two CEQA lawsuits.

**Water Management Tools Contract Amendment**

In a December 2017 Notice to Contractors, DWR indicated its desire to supplement and clarify existing SWP Contract's water transfer and exchange provisions to provide improved water management among public water agencies (PWAs). The purpose was to seek greater flexibility to manage the system in order to address changes in hydrology and further constraints placed on DWR's operation of the SWP. To this end, PWAs and DWR conducted public negotiations in 2017 with the purpose of improving these water management tools (WMT). Importantly, the transfers and exchanges provided for in a WMT Contract amendment are limited to those transfers and exchanges between PWAs with SWP Contracts.

In June 2018, PWAs and DWR agreed upon the AIP, which included specific principles to accomplish this goal. These principles included a process for transparency for transfers and exchanges, new flexibility for single and multi-year non-permanent water transfers, allowing PWAs to set terms of compensation for transfers and exchanges, and providing for the limited transfer of carryover and Article 21 water (defined in Section 4.2.1.3 below).

In October 2018, a Draft Environmental Impact Report (DEIR) was circulated based on the agreed upon AIP principles for a WMT Contract amendments. At that time, the AIP included cost allocation for the California WaterFix project (WaterFix). In early 2019, Governor Newsom decided not to move forward with WaterFix and DWR rescinded its approvals for WaterFix. After this shift, the PWAs and DWR held a public negotiation session and agreed to remove the WaterFix cost allocation sections from the AIP, but to keep all the water management provisions in the AIP. The AIP for water management provisions was finalized on May 20, 2019. In February 2020, DWR amended and recirculated the Partially Recirculated DEIR for the SWP Supply Contract Amendments for Water Management and in August 2020, DWR certified the Final EIR. The EIR is being challenged in court. The WMT Amendment became effective for those PWAs who executed the amendment on February 28, 2021. The transfer and exchange tools will be available during litigation unless there is a final court order prohibiting their implementation.

**Delta Conveyance Project Agreement in Principle**

On March 29, 2021, as part of a public negotiation that began in 2019, DWR and PWAs agreed upon an Agreement in Principle for a Contract amendment on a Delta Conveyance Project (DCP). The objective of the DCP AIP is to develop an agreement to equitably allocate costs and benefits among SWP PWAs of a potential Delta Conveyance Facility that preserves operational flexibility. A decision by each participating PWA for approving a contract amendment with DWR would not occur until after the environmental review for the DCP is completed. That decision would likely occur in 2023, at the earliest. Additional details on the DCP are provided in Section 4.2.1.9.

#### 4.2.1.3 SWP Water Supplies

Each SWP contractor's SWP Contract contains a "Table A," which lists the maximum amount of contract water supply, or "Table A Water," an agency may request each year throughout the life of the contract. The Table A Amounts in each contractor's SWP Contract ramped up over time, based on projections at the time the contracts were signed of future increases in population and water demand, until they reached a maximum Table A Amount. Most contractor's Table A Amounts reached their maximum levels in the early to mid-1990s. Table A Amounts are used in determining each contractor's proportionate share, or "allocation," of the total SWP Water supply DWR determines to be available each year.

The total planned annual delivery capability of the SWP and the sum of all contractors' maximum Table A Amounts was originally 4.23 million acre-feet (MAF). The initial SWP storage facilities were designed to meet contractors' water demands in the early years of the SWP, with the construction of additional storage facilities planned as demands increased. However, essentially no additional SWP storage facilities have been constructed since the early 1970s. SWP conveyance facilities were generally designed and have been constructed to deliver maximum Table A amounts to all contractors. After the permanent retirement of some Table A amount by two agricultural contractors in 1996, the maximum Table A Amounts of all SWP contractors now totals about 4.17 MAF. Currently, SCV Water's annual Table A Amount is 95,200 AF[4].

The primary supply of SWP water made available under the SWP Contracts is allocated Table A supply. An estimation of Table A supply availability is provided in Section 4.2.1.2.

In addition to Table A supplies, the SWP Contracts provide for additional types of water that may periodically be available, including "Article 21" water and water made available through transfers from other SWP Contractors pursuant to the WMT amendment described above (amended Article 56). Article 21 water (which refers to the SWP Contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter.

The availability of Article 21 water and water from transfers with other SWP Contractors is uncertain. When available, these supplies provide additional water that SCV Water may be able to use, either directly to meet demands or for later use after storage in its groundwater banking programs. Due to the uncertainty in availability of Article 21 water and water from transfers, supplies of these types of SWP water are not included in this report. However, to the extent SCV Water is able to make use of these supplies when available, SCV Water may be able to improve the reliability of its SWP supplies beyond the values used throughout this Plan.

While not specifically provided for in the SWP Contracts, DWR or the State Water Contractors have in dry years created Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased from willing sellers in areas that have available supplies and is then sold to contractors willing to purchase those supplies. The availability of these supplies is annually variable and therefore they are not included in this report. However, SCV Water's access to these supplies when they are available would enable it to improve the reliability of its dry-year supplies beyond the values used throughout this report.

**Flexible Storage Account**

As part of its SWP Contract with DWR, SCV Water has access to a portion of the storage capacity of Castaic Lake. This Flexible Storage Account allows SCV Water to utilize up to 4,684 AF of the storage in Castaic Lake for SCV Water. Any of this amount that SCV Water withdraws must be returned to storage by SCV Water within five years of its withdrawal. SCV Water manages this storage by keeping the account full in normal and wet years and then delivering that stored amount (or a portion of it) during dry periods. The account is refilled during the next year that adequate SWP supplies are available to SCV Water to do so. In 2005 and again in 2015, SCV Water negotiated with Ventura County SWP contractor agencies to obtain the use of their Flexible Storage Account. This allows SCV Water access to another 1,376 AF of storage in Castaic Lake. With the extension to the term of the agreement, SCV Water access to this additional storage is available on a year-to-year basis through 2025. While

[4] SCV Water's original SWP Contract with DWR was amended in 1966 for a maximum annual Table A Amount of 41,500 AF. In 1991, SCV Water (CLWA at the time) purchased 12,700 AF of annual Table A Amount from a Kern County Water district, and in 1999 purchased an additional 41,000 AF of annual Table A Amount from another Kern County Water district, for a current total annual Table A Amount of 95,200 AF.

it is expected that SCV Water and Ventura County will extend the existing flexible storage agreement beyond the 2025 term, it is not assumed to be available beyond 2025 in this Plan.

**Water Management Provisions**

The SWP Contract includes a number of provisions that give each contractor flexibility in managing the supplies that are available to it in a given year. For example, a contractor may take delivery of its allocated SWP supplies for direct use or storage within its service area, store that water outside its service area for later withdrawal and use within its service area, carry over a portion of that supply for storage on an as-available-basis in SWP reservoirs for delivery in following years (commonly referred to as “carryover”), exchange a portion of that supply with others for return in a future year, or transfer water with other PWAs pursuant to the newly approved WMT amendment. The SWP Contract also provides for DWR to deliver non-SWP water supplies for contractors through SWP conveyance facilities.

SCV Water takes advantage of these water management provisions in wetter years by storing excess SWP allocated water supply, either in groundwater banking programs or as carryover, or by exchanging supplies with another contractor or water agency. Then in drier years, SCV Water withdraws its previously stored supplies or recovers water from its exchange partner(s). Water stored in groundwater banking programs has the benefit of remaining available until needed, and the water SCV Water currently has in storage is assumed to be available as described in this Plan. At current demand levels, SCV Water also regularly stores a portion of any excess supply as carryover in SWP reservoirs, which can provide it with additional supply for use in following years. Carryover is a no-added-cost storage option, is an easily and quickly accessible supply, and is a valuable benefit if the next year is dry. However, SCV Water carryover water may be lost when SWP reservoirs fill, which can occur in wetter years. Although the carryover water is considered in the 2021-2025 water drought assessment, because of the variability in how frequently SWP reservoir space would be available to store SCV Water’s carryover, it is not specifically included in other supply projections of this Plan.

SCV Water’s participation in several groundwater banking and water exchange programs is discussed in Sections 4.5 and 4.4.5. SCV Water also takes advantage of the provision for transport of non-SWP water supplies for delivery of all its other imported supplies, which are discussed in Section 4.2.2.

### 4.2.1.4 Factors Affecting SWP Table A Supplies

While Table A identifies the maximum annual amount of Table A Water a SWP contractor may request, the amount of SWP water actually available and allocated to SWP contractors each year is dependent on a number of factors and can vary significantly from year to year. The primary factors affecting SWP supply availability include: the availability of water at the source of supply in northern California, the ability to transport that water from the source to the primary SWP diversion point in the southern Delta, and the magnitude of total contractor demand for that water.

## Availability of SWP Source Water

SWP supplies originate in northern California, primarily from the Feather River Watershed. The availability of these supplies is dependent on the amount of precipitation in the Watershed, the amount of that precipitation that runs off into the Feather River, water use by others in the Watershed and the amount of water in storage in the SWP's Lake Oroville at the beginning of the year. Variability in the location, timing, amount and form (rain or snow) of precipitation, as well as how wet or dry the previous year was, produces variability from year to year in the amount of water that flows into Lake Oroville. However, Lake Oroville acts to regulate some of that variability, storing high inflows in wetter years that can be used to supplement supplies in dry years with lower inflows.

In DWR's 2019 State Water Project Delivery Capability Report (2019 DCR), climate change adds another layer of uncertainty in estimating the future availability of SWP source water. Current projections indicate that global warming may change precipitation patterns in California from the patterns that have occurred historically. While different climate change models show differing effects, potential changes are anticipated to include more precipitation falling in the form of rain rather than snow and earlier snowmelt, which would result in more runoff occurring in the winter and early spring rather than spread out over the winter and spring, creating challenges in capturing this runoff for later use in the SWP delivery system.

## Ability to Convey SWP Source Water

As discussed previously, water released from Lake Oroville flows down natural river channels into the Delta. The Delta is a network of channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The SWP and the federal Central Valley Project (CVP) use Delta channels to convey water to the southern Delta for diversion, making the Delta a focal point for water distribution throughout the state.

A number of issues affecting the Delta can impact the ability to divert water supplies from the Delta, including water quality, fishery protection and levee system integrity. Water quality in the Delta can be adversely affected by both SWP and CVP diversions, which primarily affect salinity, as well as by urban discharge and agricultural runoff that flows into the Delta, which can increase concentrations of constituents such as mercury, organic carbon, selenium, pesticides, toxic pollutants and reduce dissolved oxygen. The Delta also provides a unique estuarine habitat for many resident and migratory fish species, some of which are listed as threatened or endangered. The decline in some fish populations is likely the result of a number of factors, including water diversions, habitat destruction, degraded water quality and the introduction of non-native species. Delta islands are protected from flooding by an extensive levee system. Levee failure and subsequent island flooding can lead to increased salinity requiring the temporary shutdown of SWP pumps. In addition, climate change analyses also project that salinity issues will increase with seal level rise, requiring extra Delta outflow to dilute more brackish Delta water to meet environmental standards.

In order to address some of these issues, SWP and CVP operations in the Delta are limited by a number of regulatory and operational constraints. These constraints are primarily incorporated into the SWRCB Water Rights Decision 1641 (D-1641), which establishes Delta water quality standards and outflow requirements with which the SWP and CVP must comply. In addition, SWP and CVP operations are further constrained by requirements included in Biological Opinions (BOs) for the protection of threatened and endangered fish species in the Delta issued by the United States Fish and Wildlife Service (FWS) in December 2008 and the National Marine Fishery Service (NMFS) in June 2009, and most recently in 2019 by the FWS as described in Section 4.2.1.5. The requirements in the BOs are based on real-time physical and biological phenomena (such as turbidity, water temperature and location of fish), which results in uncertainty in estimating potential impacts on supply of the additional constraints imposed by the BOs.

**Demand for SWP Water**

The reliability of SWP supplies is affected by the total amount of water requested and used by SWP contractors, since an increase in total requests increases the competition for limited SWP supplies. As previously mentioned, contractor Table A Amounts in the SWP Contracts ramped up over time, based on projected increases in population and water demand at the time the contracts were signed. Urban SWP contractors' requests for SWP water were low in the early years of the SWP, but have increased steadily over time, although more slowly than the initial ramp-up in their Table A Amounts, which reached a maximum for most contractors in the early to mid-1990s. Since that time, urban contractors' requests for SWP water have continued to increase until recent years when nearly all SWP contractors are requesting their maximum Table A Amounts.

Consistent with other urban SWP contractors, SWP deliveries to SCV Water have increased as its requests for SWP water have increased. Historical total SWP deliveries to SCV Water are shown at the end of this Section 4.2 in Table 4-3. The table shows deliveries to the SCV Water service area for supply to the purveyors, as well as delivery of SCV Water supplies to storage programs outside the service area and to exchange partners. SCV Water demand projections provided to DWR are typically conservative in order to maximize water deliveries available to SCV Water in any given year for both deliveries and to current and future storage programs.

#### 4.2.1.5 Biological Opinion

In late 2019, the FWS and NMFS issued new Biological Opinions for the Long-Term Operation of the CVP and SWP. Consultation on the Biological Opinions began in 2016 to update the prior 2008 and 2009 Biological Opinions and provide Federal Endangered Species Act (ESA) compliance for the CVP and SWP. Additionally, in early 2020, the California Department of Fish and Wildlife (DFW) issued DWR an Incidental Take Permit for the Long-Term Operation of the SWP pursuant to the California Endangered Species Act (CESA) with regards to state-protected longfin smelt and state- and federally-protected delta smelt, winter-run Chinook and spring-run Chinook. Previously, DFW had issued the SWP an Incidental Take Permit for the state-listed longfin smelt and Consistency Determinations with the 2008 and 2009 Biological Opinions for the state and federally listed species, not a separate permit. Some of the operational restrictions in the 2019 Biological Opinions differ from those in the 2020 Incidental Take Permit. Specifically, even though the projects' operations are coordinated, the SWP is subject to additional operational constraints that reduce SWP supplies and create operational conflicts. Both the 2019 Biological Opinions and the 2020 Incidental Take Permit are subject to multiple court challenges.

**Biological Opinion Litigation.** Two cases were filed challenging the BOs under the ESA, Administrative Procedure Act, and National Environmental Policy Act. The first case, *Pacific Coast Federation of Fisherman's Association, et al. v. Ross (Case No. 1:20-CV-00431-DAD-SAB ("PCFFA v. Ross")*, was brought by six environmental organizations. The second case, *California Natural Resources Agency, et al. v. Ross* (Case No. 1:20) ("*CNRA v. Ross"*), was brought by the California Natural Resources Agency, the California Environmental Protection Agency and the California Attorney General. The State's case includes a cause of action under CESA alleging that the federal CVP must comply with CESA. The cases were coordinated and transferred to the Eastern District. State and federal water contractors have intervened as defendants in both cases.

In Spring of 2020, plaintiffs in both cases brought motions for preliminary injunction. The environmental organizations sought broad relief, asking the court to require the federal defendants to abide by the 2008 and 2009 BOs pending a determination on the merits. The State sought a narrow injunction requiring the federal defendants to operate pursuant to the inflow to export ratio in the 2009 NMFS BO for the final 20 days of May based on alleged irreparable harm to delta smelt, longfin smelt and San Joaquin River steelhead. The court issued an order on May 11, 2020 granting the State's narrow injunction on limited grounds for the protection of steelhead. The court denied the other elements of the *PCFFA v. Ross* plaintiffs' motion for preliminary injunction finding the evidence presented was insufficient to show irreparable harm to the species or that the requested injunction was likely to materially improve conditions for the species during the specified period.

In *CNRA v. Ross*, the Federal Defendants and several intervenors filed motions to dismiss the State's CESA cause of action for lack of subject matter jurisdiction or, alternatively, failure to state a claim. As of this date, the court has not scheduled a hearing or ruled on the motion.

**CESA Incidental Take Permit Litigation.** Eight cases, listed below, have been filed in state court by public agencies, environmental organizations, and a Native American tribe challenging DWR's approval of the Long-Term Operations of the SWP and associated environmental review. Most of the cases also challenge CDFW's issuance of an Incidental Take Permit for the SWP.

- *North Coast Rivers Alliance, et al. v. Department of Water Resources, et al.*, County of San Francisco Superior Court Case No. CPF-20-517078, filed April 28, 2020;
- *State Water Contractors, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01302, electronically filed April 28, 2020;
- *Tehama-Colusa Canal Authority, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01303, electronically filed April 28, 2020;
- *The Metropolitan Water District of Southern California, et al. v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01347, electronically filed April 28, 2020;
- *Sierra Club, et al. v. California Department of Water Resources*, County of San Francisco Superior Court Case No. CPF-20-517120, filed April 29, 2020;

- *Central Delta Water Agency, et al. v. California Department of Fish and Wildlife, et al.*, County of Sacramento Superior Court Case No. 34-2020-80003368, filed May 6, 2020;

- *San Bernardino Valley Municipal Water District v. California Department of Water Resources, et al.*, County of Fresno Superior Court Case No. 20CECG01556, filed May 28, 2020;

- *San Francisco Baykeeper, et al. v. California Department of Water Resources, et al.*, County of Alameda Superior Court Case No. RG20063682, filed June 5, 2020.

The challenges are raised on several legal grounds, including CESA, California Environmental Quality Act, the Delta Reform Act, Public Trust Doctrine, area of origin statutes, breach of contract, and breach of covenant of good faith and fair dealing. All eight cases have been coordinated in Sacramento County Superior Court.

Litigation over the 2019 BOs and 2020 Incidental Take Permit will likely take several years. The projects began operating to the new requirements in 2020. Throughout implementation any party may seek preliminary injunctive relief during the litigation, such as that sought by the plaintiffs in the 2019 BO cases described above. It is likely that the 2019 BOs and 2020 Incidental Take Permit will govern operations until final judicial determinations on the merits are made. Thus, it is unlikely that SWP water supply would increase beyond that resulting from the limitations in the 2019 BOs and 2020 Incidental Take Permit during this timeframe.

#### 4.2.1.6 SWP Table A Supply Assessment

DWR prepares a biennial report to assist SWP contractors and local planners in assessing the availability of supplies from the SWP. DWR issued its most recent update, the 2019 DCR, in August 2020. In this update, DWR provides SWP supply estimates for SWP Contractors to use in their planning efforts, including for use in their 2020 UWMPs. The 2019 DCR includes DWR's estimates of SWP water supply availability under both existing (2020) and future conditions (2040).

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and contractor demands for SWP water. In conducting its model studies, DWR must make assumptions regarding each of these key inputs.

In the 2019 DCR for its model study under existing conditions, DWR assumed: existing facilities, hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003), current regulatory and operational constraints including 2018 Coordinated Operation Agreement Amendment, 2019 BOs and 2020 Incidental Take Permit, and contractor demands at maximum Table A Amounts. The long-term average allocation reported in the 2019 DCR for the existing conditions study provide an appropriate estimate of the SWP water supply availability under current conditions.

To evaluate SWP supply availability under future conditions, the 2019 DCR included a model study representing hydrologic and sea level rise conditions in the year 2040. The future condition study used all of the same model assumptions as the study under existing conditions, but reflected changes expected to occur from climate change, specifically, projected temperature and precipitation changes centered around 2035 (2020 to 2049) and a 45 cm sea level rise. For the long-term planning purposes of this UWMP, the long-term average allocations reported for the future conditions study from 2019 DCR is the most appropriate estimate of future SWP water supply availability.

#### 4.2.1.7 SWP Water Supply Estimates

In the 2019 DCR, DWR estimates that for all Contractors combined, the SWP can deliver on a long-term average basis a total Table A supply of 58 percent of total maximum Table A Amounts under existing conditions and 52 percent under future conditions.

DWR's 2019 DCR indicates that the modeled single dry year SWP water supply allocation is 7% under the existing conditions. However, historically the lowest SWP allocations were at 5% in 2014 and initial allocations in 2021. Due to extraordinarily dry conditions in 2013 and 2014, the initial 2014 SWP allocation was a historically low 5% of Table A Amounts, was later reduced to 0% in January 2014, and was later raised back to 5%, the lowest ever final total SWP water supply allocation.

Each year by October 1, SWP contractors submit their requests for SWP supplies for the following calendar year. By December 1, DWR estimates the available water supply for the following year and sets an initial supply allocation based on the total of all contractors' requests, current reservoir storage, forecasted hydrology through the next year, and target reservoir storage for the end of the next year. The most uncertain of these factors is the forecasted hydrology. In setting water supply allocations, DWR uses a conservative 90% hydrologic forecast, where nine out of ten years will be wetter and one out of ten years drier than assumed. DWR re-evaluates its estimate of available supplies throughout the runoff season of winter and early spring, using updated reservoir storage and hydrologic forecasts, and revises SWP supply allocations as warranted. Since most of California's annual precipitation falls in the winter and early spring, by the end of spring the supply available for the year is much more certain, and in most years DWR issues its final SWP allocation by this time. While most of the water supply is certain by this time, runoff in the late fall remains somewhat variable as the next year's runoff season begins. A drier than forecasted fall can result in not meeting end-of-year reservoir storage targets, which means less water available in storage for the following year.

Water year 2013 was a year with two hydrologic extremes. October through December 2012 was one of the wettest fall periods on record, but was followed by the driest consecutive 12 months on record. The supply allocation for 2013 was a low 35% allocation. However, the 2013 hydrology ended up being even drier than DWR's conservative hydrologic forecast, so the SWP began 2014 with reservoir storage lower than targeted levels and less stored water available for 2014 supplies. Compounding this low storage situation, 2014 also was a critically dry year, with runoff for water year 2014 the fourth driest on record.

The exceedingly dry sequence from the beginning of January 2013 through the end of 2014 was one of the driest two-year periods in the historical record. As noted above, the circumstances that led to the low 2014 and 2021 SWP water supply allocation were unusual, and likely have a low probability of frequent occurrence in the future. Thus, the assumption for SWP contractors such as SCV Water is that a 5% allocation in 2014 and 2021 represents the "worst-case" scenario.

In this Plan, DWR's analysis of existing (2020) conditions is used to estimate SWP supplies between 2020 and 2040 and its analysis of future (2040) conditions is used to estimate 2040-2050 SWP supplies. SWP supplies for the five-year increments between 2020 and 2040 are interpolated between these values. SWP supplies for years beyond 2040 are assumed to be the same as for 2040.

Table 4-2 shows SWP supplies projected to be available to SCV Water in average/normal years (based on the average delivery over a repeat of the study's historic hydrologic period from 1922 through 2003). Table 4-2 also summarizes estimated SWP supply availability in a single dry year (based on a repeat of the historic hydrologic conditions of 1977, as well as the worst-case actual allocation of 2014) and over a five-year multiple dry year period (based on a repeat of the historic four-year drought of 1988 through 1992).

**TABLE 4-2 SWP TABLE A SUPPLY RELIABILITY (AF)[(a)(b)]**

| Wholesaler (Supply Source) | 2020 | 2025 | 2030 | 2035 | 2040-2050 |
|---|---|---|---|---|---|
| **Average Water Year[(c)]** | | | | | |
| SWP Table A Supply | 55,216 | 53,312 | 51,408 | 50,456 | 49,504 |
| % of Table A Amount[(d)] | 58% | 56% | 54% | 53% | 52% |
| **Single-Dry Year** | | | | | |
| SWP Table A Supply[(e)] | 6,664 | 7,616 | 8,568 | 9,520 | 10,472 |
| % of Table A Amount[(e)] | 7% | 8% | 9% | 10% | 11% |
| SWP Table A Supply[(f)] | 4,760 | 4,760 | 4,760 | 4,760 | 4,760 |
| % of Table A Amount[(f)] | 5% | 5% | 5% | 5% | 5% |
| **Multiple-Dry Year[(g)]** | | | | | |
| SWP Table A Supply[(g)] | 23,800 | 23,800 | 23,800 | 23,800 | 23,800 |
| % of Table A Amount[(d)] | 25% | 25% | 25% | 25% | 25% |

Notes:
(a) Supplies to SCV Water are based on DWR analyses presented in its 2019 DCR, assuming existing SWP facilities and current regulatory and operational constraints (except as otherwise indicated in Note f).
(b) Table A supplies include supplies allocated in one year that are carried over for delivery the following year.
(c) Based on average deliveries over a repeat of the study's historic hydrologic period of 1922 through 2003.
(d) Supply as a percentage of SCV Water's Table A Amount of 95,200 AF.
(e) Based on a repeat of the worst case historic single dry year of 1977 (from 2019 DCR)
(f) Based on the worst-case actual allocation of 2014.
(g) Supplies shown are annual averages over five consecutive dry years, based on a repeat of the historic five-year dry period of 1988-1992.

#### 4.2.1.8 Coordinated Operations Agreement

The Coordinated Operation Agreement (COA) was originally signed in 1986 and defines how the state and federal water projects share the available water supply and the obligations including senior water right demands, water quality and environmental flow requirements imposed by regulatory agencies. The agreement calls for periodic review to determine whether updates are needed in light of changed conditions. After completing a joint review process, DWR and the Bureau of Reclamation agreed to an addendum to the COA in December 2018, to reflect water quality regulations, biological opinions and hydrology updated since the agreement was signed.

The COA Addendum includes changes to the percentages for sharing responsibilities for in basin uses, sharing available export capacity, and the review process. The 1986 Agreement required CVP to meet 75% of the in basin uses and the SWP to meet 25%. The COA Addendum now distinguishes responsibility based on water year type and CVP responsibilities range from 80% in wet years to 60% in critical years. SWP responsibility ranges from 20% in wet years to 40% in critical years. Additionally, the COA Addendum changed sharing export capacity. Previously, export capacity was shared 50% to CVP and 50% to SWP. The COA addendum changed this formula to be 65% CVP and 35% SWP during balanced conditions and 60% CVP and 40 % SWP during excess conditions. Overall, based on modeling, these changes result in an approximately 115,000 AFY on average reduction in SWP supplies.

Finally, the 2018 COA Addendum updated the review process to require review of the COA Agreement and Addendum every 5 years. Litigation regarding the COA addendum environmental review is ongoing. The litigation is unlikely to change the negotiated COA addendum and implementation has already begun.

#### 4.2.1.9 Delta Conveyance Project

Consistent with Executive Order N-10-19, in early 2019, the state announced a new single tunnel project, which proposed a set of new diversion intakes along Sacramento River in the north Delta for the SWP. In 2019, DWR initiated planning and environmental review for a single tunnel DCP to protect the reliability of SWP supplies from the effects of climate change and seismic events, among other risks. DWR's current schedule for the DCP environmental planning and permitting extends through the end of 2024. DCP will potentially be operational in 2040 following extensive planning, permitting and construction.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and so do not include the proposed conveyance facilities that are part of the DCP. Since this UWMP uses DWR's 2019 DCR to estimate SWP supplies at 2040, any changes in SWP supply reliability that would result from the proposed DCP are not included in this UWMP.

#### 4.2.1.10 Emergency Freshwater Pathway Description (Sacramento-San Joaquin Delta)

It has been estimated by DWR that in the event of a major earthquake in or near the Delta, water supplies could be interrupted for up to three years, posing a significant and unacceptable risk to the California business economy. A post-event strategy would provide necessary water supply protections to avert this catastrophe. Such a plan has been coordinated through DWR, Corps of Engineers (Corps), Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California and the State Water Contractors.

**DWR Delta Flood Emergency Management Plan:** The Delta Flood Emergency Management Plan (DWR, 2018) provides strategies for response to Delta levee failures, up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and saltwater intrusion are large, resulting in curtailment of export operations. Under these severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the prepositioning of emergency construction materials at existing and new stockpile and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, conduct tabletop and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to Cal OES operations. These agencies perform under a unified command structure and response and recovery framework. The Northern California Catastrophic Flood Response Plan (Cal OES, 2018) incorporates the DWR Delta Flood Emergency Management Plan. The Delta Emergency Operations Integration Plan (DWR and USACE, 2019) integrates personnel and resources during emergency operations.

**Pathway Implementation Timeline:** The Delta Flood Emergency Management Plan has found that using pre-positioned stockpiles of rock, sheet pile and other materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired in less than six months. A supplemental report (Levee Repair, Channel Barrier and Transfer Facility Concept Analyses to Support Emergency Preparedness Planning, M&N, August 2007) evaluated among other options, the placement of sheet pile to close levee breaches, as a redundant method if availability of rock is limited by possible competing uses. The stockpiling of sheet pile is vital should more extreme emergencies warrant parallel and multiple repair techniques for deep levee breaches. Stockpiles of sheet pile and rock to repair deep breaches and an array of levee slumping restoration materials are stored at DWR and Corps stockpile sites and warehouses in the Delta.

**Emergency Stockpile Sites and Materials:** DWR has acquired lands at Rio Vista and Stockton as major emergency stockpile sites, which are located and designed for rapid response to levee emergencies. The sites provide large loading facilities, open storage areas and new and existing warehousing for emergency flood fight materials, which augment existing warehousing facilities throughout the Delta. The Corps maintains large warehousing facilities in the Delta to store materials for levee freeboard restoration, which can be augmented upon request of other stockpiles in the United States. Pre-positioned rock and sheet pile are used for closure of deep levee breaches. Warehoused materials for rapid restoration of slumped levees include muscle (k-rail) walls, super sacks, caged rock containers, sandbags, stakes and plastic tarp. Stockpiles will be augmented as materials are used.

**Emergency Response Drills:** Earthquake-initiated multiple island failures will mobilize DWR and Corps resources to perform Delta region flood fight activities within an overall Cal OES framework. In these events, DWR and the Corps integrate personnel and resources to execute flood fight plans through the Delta Emergency Operations Integration Plan (DWR and USACE, 2019). DWR, the Corps and local agencies perform emergency exercises focusing on communication readiness and the testing of mobile apps for information collection and dissemination. The exercises train personnel and test the readiness of emergency preparedness and response capabilities under unified command and provide information to help to revise and improve plans.

**Levee Improvements and Prioritization:** The DWR Delta Levees Subventions and Special Projects Programs have prioritized, funded and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta. These efforts are complementary to the Delta Flood Emergency Management Plan, which along with pre-positioned emergency flood fight materials, ensures reasonable seismic performance of levees and timely pathway restoration after a severe earthquake. These programs have been successful in implementing a coordinated strategy of emergency preparedness to the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levees systems along Old and Middle Rivers began in 2010 and are continuing to the present time. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Levee improvements along the Middle River emergency freshwater pathway and Old River consist of crest raising, crest widening, landside slope fill and toe berms, which improve seismic stability, reduce levee slumping and create a more robust flood-fighting platform. Urban agencies, including Metropolitan, Contra Costa Water District, East Bay Municipal Utility District, and others have participated in levee improvement projects along or near the Old and Middle River corridors.

#### 4.2.1.11 Sisk Dam Raise and San Luis Reservoir Expansion

Reclamation and San Luis & Delta Mendota Water Authority (SLDMWA) are proposing to raise Sisk Dam and increase storage capacity in San Luis Reservoir. The proposed 10-foot dam raise is in addition to the ongoing 12-foot raise of Sisk Dam to improve dam safety and would expand San Luis Reservoir storage by 130 thousand AF. The final supplemental EIS/EIR released on December 18, 2020, estimated that the SWP exports could potentially reduce by about 23 thousand AFY on average under the preferred alternative. This project is currently undergoing design, environmental planning and permitting. Construction is estimated to complete by 2030 following environmental planning and permitting.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and do not include this project.

#### 4.2.1.12 Sites Reservoir

Sites Reservoir is a proposed new 1,500,000 acre-feet off-stream storage reservoir in northern California near Maxwell. Sacramento River flows will be diverted during excess flow periods and stored in the off-stream reservoir and released for use in the drier periods. Sites Reservoir is expected to provide water supply, environmental, flood and recreational benefits. The proponents of Sites Reservoir include 31 entities including several individual SWP PWAs including SCV Water. Sites Reservoir is expected to provide approximately 240,000 AFY (Sites Reservoir Value Planning Report, Table 8-1) of additional deliveries on average to participating agencies under existing conditions. SCV Water's current participation is 3% of that total. Further, SCV Water would operate its share of project storage so as to maximize delivery during dry and critically dry years and the project is projected to provide between 9,800 and 7,100 AFY depending on final project configuration and level of Federal participation by the USBR. Sites Reservoir is currently undergoing environmental planning and permitting. Full operations of the Sites Reservoir are estimated to start by 2029 following environmental planning, permitting and construction. Sites was conditionally awarded $816 million from the California Water Commission for ecosystem, recreation, and flood control benefits under Proposition 1. Reclamation may also invest in Sites under the Water Infrastructure Improvements for the Nation (WIIN) Act and recently transmitted a final Federal Feasibility Report to Congress for the project.

DWR estimates of SWP supply reliability in its 2019 DCR are based on existing facilities, and do not include the proposed Sites Reservoir. SCV Water along with other SWP public water agencies and north of Delta participants, however, are members of the Sites Reservoir Committee and are sharing costs, to advance environmental, permitting and other planning activities. The Sties Reservoir staff has performed modeling of potential water supply from this project. While not identified as a project in the Section 7 reliability tables, the project is analyzed as part of the SCV Water's Updated Water Reliability Report. A summary of the results of that report are incorporated into Section 7 of this Plan.

#### 4.2.1.13 SWP Seismic Improvements

DWR's recent SWP seismic resiliency efforts have focused heavily on SWP Dam Safety. The most prominent is the joint Reclamation/DWR corrective action study of Sisk Dam which will result in a massive seismic stability alteration project and is expected to begin construction in 2021. Several analyses have been conducted on SWP dam outlet towers/access bridges which has resulted in seismic upgrades (some completed/some on-going). Castaic Reservoir outlet towers were determined to be vulnerable to a major earthquake. DWR is currently undertaking retrofits to the access bridge to the Castaic outlet tower. That work is scheduled to be completed in 2022. Updated dam seismic safety evaluations are being performed on the Oroville Dam embankment and the radial gate control structure on the flood control spillway.

Seismic retrofits have also been completed on 23 SWP bridges located in four Field Divisions with additional retrofits in various development stages. DWR has also updated the earthquake notification procedures and has replaced and expanded instrumentation for the SWP's seismic network.

#### 4.2.1.14 Water Quality Control Plan/Voluntary Agreement

The State Water Board is responsible for adopting and updating the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan), which establishes water quality control objectives and flow requirements needed to provide reasonable protection of beneficial uses in the Watershed. The State Water Board has been engaged for many years in updating the Bay Delta Plan.

The Bay-Delta Plan is being updated through phases. Phase 1 is updating the Bay-Delta Plan objectives for the San Joaquin River and its major tributaries and the southern Delta salinity objectives. Phase 2 is updating the objectives for the Sacramento River and Delta and their major tributaries. (Plan amendments). On December 12, 2018, through State Water Board Resolution No. 2018-0059, the State Water Board adopted the Phase 1 Plan amendments and Final Substitute Environmental Document (SED) establishing the Lower San Joaquin River flow objectives and revised southern Delta salinity objectives. On February 25, 2019, the Office of Administrative Law approved the Plan amendments. This plan requires an adaptive range of 30-50 percent of the unimpaired flow to be maintained from February through June in the Stanislaus, Tuolumne, and Merced Rivers, with a starting point of 40 percent of the unimpaired flow. During this same time period, the flows at Vernalis on the San Joaquin River, as provided by the unimpaired flow objective, are required to be no lower than a base flow of 1,000 cubic feet per second (cfs), with an adaptive range between 800 and 1,200 cfs, inclusive. The Phase 1 plan amendments are the subject of litigation.

The State Water Board is also considering Phase 2 Plan amendments focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne rivers), Delta outflows, and interior Delta flows. Staff is recommending an adaptive range of 45-65 percent Unimpaired Flow (UIF) objective with a starting point of 55 percent. Once the State Water Board adopts Phase 2 Plan amendments, the Board will need to conduct hearings to determine, consistent with water rights, water users' responsibilities for meeting the objectives in both Phase 1 and 2. At this time, the potential impacts to the SWP are unknown but this objective would have a large impact on water users in the Phase 2 planning area.

The State and several water users began working on an alternative to the Bay-Delta Plan update in 2018, known as the Voluntary Agreement process. The Voluntary Agreement process offers an alternative to the State Water Board staff's flow only approach. A Voluntary Agreement, if agreed to by the State Water Board, would be a substitute for the UIF approach and would become the Program of Implementation for the Plan amendments. Implementing the Voluntary Agreement would not require a water rights hearing because the parties are agreeing to take the actions. The Voluntary Agreement approach would provide flow, and funding for flows, habitat actions, and a robust science program. The Voluntary Agreement approach could provide an opportunity to combine flow and habitat actions to protect public trust resources, while providing certainty for water users. If successful, it provides a pathway to avoid years of hearings and litigation.

### 4.2.2 Delta Reliance

Approximately half of SCV Water's water supply comes from the Delta. The 2020 UWMP Guidebook describes how urban water suppliers that anticipate participating in or receiving water from a "covered action" related to the Delta should provide information in their 2020 UWMPs to demonstrate consistency with *Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (Reduced Reliance Policy). DWR has suggested that any entity receiving imported water from the SWP should anticipate being part of a "covered action".

SCV Water gathered information to determine the volume of SWP received in past years. In Appendix K SCV Water:

- Establishes a base period for evaluation of Delta water use in the service area,
- Provides data on past service area demands and population,
- Provides data on SWP water received in the past,
- Provides a projection on service area demands and through 2050,
- Provides information on supplier contribution to regional self-reliance (local supplies brought online 2010-2050 in 5-year increments), and
- Projects SWP water that will be received by SCV Water through 2050.

### 4.2.3 Other Imported Supplies

The following supplies are available to SCV Water through agreements that have been executed since 2005. These supplies are now part of the imported supplies available to the service area.

#### 4.2.3.1 Buena Vista-Rosedale Rio Bravo

SCV Water has executed a long-term transfer agreement for 11,000 AFY with BVWSD and RRBWSD. These two districts, both located in Kern County, joined together to develop a program that provides both a firm water supply and a water banking component. Both districts are member agencies of the Kern County Water Agency (KCWA), a SWP contractor and both districts have contracts with KCWA for SWP Table A Amounts. The supply is based on existing long-standing Kern River water rights held by BVWSD and is delivered by exchange of the two districts' SWP Table A supplies or directly to the California Aqueduct via the Cross Valley Canal. This water supply is firm; that is, the total amount of 11,000 AFY is available in all water year types based on the Kern River Water right. SCV Water began taking delivery of this supply in 2007 as shown in Table 4-3.

SCV Water has entered into agreements that reserved 3,378 AF of the Buena Vista-Rosedale Rio Bravo water for potential annexations into its service area. 389 AF is reserved for the second phase of the Tesoro Del Valle development. This development is scheduled to be completed by the end of 2025. 489 AF has been reserved for the Tapia Ranch development with development estimated to be completed in the late 2020s. 2,500 AF is reserved for the planned Legacy Village development. This development is assumed to occur after 2030 but before 2035. During the periods before demands for these developments occur, or if these developments occur but do not use all the amounts reserved for them in any year or years, the remaining supply would be available to the entire SCV Water service area.

#### 4.2.3.2 Nickel Water - Newhall Land

Newhall Land has acquired a water supply from Kern County sources known as the Nickel water. This source of supply totals 1,607 AFY. The Nickel water comes from a firm source of supply and is available in all hydrologic water year types. This source of supply was acquired in anticipation of the development of the Newhall Ranch Specific Plan Development. Newhall Land currently stores its annual supply of Nickel water in its Semitropic Water Storage District Water Banking Program. Upon completion of the Newhall Ranch Specific Plan, Newhall Land will transfer its rights to this supply to SCV Water. In this UWMP it is assumed for planning purposes that Newhall Ranch will be developed and that this water supply will be transferred to SCV Water in 2035 (i.e. the assumed completion of the Newhall Ranch Specific Plan), thereafter becoming available as an annual supply to SCV Water. Prior to any permanent transfer to SCV Water, Newhall Land may make this supply available to SCV Water for purchase. However, because there is no history of such purchases, this UWMP does not assume this Nickel water will be generally available to meet SCV Water demands until 2035.

SCV Water and NLF will monitor the use and storage of Nickel water. SCV Water is required to undertake this effort to manage its overall supply portfolio, to meet the Agency's obligations under applicable state law and by request of the County of Los Angeles in the Specific Plan EIR. Based on current estimates, the Nickel water and the stored water in the Semitropic bank provide adequate reserves for potential future needs within the Specific Plan area. Under the

Specific Plan EIR, NLF is to transfer Nickel water from its Semitropic Water Bank to make up a shortfall.

#### 4.2.3.3 Yuba Accord Water

In 2008, SCV Water entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through DWR to 21 SWP contractors (including SCV Water) and the San Luis and Delta-Mendota Water Authority. Yuba Accord water comes from north of the Delta, and the water purchased under this agreement is subject to losses associated with transporting it through the Delta. These losses can vary from year to year, depending on Delta conditions at the time the water is transported. Under the agreement, an estimated average of up to 1,000 AFY of non-SWP supply (after losses) is available to SCV Water in dry years, through 2025. In 2021, with a current SWP allocation of 5% of Table A Amount, a minimum supply of 1,700 AF north of the Delta is available to SCV Water. Under certain hydrologic conditions, additional water may be available to SCV Water from this program. SCV Water received 284 AF from this source in 2020.

**TABLE 4-3 HISTORICAL IMPORTED SUPPLY DELIVERIES (AF)**

| Year | SWP Deliveries to SCV Water Service Area[a] | SWP Deliveries to Out-of-Service Area Storage/ Exchange[b] | Withdrawals from Out-of-Service Area Storage/ Exchange[b] | Other Imported Deliveries to SCV Water Service Area[c][d] | Other Imported Deliveries to Out of-Service Area Storage/ Exchange[d] | Total Imported Supplies to SCV Water Service Area |
|---|---|---|---|---|---|---|
| 1980 | 1,210 | - | - | - | - | 1,210 |
| 1981 | 5,761 | - | - | - | - | 5,761 |
| 1982 | 9,516 | - | - | - | - | 9,516 |
| 1983 | 9,476 | - | - | - | - | 9,476 |
| 1984 | 11,477 | - | - | - | - | 11,477 |
| 1985 | 12,401 | - | - | - | - | 12,401 |
| 1986 | 13,928 | - | - | - | - | 13,928 |
| 1987 | 16,167 | - | - | - | - | 16,167 |
| 1988 | 18,904 | - | - | - | - | 18,904 |
| 1989 | 21,719 | - | - | - | - | 21,719 |
| 1990 | 22,139 | - | - | - | - | 22,139 |
| 1991 | 7,357 | - | - | - | - | 7,357 |
| 1992 | 14,812 | - | - | - | - | 14,812 |
| 1993 | 13,787 | - | - | - | - | 13,787 |
| 1994 | 14,919 | - | - | - | - | 14,919 |
| 1995 | 17,747 | - | - | - | - | 17,747 |
| 1996 | 18,448 | - | 1,256 | - | - | 19,704 |
| 1997 | 21,586 | 1,256 | - | - | - | 21,586 |
| 1998 | 19,782 | - | - | - | - | 19,782 |
| 1999 | 28,813 | - | - | - | - | 28,813 |
| 2000 | 31,085 | - | 2,589 | - | - | 33,674 |
| 2001 | 35,632 | 2,589 | - | - | - | 35,632 |
| 2002 | 42,080 | 24,000 | 395 | - | - | 42,475 |
| 2003 | 44,967 | - | - | - | - | 44,967 |
| 2004 | 47,463 | 32,522 | - | - | - | 47,463 |

| Year | SWP Deliveries to SCV Water Service Area[(a)] | SWP Deliveries to Out-of-Service Area Storage/ Exchange[(b)] | Withdrawals from Out-of-Service Area Storage/ Exchange[(b)] | Other Imported Deliveries to SCV Water Service Area[(c)(d)] | Other Imported Deliveries to Out of-Service Area Storage/ Exchange[(d)] | Total Imported Supplies to SCV Water Service Area |
|---|---|---|---|---|---|---|
| 2005 | 36,747 | 20,000 | - | - | - | 36,747 |
| 2006 | 39,622 | 20,395 | - | - | - | 39,622 |
| 2007 | 34,919 | 8,200 | - | 11,000 | - | 45,919 |
| 2008 | 31,878 | - | - | 11,000 | - | 42,878 |
| 2009 | 26,096 | - | 1,650 | 11,000 | - | 38,746 |
| 2010 | 16,988 | 33,024 | 3,300 | 11,000 | - | 31,288 |
| 2011 | 20,445 | 23,796 | - | 11,000 | - | 31,445 |
| 2012 | 36,153 | 18,569 | - | 0 | 11,000 | 36,153 |
| 2013 | 33,126 | 28,628 | - | 11,000 | - | 44,126 |
| 2014 | 8,673 | - | 14,198 | 11,000 | - | 33,871 |
| 2015 | 15,196 | 4,339 | 2,998 | 10,995 | - | 29,189 |
| 2016 | 31,888 | | | - | 6,560 | 31,888 |
| 2017 | 47,912 | 5,795 | | | 11,000 | 47,912 |
| 2018 | 36,835 | 62 | | 6,000 | | 42,897 |
| 2019 | 41,111 | 24884 | 750 | 1,100 | | 42,961 |
| 2020 | 14,871 | | 22,957 | 11,000 | | 48,828 |

Sources: DWR Bulletin 132, Management of the California State Water Project; and DWR delivery files.

Notes:

(a) Includes deliveries of Table A supplies, carryover water, Article 21 water, Turnback Pool water, local supply (from West Branch reservoirs), Yuba Accord water and water purchased through DWR.

(b) Out-of-service area storage includes flexible storage in Castaic Lake, the Semitropic Banking Program and the Rosedale-Rio Bravo Banking Program and deliveries to Devil's Den, and exchange includes the Rosedale-Rio Bravo Exchange and West Kern Exchange.

(c) Deliveries from Buena Vista.

(d) Years when other imported deliveries to SCV Water service area, and other imported deliveries to out of service area storage/exchange do not total 11,000 AF, are due to water sales that occurred and are not shown in this table.

## 4.3 Groundwater

This section presents information about the purveyors' groundwater supplies, including a summary of the adopted groundwater management plan (GWMP) and Groundwater Sustainability Plan (GSP) activities. The passage of the Sustainable Groundwater Management Act (SGMA) in 2014 replaces the GWMP with a requirement that a GSP be prepared by 2022 in those basins the DWR has identified as medium to high priority.

### 4.3.1 Santa Clara River Groundwater Basin – East Subbasin

The sole source of local groundwater for urban water supply in the Valley is the groundwater Basin identified in the DWR Bulletin 118 (DWR 2016) as the Santa Clara River Valley Groundwater Basin, East Subbasin (Basin) (Basin No. 4-4.07). The Basin is comprised of two aquifer systems, the Alluvium and the Saugus Formation. The Alluvium generally underlies the Santa Clara River and adjacent areas, including its several tributaries, to maximum depths of about 200 feet; and the Saugus Formation underlies practically the entire Upper Santa Clara River area, to depths of at least 2,000 feet. There are also some scattered outcrops of Terrace deposits in the Basin that likely contain limited amounts of groundwater. However, since these deposits are located in limited areas situated at elevations above the regional water table and are also of limited thickness, they are of no practical significance as aquifers for municipal water supply; consequently, they have not been developed for any significant water supply in the Basin and are not included as part of the existing or planned groundwater supplies described in this UWMP. Figure 3-1 illustrates the extent of the Santa Clara River Valley East Subbasin in DWR Bulletin 118 (DWR 2016). The Basin is defined in Bulletin 118 as being bordered on the north by the Piru Mountains, on the west by impervious rocks of the Modelo and Saugus Formations and a constriction in the alluvium, on the south by the Santa Susana Mountains, and on the south and east by the San Gabriel Mountains (DWR 2016). The extent of the basin generally coincides with the outer extent of the Alluvium and Saugus Formation. The SCV Water service area is also shown on Figure 3-1.

The Santa Clara River Valley Groundwater Basin, East Subbasin has been identified by DWR as a high priority basin (DWR 2019), thereby requiring preparation of a GSP, described below.

### 4.3.2 Groundwater Management Planning

As part of legislation authorizing SCV Water to provide retail water service to individual municipal customers, Assembly Bill (AB) 134 (2001) included a requirement that SCV Water prepare a GWMP (provided as Appendix I) in accordance with the provisions of Water Code Section 10753, which was originally enacted by AB 3030. This legislation has since been superseded by the passage of SGMA in 2014, however, the existing GWMP will be in effect until a GSP is submitted to DWR in 2022. A summary of ongoing GSP activities as well as a summary of the GWMP are provided below.

#### 4.3.2.1 Groundwater Sustainability Plan

The Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) operates under a Joint Powers Agreement which was executed by member Agencies in 2018. The SCV-GSA is currently developing the State-required GSP for the East Subbasin of the Santa Clara River Valley Groundwater Basin. Developing the plan is a significant multi-year undertaking and plan adoption is anticipated by December 2021. Stakeholder engagement continues to be an important component of plan development and a Stakeholder Advisory Committee is in place to reflect views from private well owners, members at large, environmental interests, and the business community. This Stakeholder Advisory Committee meets regularly to review technical memoranda and provide advisement to the GSA on materials and assistance with a number of public workshops.

The final Board Adopted GSP is anticipated to be consistent with the current groundwater operating plan as described in the Groundwater Management Plan (AB 3030 plan), and the 2009 update, described below. The GSP is based on a new groundwater flow model (an unstructured grid version of ModFlow called ModFlow USG) that models the groundwater operating plan but reflects some updates such as redistribution of pumping and current Basin conditions. Once completed, the SCV-GSA will conduct required annual monitoring and reporting for the GSP making that available to the State and stakeholders.

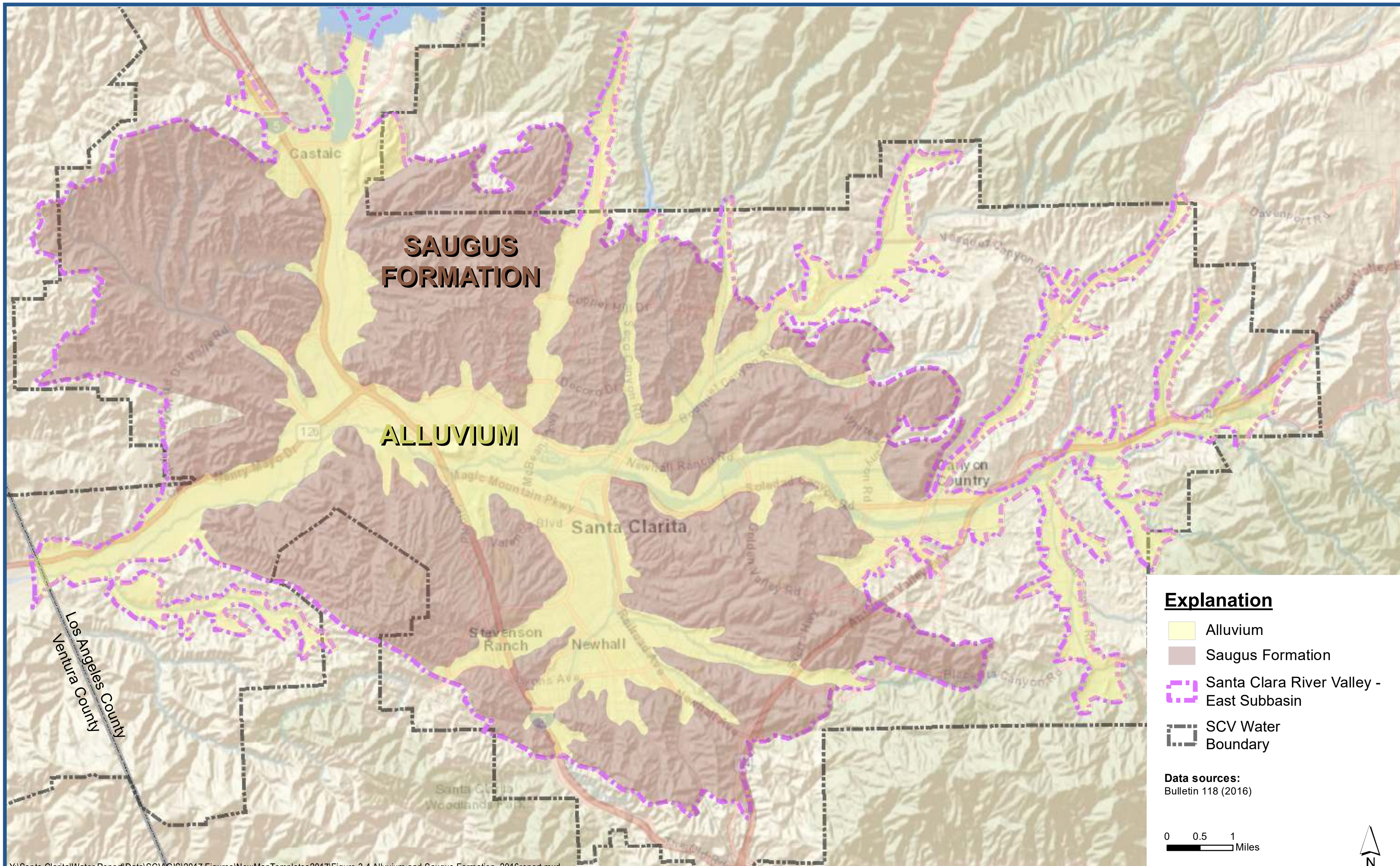
#### 4.3.2.2 Groundwater Management Plan

The general contents of the GWMP were outlined in 2002, and a detailed plan was adopted in 2003 to satisfy the requirements of AB 134. The plan both complements and formalizes a number of existing water supply and water resource planning and management activities in SCV Water's service area, which effectively encompass the East Subbasin of the Santa Clara River

Valley Groundwater Basin. Notably, the GWMP also includes a basin-wide monitoring program, the results of which provide input to annual reporting on water supplies and water resources in the Basin, as well as input to assessment of Basin yield for water supply as described herein. Groundwater level data from the existing groundwater monitoring program is reported to DWR as part of SBX7-6 implementation (California Statewide Groundwater Elevation Monitoring [CASGEM]). SCV Water serves as the monitoring entity for CASGEM for the basin. Available groundwater level data for the CASGEM program is submitted twice a year. SCV Water will continue to provide groundwater level data consistent with the CASGEM program.

The GWMP contains four management objectives, or goals, for the Basin including (1) development of an integrated surface water, groundwater and recycled water supply to meet existing and projected demands for municipal, agricultural and other water uses; (2) assessment of groundwater basin conditions to determine a range of operational yield values that use local groundwater conjunctively with supplemental SWP supplies and recycled water to avoid groundwater overdraft; (3) preservation of groundwater quality, including active characterization and resolution of any groundwater contamination problems and (4) preservation of interrelated surface water resources, which includes managing groundwater to not adversely impact surface and groundwater discharges or quality to downstream basin(s).

Prior to preparation and adoption of the GWMP, a local Memorandum of Understanding (MOU) process among the former CLWA, the CLWA retail water purveyors and United Water Conservation District (UWCD) in neighboring Ventura County, downstream of the East Subbasin of the Santa Clara River Valley, produced the beginning of local groundwater management. This is now embodied in the GWMP prepared and implemented in 2001. The MOU was a collaborative and integrated approach to several aspects of water resource management included in the GWMP. As a result of the MOU, the cooperating agencies integrated their respective database management efforts and continued to monitor and report on the status of Basin conditions, as well as on geologic and hydrologic aspects of their respective parts of the overall stream-aquifer system. Following adoption of the GWMP, the water suppliers developed and utilized a numerical groundwater flow model for analysis of groundwater basin yield and for analysis of extraction and containment of groundwater contamination. The results of those basin yield and contamination analyses, most recently updated in 2009 by Luhdorff and Scalmanini Consulting Engineers and GSI Water Solutions, Inc. (LSCE & GSI, 2009), are bases for the amounts and allocations of groundwater supplies in this UWMP.




Luhdorff & Scalmanini
Consulting Engineers

**Alluvium and Saugus Formation**

*Santa Clarita Valley Water Report*
*Santa Clarita Valley, Los Angeles County, California*

**Figure 4-1**

The adopted GWMP includes 14 elements intended to accomplish the Basin management objectives listed above. In summary, the plan elements include:

- Monitoring of groundwater levels, quality, production and subsidence
- Monitoring and management of surface water flows and quality
- Determination of Basin yield and avoidance of overdraft
- Development of regular and dry-year emergency water supply
- Continuation of conjunctive use operations
- Long-term salinity management
- Integration of recycled water
- Identification and mitigation of soil and groundwater contamination, including involvement with other local agencies in investigation, cleanup and closure
- Development and continuation of local, state and federal agency relationships
- Groundwater management reports
- Continuation of public education and water conservation programs
- Identification and management of recharge areas and wellhead protection areas
- Identification of well construction, abandonment and destruction policies
- Provisions to update the groundwater management plan

Work on a number of the GWMP elements had been ongoing for some time prior to the formal adoption of the GWMP, and expanded work on implementation of the GWMP will continue on an ongoing basis. Draft elements of the GSP evaluate the operating plan going forward and these analyses of the groundwater basin are reflected in this Plan. Notable in the implementation of the GWMP has been the annual preparation of a Santa Clarita Valley Water Report (Annual Report) that summarizes (1) water requirements, (2) all three sources of water supply (groundwater, imported surface water and recycled water, all as part of the GWMP's overall management objectives) and (3) projected water supply availability to meet the following year's projected water requirements. Besides for addressing GWMP requirements, the Annual Report is also prepared in response to a request by the Los Angeles County Board of Supervisors and the MOU between the water purveyors in the Basin and UWCD.

#### 4.3.2.3 Available Groundwater Supplies

The groundwater component of overall water supply in the Valley derives from a groundwater operating plan developed and analyzed to meet water requirements (municipal, agricultural, small domestic) while maintaining the Basin in a sustainable condition, specifically no long-term depletion of groundwater or interrelated surface water. The operating plan also addresses groundwater contamination issues in the Basin, all consistent with the GWMP described above. The groundwater operating plan is based on the concept that pumping can vary from year to year to allow increased groundwater use in dry periods and increased recharge during wet periods to collectively assure that the groundwater Basin is adequately replenished through various wet/dry cycles. As ultimately formalized in the GWMP and described in the Basin Yield Report (LSCE and GSI, 2009), the operating yield concept has been quantified as ranges of annual pumping volumes to capture year-to-year pumping fluctuations in response to both hydrologic conditions and customer demand.

Ongoing work through implementation of the GWMP has produced three detailed technical reports in addition to the annual Water Reports (the most recent of which, for 2019, was the twenty-second annual report). The first detailed technical report (CH2M Hill, April 2004) documents the construction and calibration of the groundwater flow model for the Valley. The second report (CH2M Hill and LSCE, August 2005) presents the initial modeling analysis of the purveyors' original groundwater operating plan. The most recent report, an updated analysis of the Basin (LSCE & GSI, 2009) presents the modeling analysis of the current groundwater operating plan, including restoration of two Saugus Formation wells for municipal supply after treatment and also presents a range of potential impacts deriving from climate change considerations. All those results are reflected in this UWMP. The primary conclusion of the technical analysis is that the groundwater operating plan will not cause detrimental short or long term effects to the groundwater and surface water resources in the Valley and is therefore sustainable. The analysis of sustainability for groundwater and interrelated surface water is described in detail in "Analysis of Groundwater Supplies and Groundwater Basin Yield, Upper Santa Clara River Groundwater Basin, East Subbasin" (Basin Yield Analysis) prepared August 2009 (LSCE & GSI, 2009).

Additional technical work performed for the SCV-GSA in preparation its Groundwater Sustainability Plan (GSP), confirmed previous conclusions that the basin plan was sustainable. Utilizing the new MODFLOW-USG model additional analysis of the basin plan operating plan was performed for the Water Budget Development for the Santa Clara River Valley East Groundwater Subbasin report, GSI Water Solutions Inc, October 2021. The analysis was based on the existing operating plan, modified spatial pumping distribution, incorporated updated climate change data, and made other refinements. The analysis concluded that chronic lowering of groundwater levels and groundwater storage would not occur under the operating plan and therefore operation was within the safe yield of the Basin.

The updated groundwater operating plan (LSCE & GSI, 2009), summarized in Table 4-4, is as follows:

- **Alluvium:** Pumping from the Alluvial Aquifer in a given year is governed by local hydrologic conditions in the eastern Santa Clara River Watershed. Pumping for municipal, agricultural, and private purposes ranges between 30,000 and 40,000 AFY during normal and above-normal rainfall years. However, due to hydrogeologic constraints in the eastern part of the Basin along with distribution of groundwater pumping, pumping is reduced to between 30,000 and 35,000 AFY during locally dry years. These amounts result in an ability to operate supply wells in the Basin in a feasible and sustainable manner.

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

**TABLE 4-4 GROUNDWATER OPERATING PLAN FOR THE SANTA CLARITA VALLEY**

| | Groundwater Production (AF) | | | |
|---|---|---|---|---|
| **Aquifer** | **Normal Years** | **Dry Year 1** | **Dry Year 2** | **Dry Years 3-5** |
| Alluvium | 30,000 to 40,000 | 30,000 to 35,000 | 30,000 to 35,000 | 30,000 to 35,000 |
| Saugus Formation | 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** |

Within the groundwater operating plan, three factors affect the availability of groundwater supplies: sufficient source capacity (wells and pumps), sustainability of the groundwater resource to meet pumping demand on a renewable basis and protection of groundwater sources (wells) from known contamination, or provisions for treatment in the event of contamination. These factors are discussed below.

Protection of groundwater sources and provisions for treatment in the event of contamination is briefly discussed below and discussed further in Section 6.

Perchlorate has been a water quality concern since 1997 when first detected in SCV Water's service area. Several Saugus Formation and Alluvial wells were initially removed from service. Treatment facilities for two wells, Saugus 1 and Saugus 2, have been installed and are currently operational. A treatment facility has been installed for the V201 well and awaits final permitting. Treatment system design has been initiated for Well 205. Additionally, two new wells, Saugus 3 and 4 have been designed and await permitting from DDW prior to drilling. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 6.7.

Recently, USEPA provided a health advisory of lifetime exposure to PFOA and PFOS of 70 parts per trillion (or 70 nanogram per liter (ng/l)) for polyfluoroalkyl substances (PFAS). The health advisory is non-enforceable and non-regulatory and is intended to provide technical information to local and state agencies. In August of 2019, DDW set notification level (NL) and response levels for various PFAS constituents. SCV Water wells were tested and as of February 2020, over 60% of Alluvium wells exceeded the NL or RL resulting in 18 wells being taken out of service. Treatment for three of these wells (N-Wells) has been installed and the wells are now operational. Design is underway for treatment of two additional wells, Honby and Santa Clara, scheduled to be back online by 2023. Preliminary design for an additional 6 wells is under way and they are anticipated to be back online between 2024 and 2025. The remaining wells are anticipated to have treatment installed by 2030. Refer to the feasibility assessment and schedule for completion of these wells in Appendix M.

During this interim period of operation, pumping from non-impacted alluvium wells and Saugus Formation wells will be increased to partially mitigate for lost production capacity. The pumping distribution shown in Table 4-5 and Table 4-6 below were developed in coordination with the SCV Water Operation Division and reflect a likely operation moving forward but will be adjusted to reflect operational conditions that may develop.

Recent historical groundwater pumping by SCV Water and other groundwater users is summarized in Table 4-5. Planned future groundwater pumping in normal years, by the retail water purveyors as well as by other groundwater users, is summarized in Table 4-6. Existing and planned groundwater pumping by SCV Water as well as by other groundwater users, for normal, single-dry and multiple-dry year periods, are summarized in Section 4.3.3.4 and in Table 4-9 through Table 4-11 below.

### TABLE 4-5 RECENT HISTORICAL GROUNDWATER PRODUCTION (AF)[(a)]

| Santa Clara River Valley East Subbasin | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| SCWD | 6,892 | 3,900 | 5,383 | 5,948 | 5,311 |
| Alluvium | 3,485 | 907 | 2,465 | 2,762 | 2,517 |
| Saugus Formation[(b)] | 3,407 | 2,993 | 2,918 | 3,186 | 2,794 |
| LACWWD 36 | 1,047 | 1,093 | 1,204 | 972 | 1,257 |
| Alluvium | 0 | 0 | 0 | 0 | 0 |
| Saugus Formation | 1,047 | 1,093 | 1,204 | 972 | 1,257 |
| NCWD/NWD | 4,468 | 2,303 | 2,608 | 3,708 | 4,591 |
| Alluvium | 626 | 780 | 728 | 1,044 | 1,322 |
| Saugus Formation | 3,842 | 1,523 | 1,880 | 2,664 | 3,269 |
| VWC/VWD | 13,922 | 9,107 | 13,674 | 6,919 | 6,173 |
| Alluvium | 11,133 | 7,737 | 10,837 | 5,243 | 3,732 |
| Saugus Formation | 2,789 | 1,370 | 2,837 | 1,676 | 2,441 |
| **Total Purveyor** | **26,329** | **16,403** | **22,869** | **17,547** | **17,332** |
| **Alluvium** | **15,244** | **9,424** | **14,030** | **9,049** | **7,571** |
| **Saugus Formation** | **11,085** | **6,979** | **8,839** | **8,498** | **9,761** |
| Agricultural and Other[(c)(d)] | 14,359 | 13,438 | 13,071 | 12,510 | 12,300 |
| Alluvium | 13,605 | 12,554 | 12,437 | 11,967 | 9,190 |
| Saugus Formation | 754 | 884 | 843 | 1067 | 1060 |
| **Total Basin** | **40,688** | **29,841** | **36,149** | **30,581** | **27,582** |
| **Alluvium** | **28,849** | **21,978** | **26,467** | **21,016** | **16,761** |
| **Saugus Formation** | **11,839** | **7,863** | **9,682** | **9,565** | **10,821** |
| **Groundwater Fraction of Total Municipal Water Supply** | **56%** | **39%** | **46%** | **42%** | **36%** |

Notes:
(a) From 2019 Santa Clarita Valley Water Report (July 2020) and recorded amounts for 2020.
(b) Represents pumping from Saugus 1 and Saugus 2 wells.
(c) Includes agricultural and other small private well pumping.
(d) 2020 Agricultural and Other alluvial production includes Pitches Detention Center = 1,282 AF, Sand Canyon Country Club 116 AF, Small Pumpers = 500 AF and 2020 Newhall Land and Farming pumping = 7,292 AF for a total of 9,190 AF. Saugus includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course 612 AF Saugus and Whittaker Bermite Treatment = 448 AF, for a total of 1,060 AF.

## TABLE 4-6 PROJECTED GROUNDWATER PRODUCTION (NORMAL YEAR) (AF)

| Basin Name | Groundwater Pumping (AF) | | | | | |
|---|---|---|---|---|---|---|
| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
| Santa Clara River Valley East Subbasin | | | | | | |
| **Purveyor** | | | | | | |
| Alluvium[(a)] | 21,430 | 28,050 | 30,790 | 30,790 | 30,790 | 30,790 |
| Saugus Formation[(b)] | 17,450 | 9,900 | 9,900 | 9,900 | 9,900 | 9,900 |
| **Total Purveyor** | **38,880** | **37,950** | **40,690** | **40,690** | **40,690** | **40,690** |
| **Non Purveyor (Agricultural and Other)[(c)]** | | | | | | |
| Alluvium[(d)] | 11,540 | 9,150 | 6,410 | 6,410 | 6,410 | 6,410 |
| Saugus Formation | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **Total Agricultural and Other** | **12,740** | **10,350** | **7,610** | **7,610** | **7,610** | **7,610** |
| **Basin** | | | | | | |
| Alluvium | 32,970 | 37,200 | 37,200 | 37,200 | 37,200 | 37,200 |
| Saugus Formation | 18,650 | 11,100 | 11,100 | 11,100 | 11,100 | 11,100 |
| **Total Basin** | **51,620** | **48,300** | **48,300** | **48,300** | **48,300** | **48,300** |

Notes:

(a) Includes existing, future (associated with the assumed development under the Newhall Ranch Specific Plan) and recovered pumping capacity after PFAS and Perchlorate treatment.

(b) Saugus Normal Year pumping in 2025 is higher than normal to mitigate for lost alluvial pumping capacity due to impacted PFAS wells.

(c) Non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club, private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment.

(d) Reflects reduction of up to 7,038 AF associated with the assumed development under the Newhall Ranch Specific Plan.

As reflected in Table 4-6, the groundwater operating plan recognizes ongoing pumping for the two major uses of groundwater in the Basin, municipal and agricultural (including private pumpers) water supply. Consistent with the groundwater operating plan, projected groundwater pumping includes an ongoing conversion of pumping, coincident with planned land-use changes, from agricultural to municipal water supply. This is shown in Table 4-6, with projected pumping by agricultural and other users decreasing as purveyor pumping increases in such a manner that overall pumping remains within the basin operating plan. The reduction in pumping for agricultural supply is primarily due to the development of Newhall Ranch (expected buildout date of 2034) and is expected to shift to an increase in pumping by SCV Water. The groundwater operating plan and projected pumping also includes other small private domestic and related pumping. As shown in Table 4-6, total projected groundwater pumping by all users within each aquifer is within the ranges for normal year pumping identified in the groundwater operating plan (Table 4-4). SCV Water recognizes that these estimates of projected groundwater use are subject to adjustment based on various factors and conditions occurring from time to time. These estimates are provided for the planning purposes of this report and the UWMP, and do not constitute an allocation of groundwater from the local groundwater basins.

#### 4.3.2.4 Alluvium

Based on a combination of historical operating experience and groundwater modeling analyses (2005 and 2009 groundwater operation plan updates), the Alluvial Aquifer can supply groundwater on a long-term sustainable basis in the overall range of 30,000 to 40,000 AFY, with a probable reduction in dry years to a range of 30,000 to 35,000 AFY. Both of those ranges include 13,000 to 6,400 AFY (as reflected in Table 4-9 and Table 4-10) of Alluvial pumping for agricultural and other non-municipal water uses. The dry year reduction is a result of practical constraints in the eastern part of the Basin, where lowered groundwater levels in dry periods have the effect of reducing pumping capacities in that shallower portion of the aquifer. The GSP will also consider potential impacts on Groundwater Dependent Ecosystems throughout the basin and available analysis supports a determination that historic pumping patterns and future pumping patterns consistent with the Groundwater Basin Operating Plan were protective of these systems. In addition, in general, increased water conservation practices are expected to reduce both indoor and outdoor irrigation demands. Less outdoor irrigation water use creates less return flow to the basin and less indoor water use creates less recycled water both for use within SCV Water and for return to the River. SCV Water will monitor these effects to ensure that pumping by SCV Water does not impact groundwater supply for other uses, including groundwater dependent ecology. Additionally, it is anticipated that the SCV-GSA will monitor groundwater conditions and implement management actions if Sustainable Management Criteria, or Groundwater Dependent Ecosystem triggers are reached so as to protect resources and ensure sustainable operation of the basin.

One notable change in the future geographic patterns of production compared to historical distributions concerns the historic distribution of agricultural pumping compared to future distribution among SCV Water wells. Under the Newhall Ranch Specific Plan, NLF is to dedicate up to 7,038 AFY by fallowing lands and reducing agricultural pumping on its lands. Under the Specific Plan, SCV Water would then have the ability to pump water to serve the new development. The project will be constructed in stages over a number of years depending on market conditions. Likewise, SCV Water pumping would increase over time in such a manner that the overall pumping remains within the basin operating plan. The Specific Plan development is projecting to implement water conservation practices which will reduce both indoor and outdoor irrigation demands.  This reduces the overall water demand of the development. Consistent with the above, SCV Water will monitor the transfer of water from NLF to ensure it does not impact other uses

If the 7,038 AFY dedicated by NLF is not sufficient to support the Specific Plan Development, NLF (or its successor in interest), will transfer additional water to SCV Water from the Nickel Water and/or the Semitropic Water Bank to backstop demands.  In anticipation of this development, VWC, a PUC regulated private utility then owned by NLF, installed four wells. However, to manage future potential reductions in groundwater levels in the vicinity of these new wells, particularly during drought conditions, the Draft GSP Water Budget Analysis indicated it would be desirable to install several wells located near the confluence of Castaic Creek and the Santa Clara River near the existing “C” wells that are currently used for agricultural production for Newhall Land’s operations in Los Angeles County.

### *Adequacy of Supply*

Three factors affecting the availability of groundwater are (1) sufficient source infrastructure capacity (wells and pumps), (2) sustainability of the groundwater resource to meet pumping demand on a renewable basis, and (3) protection of groundwater sources (wells) from known contamination or from potential sources of contamination.  The first two of these are discussed below and the third is discussed in Section 6.  The resolution of contamination for aquifer protection is addressed below.

For source infrastructure, existing and planned wells and pumps, SCV Water has a combined pumping capacity from active Alluvial wells of approximately 51,000 gallons per minute (gpm), which translates into a current full-time Alluvial source pumping capacity of approximately 83,000 AFY.  The higher individual and cumulative pumping capacities are, of course, primarily for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands).  Further, to achieve these levels of production SCV Water must complete treatment facilities to PFAS compliance. The timing for returning PFAS and Perchlorate impacted wells is shown in Tables 4-7B and 4-7C in Appendix E.  Alluvial pumping capacity from all the active and future municipal supply wells is summarized in Table 4-7A.  The locations of the various municipal Alluvial wells throughout the Basin are illustrated on Figure 4-2.

In terms of adequate source capacity to provide flexible and adaptative management in the sustainable use of groundwater resources, the current and projected availability of Alluvial groundwater source capacity of municipal wells is approximately 83,000 AFY.   This source capacity is more than sufficient to meet the 21,400 AFY in 2025 and increases to 30,800 in 2035 (Table 4-6).  The higher individual and cumulative pumping capacities are, of course, primarily for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands).  As illustrated on Table 4-6, the balance of all Alluvial pumping 37,200 AFY, including non-SCV Water pumping, remains within the operating plan range of 30,000 to 40,000 AFY.  Further, to achieve these levels of production SCV Water must complete treatment facilities to PFAS compliance.

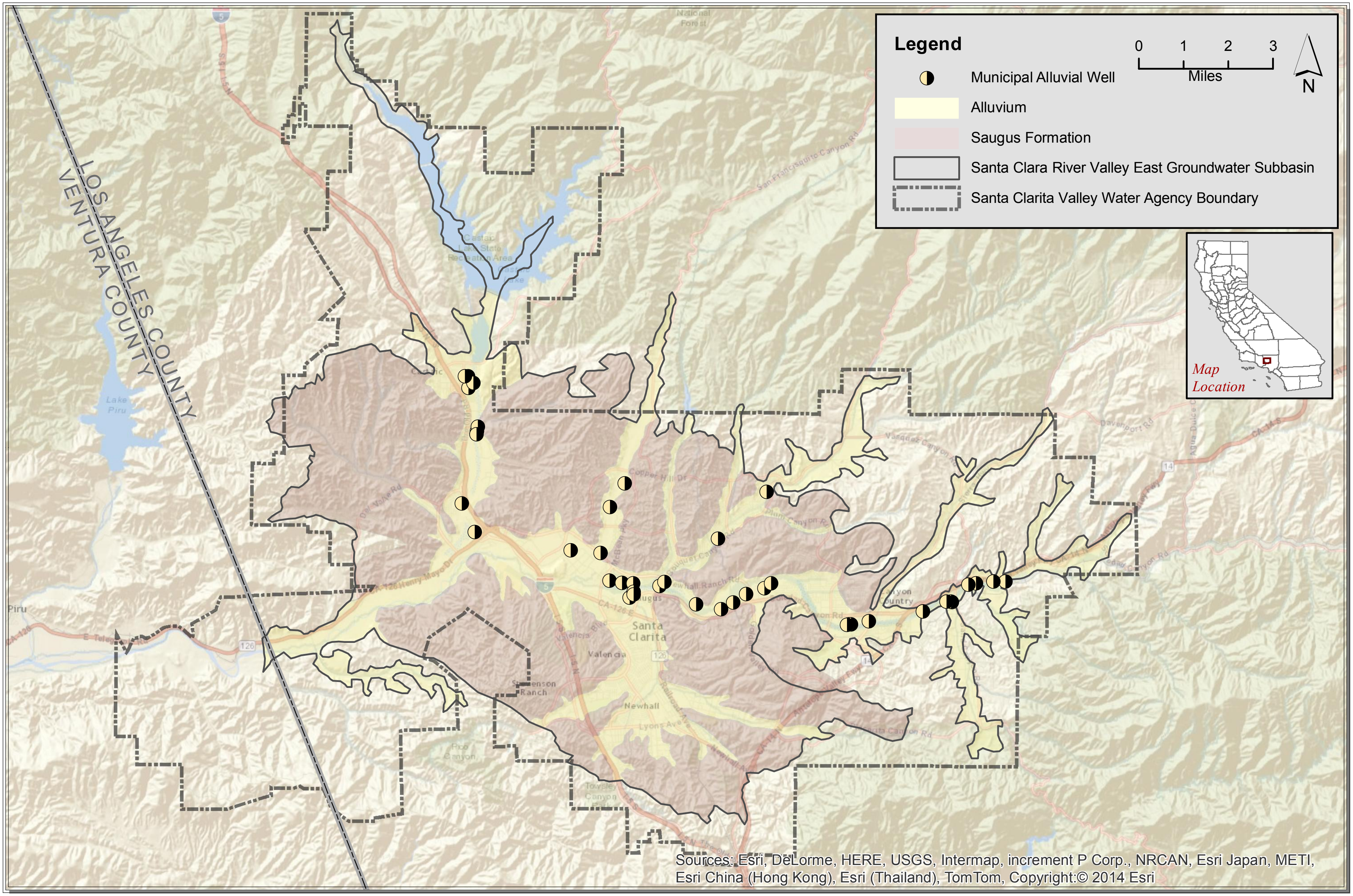



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**Figure 4-2**
**Alluvial Municipal Well Location Map**

## TABLE 4-7A ACTIVE MUNICIPAL GROUNDWATER SOURCE CAPACITY — ALLUVIAL AQUIFER WELLS[(a)]

| Well | Permitted Capacity (gpm) | Max. Annual Capacity (AF) | GSP Water Budget Analysis[(b)] Normal Year (AF) | Dry Year (AF) |
|---|---|---|---|---|
| **Existing Wells[(c)]** | | | | |
| Castaic 1 | 640 | 1,030 | 430 | 420 |
| Castaic 2 | 500 | 810 | 220 | 220 |
| Castaic 4 | 330 | 530 | - | - |
| Castaic 6 | 600 | 970 | - | - |
| Castaic 7 | 2,000 | 3,230 | 580 | 730 |
| Pinetree 3 | 550 | 890 | 310 | - |
| Pinetree 4 | 500 | 810 | - | - |
| Guida | 1,000 | 1,610 | 560 | 560 |
| Lost Canyon 2[(d)] | 800 | 1,290 | 410 | 250 |
| Lost Canyon 2A[(d)] | 1,000 | 1,610 | 420 | 160 |
| N. Oaks West | 750 | 1,210 | - | - |
| Sand Canyon | 1,200 | 1,940 | 730 | 310 |
| Well E-15[(d)] | 1,400 | 2,260 | 725 | 620 |
| Well W9 | 800 | 1,290 | 1,010 | 700 |
| Well W11 | 1,000 | 1,610 | 1,180 | 1,000 |
| Well E-17[(d)] | 1,200 | 1,940 | 725 | 620 |
| *Existing Subtotal* | *14,270* | *23,030* | *7,300* | *5,590* |
| **Future[(e)] and Recovered Wells** | | | | |
| Pinetree 1[(f)] | 300 | 480 | 190 | 0 |
| Pinetree 5[(f)] | 500 | 810 | 200 | 0 |
| Clark[(f)] | 550 | 890 | 380 | 270 |
| Honby[(f)] | 950 | 1,530 | 760 | 110 |
| Mitchell 5B[(f)] | 1,000 | 1,610 | 200 | 60 |
| N. Oaks Central[(f)] | 1,200 | 1,940 | 500 | 340 |
| N. Oaks East[(f)] | 950 | 1,530 | 500 | 220 |
| Santa Clara[(f)] | 1,500 | 2,420 | 770 | 250 |
| Sierra[(f)] | 1,000 | 1,610 | 400 | 60 |
| Valley Center[(f)] | 1,200 | 1,940 | 1,000 | 610 |
| Well D[(f)] | 1,050 | 1,690 | 1,210 | 920 |
| Well N[(f)] | 1,250 | 2,020 | 630 | 1,060 |
| Well N7[(f)] | 2,500 | 4,040 | 1,470 | 1,680 |
| Well N8[(f)] | 2,500 | 4,040 | 1,430 | 1,680 |
| Well Q2[(g)] | 1,200 | 1,940 | 770 | 850 |
| Well S6[(f)] | 2,000 | 3,230 | 640 | 2,080 |

| Well | Permitted Capacity (gpm) | Max. Annual Capacity (AF) | GSP Water Budget Analysis[b] Normal Year (AF) | Dry Year (AF) |
|---|---|---|---|---|
| Well S7[f] | 2,000 | 3,230 | 620 | 780 |
| Well S8[f] | 2,000 | 3,230 | 610 | 760 |
| Well T7[f] | 1,200 | 1,940 | 880 | 360 |
| Well U4[f] | 1,000 | 1,610 | 940 | 570 |
| Well U6[f] | 1,250 | 2,020 | 1,050 | 660 |
| Well W10[f] | 1,500 | 2,420 | 1,700 | 1,490 |
| Well E-14[h] | 1,200 | 1,940 | 725 | 610 |
| Well E-16[h] | 1,200 | 1,940 | 725 | 610 |
| Well G-45[h] | 1,200 | 1,940 | 1,670 | 1,430 |
| Well C-11[h] | 2,000 | 3,230 | 1,600 | 1,360 |
| Well C-12[h] | 2,000 | 3,230 | 1,600 | 1,360 |
| S9 (Mitchell 5A Replacement)[h] | 1,000 | 1,610 | 320 | 320 |
| *Future Subtotal* | *37,200* | *60,060* | *23,490* | *20,500* |
| **Total** | **51,470** | **83,090** | **30,790** | **26,090** |

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Production for Normal and Dry-years represented in this table represent the period after all impacted wells (PFAS and Perchlorate impacts) are recovered. See Tables 4-7B and 4-7C in Appendix E for anticipated production from 2021-2030. Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M.

(c) Existing Category include all wells currently online and in use.

(d) E wells and Lost Canyon have not come below the RL so are not impacted wells but are anticipated to be connected into central treatment systems.

(e) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan.

(f) PFAS impacted well.

(g) Perchlorate impacted well.

(h) Future wells.

***Sustainability***

Until 2003, the long-term renewability of Alluvial groundwater was empirically determined from approximately 60 years of pumping and groundwater level records. Generally, those long-term observations included stability in groundwater levels and storage, with some dry-period fluctuations in the eastern part of the Basin. During this period, the total Alluvial pumpage ranged from a low of about 20,000 AFY to as high as about 43,000 AFY. Those empirical observations have since been complemented by the development and application of a numerical groundwater flow model, which has been used to simulate aquifer response to the planned operating ranges and distribution of pumping. The numerical groundwater flow model has also been used to analyze the control of perchlorate contaminant migration as discussed in Section 5.2.1. The model was used to evaluate the likelihood of perchlorate migration to the then VWC wells, in particular Well Q2 and the wells in the VWC Pardee wellfield. The assessment of perchlorate migration also evaluated the sustainability and reliability of water supplies from the Alluvial aquifer. This analysis (LSCE, 2005) concluded that there was sufficient production capacity in the Alluvium to meet water demands in the case of VWC Well Q2 and/or the Pardee well field being temporarily taken out of service due to perchlorate impacts.

To examine the yield of the Alluvium, or more specifically the sustainability of the Alluvium on a renewable basis, the original groundwater flow model was used to examine the long-term projected response of the aquifer to pumping for municipal and agricultural uses in the 30,000 to 40,000 AFY range under average/normal and wet conditions, and in the 30,000 to 35,000 AFY range under locally dry conditions, documented in the 2005 basin yield analysis (2005 Basin Yield Analysis), prepared by CH2M Hill & LSCE, 2005. To examine the response of the entire aquifer system, the original model also incorporated pumping from the Saugus Formation in accordance with the normal (7,500 to 15,000 AFY) and dry year (15,000 to 35,000 AFY) operating plan for that aquifer. The model was run over a synthetic 78-year hydrologic period, which was selected from actual historical precipitation to examine a number of hydrologic conditions expected to affect both groundwater pumping and groundwater recharge and including projected impacts from climate change.

Simulated Alluvial Aquifer response to the range of hydrologic conditions and pumping stresses was essentially a long-term repeat of the historical conditions that have resulted from similar pumping over the last several decades. The resultant response included (1) generally constant groundwater levels in the middle to western portion of the Alluvium, and fluctuating groundwater levels in the eastern portion as a function of wet and dry hydrologic conditions, (2) variations in recharge that directly correlate with wet and dry hydrologic conditions and (3) no long-term decline in groundwater levels or storage. Consequently, the Alluvial Aquifer was considered in the 2005 UWMP to be a sustainable water supply source to meet the Alluvial portion of the operating plan for the groundwater Basin.

In 2008, partly in preparation for the 2010 UWMP and partly in response to concerns about events expected to impact the future reliability of supplemental water supply from the SWP, an updated analysis was undertaken to assess groundwater development potential and possible augmentation of the groundwater operating plan. In addition to extending the model's calibration, the updated analysis simulated the historical record of climate and incorporated SWP deliveries for those climatic conditions for an 86-year period from 1922 through 2007, in place of the original model's synthetic 78-year hydrologic period that had been developed prior to the availability of combined climate and SWP deliveries since 1922. While the overall operating plan ranges in the updated basin yield analysis did not change from the original operating plan, prevailing land-use conditions and the specific distributions of pumping were found to produce the same kinds of resultant Alluvial groundwater conditions as concluded to be sustainable in 2005 – (1) no long-term declines in Alluvial groundwater levels and storage; (2) multi-year periods of locally declining, or locally increasing, groundwater levels in response to cycles of below-normal and above-normal precipitation and (3) short-term impacts on pumping capacities in eastern parts of the basin due to declining groundwater levels during dry periods, mitigable by short-term redistribution of pumping to wells located in the central and western portions of the Basin (reflected in pumping volumes included in this UWMP) and by conformance with the dry-period reduction in Alluvial pumping in the operating plan (Table 3-5). Based on the results of the updated basin yield analysis (LSCE & GSI, 2009), the operating plan is considered to reflect ongoing sustainable groundwater supply rates. In the Alluvium, sustainability was found via explicit simulation of pumping in wet/normal years near the upper end of the operating plan range. In dry years, sustainability was found via explicit simulation of pumping throughout the dry-year operating plan range, with the additional consideration that some redistribution of municipal pumping (reflected in this UWMP and experienced in the dry years of 2014 and 2015) be implemented to achieve pumping rates near the dry-period range.

The SCV-GSA's work on Basin sustainability for the GSP has advanced the technical understanding of basin conditions since the 2009 basin yield analysis and confirms the previous conclusion. A new groundwater flow model using the U.S Geological Survey software MODFLOW-USG was developed calibrated and peer reviewed. The MODFLOW-USG model improves the spatial resolution and employs more sophisticated methods of representing stream/aquifer interactions among other advancements over the previous model. A more thorough discussion is documented in Development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin GSI September 22, 2020. Additionally, the GSP Water Budget Analysis reflect updated climate change assumptions provided by DWR. New GSP technical reports defining the extent and nature of groundwater dependent ecosystems informed potential future adjustments of pumping distributions throughout the Alluvial Aquifer and Saugus Formation when considering likely sustainability criteria and potential impacts on groundwater dependent ecosystems. Accordingly, this Plan reflects adjusted pumping distributions that are reflected in Table 4-7A.

While the GSP has not been completed, existing technical resources and analysis are available for public review and can be access at www.scvgsa.org. Information developed to date appears to support the following conclusions relating to sustainability:

1. Chronic Lowering of Groundwater Levels – Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in chronic lowering of groundwater levels.

2. Reduction of Groundwater Storage - Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in the long-term groundwater storage depletion.

3. Degraded Water Quality – Implementation of treatment for known contaminants support continued Alluvium and Saugus Formation groundwater use consistent with the operating plan.

4. Land Subsidence – An evaluation of the available information indicates there is no evidence of land subsidence occurring. The GSP does identify additional data collection needs to ensure land subsidence remains a non-issue while achieving the basin operation plan. The GSP will likely incorporate active monitoring stations.

5. Depletion of Interconnected Surface Water/Groundwater Dependent Ecosystems – Existing riparian habitat along the Santa Clara River is considered by resource agencies as having very high value. The extent and quality of the habitat can vary significantly from year to year in response to very wet or dry conditions and demonstrates considerable resiliency. Certain aquatic habitat is critical for known protected species such as the Three Spined Unarmored Stickle Back. The proposed approach, which seeks to avoid the permanent loss of riparian habitat or the temporary loss of critical aquatic habitat, is likely to involve active monitoring of groundwater levels and when trigger levels (set at or above historical groundwater levels) are reached an assessment of the cause would be conducted. If impacts are related to pumping, then responsive measures and/or projects would be implemented. These could include a reduction of groundwater pumping.

6. The GSP is also evaluating if groundwater dependent ecosystems in upper canyon areas (such as Coastal Live Oak ecosystems in Placerita Canyon) are subject to groundwater pumping impacts and what projects or actions, if any, may be incorporated into the GSP.

7. Seawater Intrusion – The significant distance of the Alluvial Aquifer and Saugus Formation from the ocean, as well as differences in elevation, do not allow for seawater intrusion into the upper basin.

Additional information regarding finalizing sustainability criteria, monitoring plans and potential projects remain to be developed for the GSP. A draft GSP is scheduled to be released in August of 2021.

Considering the results of the 2009 basin yield analysis and the results of the updated groundwater analysis performed by the SCV-GSA for its GSP which included the pumping distributions consistent with those shown in Table 4-7A, the basin can be sustainably operated without chronic lowering of groundwater levels or groundwater storage.

#### 4.3.2.5 Saugus Formation

Based on historical operating experience and recent (2005 and 2009) groundwater modeling analysis, the Saugus Formation can supply water on a long-term sustainable basis in a normal range of 7,500 to 15,000 AFY. Intermittent increases to 25,000 to 35,000 AF in dry years have not been historically experienced operationally, however, investigations of the Saugus Formation, historical groundwater level monitoring data, and numerical modeling indicate that the Saugus Formation can be pumped sustainably at these higher rates in dry years, followed by reductions in pumping in wet to normal years. The dry-year increases, based on modeled projections, demonstrate that the 25,000 to 35,000 AFY is a small amount of the large groundwater storage in the Saugus Formation and these amounts can be pumped over a relatively short (dry) period. This would be followed by recharge (replenishment) of that storage during a subsequent normal-to-wet period when the Saugus pumping would be reduced to 7,500 to 15,000 AFY.

***Adequacy of Supply***

For municipal water supply with existing wells, SCV Water has a combined pumping capacity from active Saugus wells of nearly 16,200 gpm, which translates into a full-time Saugus Formation source capacity of about 26,120 AFY. Additionally, LACWWD 36 completed a Saugus Formation Well with a pumping capacity estimated at 2,000 gpm and an annual capacity of 3,220 AFY. Saugus Formation pumping capacity from all the existing active municipal supply wells is summarized in Table 3-9, as well as restored, replacement, and planned new supply wells. The locations of the various active municipal Saugus Formation wells are illustrated on Figure 4-3. The active wells include two Saugus Formation wells contaminated by perchlorate (Saugus 1 and 2), which were returned to service in 2010 with treatment facilities for use of the treated water for municipal supply under permit from the California Department of Public Health (DPH). The permit is now with DDW. The active wells also include the most recent replacement well, Well 207, in a non-impacted part of the basin. Also included in Table 4-8A is Well 201, which was impacted by the detection of perchlorate and removed from service in 2010. The well has been equipped with treatment facilities and is awaiting final DDW approval), similar to the Saugus 1 and Saugus 2 wells. Well 201 is anticipated to provide a total of 2,000 gpm of pumping capacity and is anticipated to return to service sometime in 2021. Well 201 is shown in Table 4-8A. Similarly, Well 205, was taken out of service for perchlorate. Treatment for this facility is under early stages of design and it is anticipated to return to service in 2024 as shown in Table 4-8B and Table 4-8C, provided in Appendix E. Additional details on DDW permitting and associated timeline for Saugus wells 201 and 205 are provided in Section 6.7.

To achieve full dry year production of 33,800 AFY six additional Saugus wells are planned. Two of these wells, Saugus 3 and 4, located behind Magic Mountain, have been designed and await permitting from DDW. This has been delayed while issues surrounding the proximity of abandoned oil wells are being addressed. It is estimated that these wells should be available in 2025. The next wells anticipated to be available are Saugus 5 and 6, located in the Castaic Junction area. Sites have been secured for these wells and they are anticipated to be available in 2027. To accommodate the shifting of pumping patterns associated with treatment being added at Well 201 and Well 207 the GSP Water Budget Analysis concluded that two additional dry-year wells would be required to meet the Saugus Formation pumping objectives. These final two wells, Saugus 7 and Saugus 8, do not have specific sites. The GSP Water Budget Analysis assumed these wells would be located near the South Fork of the Santa Clara River in the vicinity of the existing well 12 and 13. These wells are anticipated to become available in 2030. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 6.7.

In terms of adequacy and availability, the combined active (existing) Saugus groundwater source capacity of municipal wells of about 29,340 AFY is more than sufficient to meet the planned use of Saugus groundwater in normal years of 7,500 to 15,000 AFY. This existing active capacity is also more than sufficient to meet near term dry year water demands, in combination with other sources. In order to supplement long term dry-year supplies, additional Saugus Formation wells are planned to be operational within the next ten years.

With the restored capacity of Well 205 and the additional planned new Saugus Formation wells, the total dry year combined capacity will increase to about 54,680 AFY. As shown in Table 4-8A, this combined capacity is more than sufficient to meet the multiple dry year municipal production target of 33,880 AFY.

# TABLE 4-8A MUNICIPAL GROUNDWATER SOURCE CAPACITY- EXISTING, FUTURE, AND RECOVERED SAUGUS FORMATION WELLS[(a)]

| Well | | Permitted Capacity (gpm) | Max. Annual Capacity (AF) | GSP Water Budget Analysis[(b)] Normal Year (AF) | GSP Water Budget Analysis[(b)] Dry Year (AF) |
|---|---|---|---|---|---|
| **Existing Wells[(c)]** | | | | | |
| LACWWD36[(d)] | | | | | |
| | Palmer | 2,000 | 3,220 | 500 | 1,250 |
| SCV Water | | | | | |
| | 12[(i)] | 2,500 | 4,030 | 530 | 2,280 |
| | 13 | 2,500 | 4,030 | 540 | 2,280 |
| | 160 | 2,000 | 3,230 | 0 | 680 |
| | 201[(e)] | 2,000 | 3,230 | 2,420 | 2,900 |
| | 206 | 2,500 | 4,030 | 180 | 2,830 |
| | 207 | 2,500 | 4,030 | 140 | 2,860 |
| | Saugus 1 | 1,100 | 1,770 | 1,450 | 1,450 |
| | Saugus 2 | 1,100 | 1,770 | 1,350 | 1,350 |
| *SCV Water Subtotal* | | *16,200* | *26,120* | *6,610* | *16,630* |
| *Existing Purveyor Subtotal* | | *18,200* | *29,340* | *7,110* | *17,880* |
| **Future[(f)] and Recovered Wells** | | | | | |
| | 205[(g)] | 2,700 | 4,360 | 2,610 | 2,920 |
| | Saugus 3[(h)] | 2,500 | 4,030 | 30 | 2,620 |
| | Saugus 4[(h)] | 2,500 | 4,030 | 30 | 2,620 |
| | Saugus 5[(h)] | 2,000 | 3,230 | 30 | 1,940 |
| | Saugus 6[(h)] | 2,000 | 3,230 | 30 | 1,940 |
| | Saugus 7[(h)] | 2,000 | 3,230 | 30 | 1,940 |
| | Saugus 8[(h)] | 2,000 | 3,230 | 30 | 1,940 |
| *Future Subtotal* | | *15,700* | *25,340* | *2,790* | *15,920* |
| **Total Purveyors** | | **33,900** | **54,680** | **9,900** | **33,800** |

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) Production for Normal and Dry-years represented in this table represent the period after all impacted wells (PFAS and Perchlorate impacts) are recovered. See Tables 4-8B and 4-8C in Appendix E for anticipated production from 2021-2030. Dry-year production represents anticipated maximum dry year production. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 in Appendix M.
(c) Existing Category include all wells currently online and in use.
(d) LAWWD36 anticipated production for normal and dry-years.
(e) Well 201 is awaiting DDW permitting, returning to service in 2021.
(f) Future Category includes one well restored from Perchlorate water quality issues, and other future Saugus wells.
(g) Well 205 is impacted by Perchlorate and is expected to return to service in 2024.
(h) Future wells, Saugus 3 & 4, are planned replacement wells, Saugus 5-8 are new Dry Year wells. The new dry-year wells would not typically be operated during average/normal years.
(i) Permitted at 2,500 gpm but capacity was reduced to 2,000 gpm during last rehab.

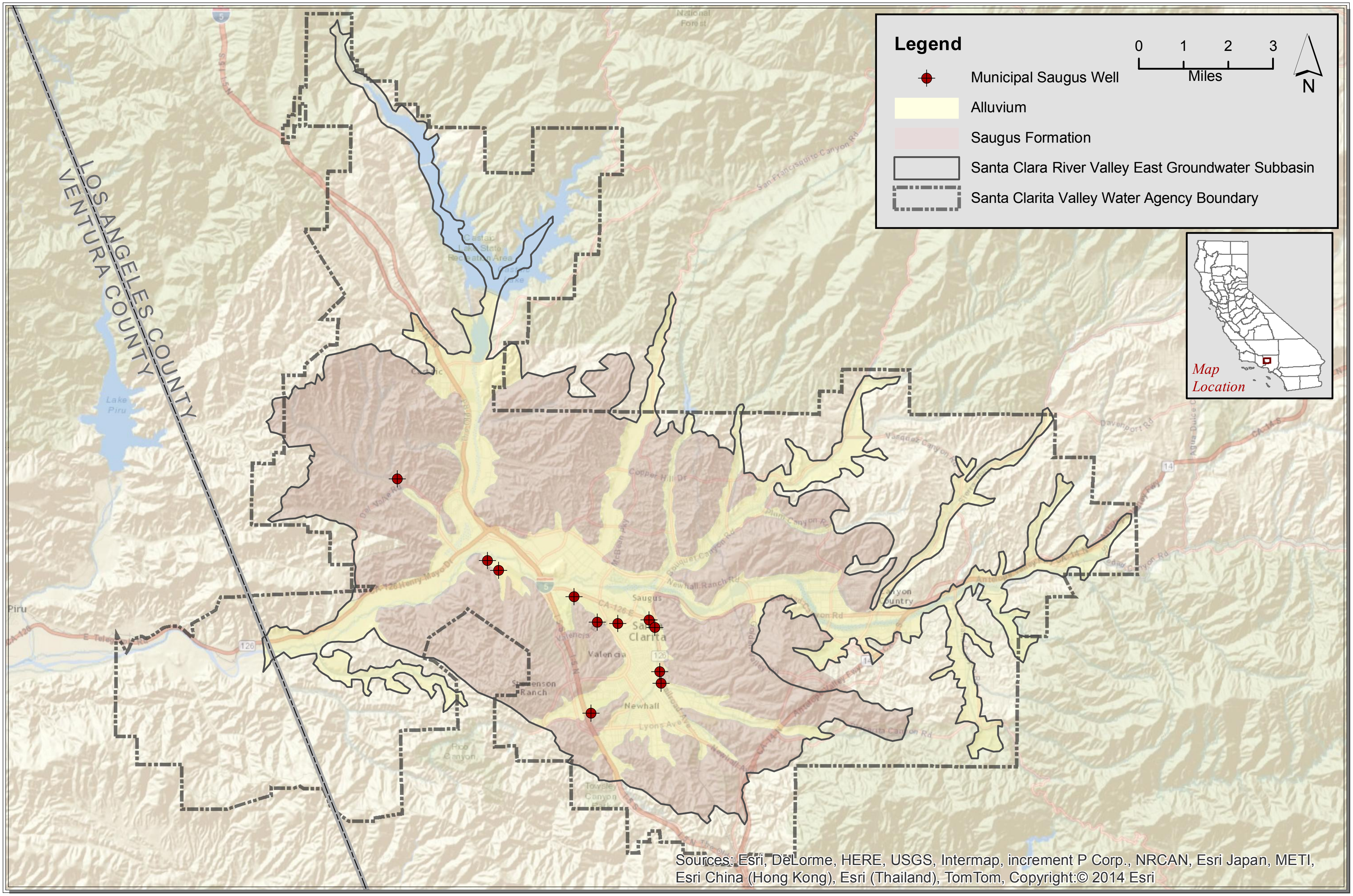


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**Figure 4-3**
**Saugus Municipal Well Location Map**

***Sustainability***

Until 2003, the long-term sustainability of Saugus Formation groundwater was empirically estimated from limited historical experience. Historically (and continuing to the present), pumping from the Saugus Formation has been fairly low in most years, with one four-year period of increased pumping up to about 15,000 AFY that had short-term water level impacts but produced no long-term depletion of the substantial groundwater storage in the Saugus Formation. Those empirical observations have now been complemented by the development and application of the numerical groundwater flow model. The numerical groundwater flow model has also been used to analyze the control of perchlorate contaminant migration on two separate occasions under selected pumping conditions. The first occasion resulted in the implementation of a plan to restore, with treatment, pumping capacity that was formerly inactivated due to perchlorate contamination detected in the Saugus 1 and Saugus 2 wells in the Basin. The second occasion utilized the numerical groundwater flow model to evaluate preferred plans to control the migration of perchlorate in the vicinity of Well 201. As discussed in Section 4.3.3, those restoration efforts have been undertaken and the restoration of that pumping is reflected in this UWMP as part of the Saugus Formation operating plan (Table 4-4) and pumping distribution (Table 4-8A).

To examine the yield of the Saugus Formation, or its sustainability on a renewable basis, the original groundwater flow model was used to examine long-term projected response to pumping from both the Alluvium and the Saugus Formation over the synthetic 78-year period of hydrologic conditions that incorporated alternating wet and dry periods as have historically occurred (CH2M Hill and LSCE, 2005). The model was based upon field investigations and historical data collected from numerous sources including annual reports prepared by LSCE and investigations of Saugus Formation and Alluvial aquifers by CH2M Hill and Richard C. Slade and Associates among others (CH2M Hill, 2004a, 2004b, 2005a; CH2M Hill & LSCE 2005; LSCE 2005; Slade & Associates 1986, 1988, 2002). The pumping simulated in the model was in accordance with the then-current operating plan for the Basin. For the Saugus Formation, simulated pumping included the then-planned restoration of historic pumping from the wells impacted by perchlorate at that time (Saugus 1 and Saugus 2).

The originally simulated Saugus Formation response to the ranges of operating plan pumping under assumed recurrent historical hydrologic conditions was consistent with actual experience under smaller pumping rates: (1) short-term declines in groundwater levels and storage near pumped wells during dry-period pumping, (2) recovery of groundwater levels and storage after cessation of dry-period pumping and (3) no long-term decreases or depletion of groundwater levels or storage. The combination of actual experience with Saugus Formation recharge and pumping up to about 15,000 AFY, complemented by modeled projections of aquifer response that showed long-term utility of the Saugus Formation at 7,500 to 15,000 AFY in normal years and rapid recovery from higher pumping rates during intermittent dry periods, was the basis for concluding that the Saugus Formation could be considered a sustainable water supply source to meet the Saugus Formation portion of the operating plan for the groundwater Basin.

As discussed under Sustainability of the Alluvium above, an updated basin yield analysis was undertaken in 2008 to assess groundwater development potential and possible augmentation of the groundwater operating plan. After extended and updated model calibration and incorporation of extended historical records, the overall operating plan (Table 4-4) and specific distribution of Saugus Formation pumping were found to produce the same kinds of resultant

Saugus Formation groundwater conditions as concluded to be sustainable in 2005 – (1) long-term stability of groundwater levels, with no sustained declines; (2) groundwater levels slightly below historic Saugus Formation levels, in response to greater long-term utilization of the Saugus and (3) maintenance of sufficiently high Saugus Formation groundwater levels to ensure achievement of planned individual pumping capacities (Table 3-9). Thus, the operating plan for the Saugus Formation, with fairly low pumping in wet/normal years and increased pumping through dry periods, is concluded to reflect sustainable groundwater supply rates.

The SCV-GSA's work on basin sustainability for the GSP has advanced the technical understanding of basin conditions since the 2009 basin yield analysis and confirms the previous conclusion. A new groundwater flow model using the U.S Geological Survey software MODFLOW-USG was developed calibrated and peer reviewed. The MODFLOW-USG model improves the spatial resolution and employs more sophisticated methods of representing stream/aquifer interactions among other advancements over the previous model. A more thorough discussion is documented in Development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin GSI September 22, 2020. Additionally, the GSP Water Budget Analysis reflects updated climate change assumptions provided by DWR. New GSP technical reports defining the extent and nature of groundwater dependent ecosystems informed potential future adjustments of pumping distributions throughout the Alluvial Aquifer and Saugus Formation when considering likely sustainability criteria and potential impacts on groundwater dependent ecosystems. Accordingly, this Plan reflects adjusted pumping distributions that are reflected in Table 4-8A.

While the GSP has not been completed, existing technical resources and analysis are available for public review and can be accessed at www.scvgsa.org. Information developed to date appears to support the following conclusions relating to sustainability:

1. Chronic Lowering of Groundwater Levels – Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in chronic lowering of groundwater levels.

2. Reduction of Groundwater Storage - Alluvium and Saugus Formation pumping consistent with the basin operating plan does not result in the long-term groundwater storage depletion.

3. Degraded Water Quality – Implementation of treatment for known contaminants support continued Alluvium and Saugus Formation pumping consistent with the operating plan.

4. Land Subsidence – An evaluation of the available information indicates there is now evidence of land subsidence occurring. The GSP does identify additional data collection needs to ensure land subsidence remains a non-issue while achieving the basin operating plan. The GSP will likely incorporate active monitoring stations.

5. Depletion of Interconnected Surface Water/Groundwater Dependent Ecosystems – Existing riparian habitat along the Santa Clara River is considered by resource agencies as having very high value. The extent and quality of the habitat can vary significantly from year to year in response to very wet or dry conditions and demonstrates considerable resiliency. The proposed approach to avoid the permanent loss of groundwater dependent ecosystems from increased pumping may involve active monitoring of groundwater levels and when trigger levels (set at or above historical groundwater levels) are reached an assessment of the cause would be conducted. If impacts are related to pumping, then measures or projects would be implemented. These could include an eventual reduction of groundwater pumping if other measures are ineffective.

6. The GSP is also evaluating if groundwater dependent ecosystems in upper canyon areas (such as Coastal Live Oak ecosystems in Placerita Canyon) are subject to groundwater pumping impacts and what projects or actions, if any, may be incorporated into the GSP.

7. Sea Water Intrusion – The proximity of the Alluvial Aquifer and Saugus Formation to the ocean as well as differences in elevation, do not allow for seawater intrusion into the upper basin.

Additional information regarding finalizing sustainability criteria, monitoring plans and potential projects remain to be developed for the GSP. A draft GSP is scheduled to be released in August of 2021.

The results of the 2009 basin yield analysis and the results of the updated groundwater analysis performed by the SCV-GSA for the GSP, which included pumping distributions consistent with those shown in Table 4-8A, show that the basin can be sustainably operated without chronic lowering of groundwater levels or groundwater storage.

Thus, the operating plan for the Saugus Formation, with fairly low pumping in wet/normal years and increased pumping through dry periods, is concluded to reflect sustainable groundwater supply rates.

## 4.3.3 Existing and Planned Groundwater Pumping

### 4.3.3.1 Impacted Well Capacity

As discussed in Section 6, USEPA recently implemented a new lifetime health advisory level of 70 parts per trillion (or 70 nanogram per liter (ng/l)) for polyfluoroalkyl substances (PFAS). In August of 2019, DDW set notification level (NL) and response levels for various PFAS constituents. SCV Water wells were tested and as of February 2020, over 60% of Alluvium wells exceeded the NL or RL resulting in 18 wells being taken out of service. Treatment for three of these wells (N-Wells) has been installed and is now operational. Design is underway for treatment of two additional wells, Honby and Santa Clara that are scheduled to be returning to service by 2023. Preliminary design for an additional 6 wells is under way and these are anticipated to be returning to service between 2024 and 2025. The remaining wells are anticipated to have treatment installed by 2030. A feasibility assessment and schedule for completion of these wells are shown in the April 2021 Technical Memorandum, Groundwater Treatment Implementation Plan (Kennedy Jenks 2021).

As discussed in Section 6.2.1 of this Plan, certain wells in the Basin were impacted by perchlorate contamination and thus represented a temporary loss of well capacity within SCV Water's service area. Six wells were initially taken out of service upon the detection of perchlorate including four Saugus wells and two Alluvial wells. All have either been (1) abandoned and replaced, (2) returned to service with the addition of treatment facilities that allow the wells to be used for municipal Water supply as part of the overall water supply systems permitted by DDW or (3) will be replaced under an existing perchlorate litigation settlement agreement (see Section 6). The restored wells (two Saugus wells and one Alluvial well), one Saugus well which is currently being restored, and the replacement wells (one Saugus and one Alluvial well), which collectively restore much of the temporarily lost well capacity, are now included as parts of the municipal groundwater source capacities delineated in Tables 3-8 and 3-9. Additional wells will be drilled to fully restore the impacted well capacity, thus restoring the operational flexibility that existed prior to perchlorate contamination being discovered.

In August 2010, Well 201, located downgradient from the Whittaker-Bermite site and downgradient from the initially impacted Saugus 1 and Saugus 2 wells and well 157 had detections of perchlorate and was removed from service. Treatment facilities were constructed, are operational, and are now awaiting final DDW approval to be returned to potable drinking water service, similar to the Saugus 1 and Saugus 2 wells. Well 201 is anticipated to provide a total of 2,000 gpm of pumping capacity (for a dry-year production capacity of 2,900 AFY) and is shown in Table 4-8A. Similarly, Well 205, was taken out of service for perchlorate. Treatment for this facility is under early stages of design and it is anticipated to return to service in 2024 as shown in Tables 4-8B and 4-8C. Additional details on DDW permitting and associated timeline for Saugus wells 201 and 205 are provided in Section 6.7.

To achieve full dry-year production of 33,800 AFY six additional Saugus wells are planned. Two of these wells Saugus 3 and 4, located behind Magic Mountain, have been designed and await permitting from DDW. As indicated above, this has been delayed while issues surrounding the proximity to abandoned oil wells are being addressed. It is estimated that these wells should be available in 2025. The next wells anticipated to be available are Saugus 5 and 6, located in the Castaic Junction area. Sites for these wells have been secured and the wells are anticipated to be available in 2027. The final two wells, Saugus 7 and 8, do not have specific sites. The GSP Water Budget Analysis (GSI 2020) assumed these wells would be located near the South Fork of the Santa Clara River in the vicinity of the existing well 12 and 13. These wells are anticipated to become available in 2030. Additional details on DDW permitting and associated timeline for Saugus wells are provided in Section 6.7.

#### 4.3.3.2 Alluvium

In terms of adequacy and availability, the current Alluvial Aquifer groundwater pumping capacity is constrained, however the current reductions in supply are being met by other sources of supply such as imported SWP water or banked water supplies. The schedule for recovery of this supply is shown in Table 4-7B for normal years and Table 4-7C for dry years (these tables are provided in Appendix E). When well capacity is recovered in 2030 and other future wells are in service in 2035 the combined Alluvial Aquifer groundwater source municipal well capacity of approximately 83,090 AFY (Table 4-7) will be sufficient to meet anticipated demands. The higher cumulative pumping capacities are for operational reasons (i.e., to meet daily and other fluctuations from average day to maximum day and peak hour system demands).

Table 4-9, Table 4-10 and Table 4-11, and Tables 7-2, 7-3 and 7-4, include future and recovered Alluvial Aquifer supplies. These planned supplies do not increase the total quantity of water being withdrawn from the Alluvial Aquifer but represent anticipated or potential shifts in pumping involving different or new wells.

For example, as shown on Table 4-6, planned Alluvial Aquifer supplies assume a reduction of Newhall Land agricultural uses and a corresponding increase in SCV Water Alluvial water use for the Newhall Ranch Specific Plan area. Total purveyor and non-purveyor supplies remain consistent with the operating plan shown on Table 3-5. Based on existing information the conclusion of the analysis is that total Alluvial Aquifer pumping is sustainable. However, the potential exists for some future curtailments during extreme long-term drought events associated with the implementation of the GSP over the upcoming twenty years.

#### 4.3.3.3 Saugus Formation

In terms of adequacy and availability, the combined active Saugus groundwater source municipal well capacity of 26,120 AFY (29,340 including LACWD36 well) is more than sufficient to meet the planned use of Saugus groundwater in normal years of 7,500 to 15,000 AFY (Table 4-4). Near term dry-year supplies will be augmented once Well 205 is restored to service by 2024 utilizing treatment technologies currently being used in the Santa Clarita Valley (see Section 6). In order to accommodate the longer-term demands, current GSP Water Budget Analysis indicates six additional wells will be required. Two of these wells have been designed and await permitting, sites for two additional wells have been secured and the final two wells need to be sited. These additional Saugus wells would provide for meeting the planned maximum purveyor use of 33,800 AFY of Saugus groundwater during a multiple-dry year period. That amount combined with non-purveyor pumping of 1,200 AFY is at the maximum of 35,000 AFY consistent with operating plan shown on Table 4-4. The conclusion of the analysis is that the Saugus operating plan is sustainable. However, associated with the implementation of the GSP, the potential exists for some future curtailment of pumping during extreme long-term drought events over the upcoming twenty years. Table 4-9, Table 4-10 and Table 4-11 and Tables 7-2, 7-3, 7-4, include planned Saugus Formation supplies.

#### 4.3.3.4 Summary

Overall, the total municipal supply in this Plan includes a groundwater component that is, in turn, part of the overall groundwater supply of the Santa Clarita Valley. As such, the municipal groundwater supply recognizes the existing and projected future uses of groundwater by overlying interests in the Valley, such that the combination of municipal and all other groundwater pumping, remains within the groundwater operating plan (Table 4-4) that has been analyzed for sustainability.

## TABLE 4-9 AVERAGE/NORMAL YEAR EXISTING AND PLANNED GROUNDWATER USAGE (AF)[(a)]

| **Alluvium Supplies** | **2025** | **2030** | **2035** | **2040** | **2045** | **2050** |
|---|---|---|---|---|---|---|
| Purveyors Existing | 8,900 | 8,180 | 7,300 | 7,300 | 7,300 | 7,300 |
| Purveyors Future and Recovered[(b)] | 12,530 | 19,870 | 23,490 | 23,490 | 23,490 | 23,490 |
| *Purveyors Total* | *21,430* | *28,050* | *30,790* | *30,790* | *30,790* | *30,790* |
| Non Purveyors (Agricultural & Other)[(c)] | 11,540 | 9,150 | 6,410 | 6,410 | 6,410 | 6,410 |
| **Total Alluvium Production** | **32,970** | **37,200** | **37,200** | **37,200** | **37,200** | **37,200** |
| ***Alluvial Operating Plan Range for Average/Normal Year (30,000-40,000)*** | | | | | | |

| **Saugus Formation Supplies** | **2025** | **2030** | **2035** | **2040** | **2045** | **2050** |
|---|---|---|---|---|---|---|
| Purveyors Existing | 14,440 | 7,110 | 7,110 | 7,110 | 7,110 | 7,110 |
| Purveyors Future and Recovered[(d)] | 3,010 | 2,790 | 2,790 | 2,790 | 2,790 | 2,790 |
| *Purveyors Total* | *17,450* | *9,900* | *9,900* | *9,900* | *9,900* | *9,900* |
| Non purveyors[(e)] | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **Total Saugus[(f)]** | **18,650** | **11,100** | **11,100** | **11,100** | **11,100** | **11,100** |
| ***Saugus Operating Plan Range for Average/Normal Year (7,500-15,000)*** | | | | | | |

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

(f) Higher total Saugus Production from 2021 to 2026 reflect temporary increase in purveyor production to mitigate for lost Alluvial pumping capacity due to PFAS impacted wells.

## TABLE 4-10 SINGLE-DRY YEAR EXISTING AND PLANNED GROUNDWATER USAGE (AF) [(a)]

| Alluvium Supplies | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Purveyors Existing | 7,300 | 6,330 | 5,590 | 5,590 | 5,590 | 5,590 |
| Purveyors Future and Recovered[(b)] | 12,970 | 17,020 | 20,500 | 20,500 | 20,500 | 20,500 |
| *Purveyors Total* | *20,270* | *23,350* | *26,090* | *26,090* | *26,090* | *26,090* |
| Non Purveyors (Agricultural & Other)[(c)] | 11,540 | 9,150 | 6,410 | 6,410 | 6,410 | 6,410 |
| **Total Alluvium Production** | **31,810** | **32,500** | **32,500** | **32,500** | **32,500** | **32,500** |
| ***Alluvial Operating Plan Range for Single Dry Year (30,000-35,000)*** | | | | | | |

| Saugus Formation Supplies | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Purveyors Existing | 17,880 | 17,880 | 17,880 | 17,880 | 17,880 | 17,880 |
| Purveyors Future and Recovered[(d)] | 9,090 | 15,920 | 15,920 | 15,920 | 15,920 | 15,920 |
| *Purveyors Total* | *26,970* | *33,800* | *33,800* | *33,800* | *33,800* | *33,800* |
| Non purveyors[(e)] | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **Total Saugus[(f)]** | **28,170** | **35,000** | **35,000** | **35,000** | **35,000** | **35,000** |
| ***Saugus Operating Plan Range for Single Dry Year (21,000-35,000)*** | | | | | | |

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis(LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

**TABLE 4-11 MULTIPLE DRY YEAR (5-YEAR) EXISTING AND PLANNED GROUNDWATER USAGE (AF) [(a)]**

| Alluvium Supplies | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Purveyors Existing | 7,300 | 6,330 | 5,890 | 5,590 | 5,590 | 5,590 |
| Purveyors Future and Recovered[(b)] | 11,930 | 16,310 | 19,900 | 20,500 | 20,500 | 20,500 |
| *Purveyors Total* | 19,230 | 22,640 | 25,790 | 26,090 | 26,090 | 26,090 |
| Non Purveyors (Agricultural & Other)[(c)] | 11,490 | 9,190 | 6,710 | 6,410 | 6,410 | 6,410 |
| **Total Alluvium Production** | **30,720** | **31,830** | **32,500** | **32,500** | **32,500** | **32,500** |
| ***Alluvial Operating Plan Range for Single Dry Year (30,000-35,000)*** | | | | | | |
| | | | | | | |
| **Saugus Formation Supplies** | **2025** | **2030** | **2035** | **2040** | **2045** | **2050** |
| Purveyors Existing | 17,880 | 17,610 | 17,610 | 17,610 | 17,610 | 17,610 |
| Purveyors Future and Recovered[(d)] | 5,750 | 8,020 | 8,020 | 8,020 | 8,020 | 8,020 |
| *Purveyors Total* | 23,630 | 25,630 | 25,630 | 25,630 | 25,630 | 25,630 |
| Non purveyors[(e)] | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 | 1,200 |
| **Total Saugus[(f)]** | **24,830** | **26,830** | **26,830** | **26,830** | **26,830** | **26,830** |
| ***Saugus Operating Plan Range for Single Dry Year (21,000-35,000)*** | | | | | | |

Notes:

(a) The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(b) These values account for recovery of alluvial PFAS and Perchlorate impacted wells along with additional pumping to supply Newhall Ranch Specific Plan.

(c) Alluvial non purveyor pumping includes Five Point (Newhall Ranch Agriculture), Pitches Detention Center, and Small Private Domestic pumping and irrigation at Sand Canyon Country Club. Decline in pumping rates incorporate reduced pumping by Five Point of 7,038 AFY for Newhall Ranch Specific Plan.

(d) This includes Saugus Perchlorate impacted well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. The new dry-year wells would not typically be operated during average/normal years.

(e) This includes private irrigation pumping from Valencia Country Club and Vista Valencia Golf Course, as well as projected Whittaker-Bermite pumping for perchlorate treatment, assumed constant.

## 4.4 Transfers and Exchanges

An opportunity available to SCV Water to increase water supplies is to participate in voluntary Water transfer programs. Since the drought of 1987-1992, the concept of water transfer has evolved into a viable supplemental source to improve supply reliability. The initial concept for water transfers was codified into law in 1986 when the California Legislature adopted the "Katz" Law (California Water Code, Sections 1810-1814) and the Costa-Isenberg Water Transfer Law of 1986 (California Water Code, Sections 470, 475, 480-483). These laws help define parameters for water transfers and set up a variety of approaches through which water or water rights can be transferred among individuals or agencies.

Up to 27 million AF of water are delivered for agricultural use every year. Over half of this water use is in the Central Valley, and much of it is delivered by, or adjacent to, SWP and CVP conveyance facilities. This proximity to existing water conveyance facilities could allow for the voluntary transfer of water to many urban areas, including SCV Water, via the SWP. Such water transfers can involve water sales, conjunctive use and groundwater substitution and water sharing. They usually occur as a form of spot, option or core transfers agreements. The costs of a water transfer would vary depending on the type, term and location of the transfer.

One of the most important aspects of any resource planning process is flexibility. A flexible strategy minimizes unnecessary or redundant investments (or stranded costs). The voluntary transfer of water between willing sellers and buyers can be an effective means of achieving flexibility. However, not all water transfers have the same effectiveness in meeting resource needs. Through the resource planning process and ultimate implementation, several different types of Water transfers could be undertaken.

### 4.4.1 Core Transfers

Core transfers are agreements to purchase a defined quantity of water every year. These transfers have the benefit of more certainty in costs and supply, but in some years can be surplus to imported water (available in most years) that is already paid for.

### 4.4.2 Spot Market Transfers

Spot market transfers involve water purchased only during the time of need (usually a drought). Payments for these transfers occur only when water is actually requested and delivered, but there is usually greater uncertainty in terms of costs and availability of supply. Examples of such transfers were the Drought Water Banks of 1991, 1992 and 1994 and DWR Dry Year Water Purchase Programs in 2001 through 2004 and 2008 along with transfers between willing sellers and buyers during the current drought period. An additional risk of spot market transfers is that the purchases may be subject to institutional limits or restricted access (e.g., requiring the purchasing agency to institute rationing before it is eligible to participate in the program).

### 4.4.3 Option Contracts

Option contracts are agreements that specify the amount of water needed and the frequency or probability that the supply will be called upon (an option). Typically, a relatively low up-front option payment is required and, if the option is actually called upon, a subsequent payment would be made for the amount called. These transfers have the best characteristics of both core and spot transfers. With option contracts, the potential for redundant supply is minimized, as are the risks associated with cost and supply availability.

SCV Water has entered into one such transfer, for Yuba Accord water, as discussed previously in Section 4.2.2.3. SCV Water and a number of other entities entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through DWR. Under the agreement, an estimated average of up to 1,000 AFY of Water (after losses) is available to SCV Water in dry years, through 2025. Under certain hydrologic conditions, additional water may be available to SCV Water under this program.

### 4.4.4 Future Market Transfers

The most viable types of water transfers are core and option transfers and, as such, are a part of SCV Water's long-term strategy.

### 4.4.5 Water Exchanges

In addition to water transfers, short-term water exchanges may also serve as a means to enhance water reliability.

In 2011 SCV Water entered into two unbalanced exchange agreements to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with RRBWSD, whereby SCV Water can recover one acre-foot of water for each two acre-feet SCV Water delivered to RRBWSD (less losses). SCV Water delivered 15,602 AF to the program in 2011, delivered another 3,969 AF in 2012 and, after program losses, had about 9,500 AF of recoverable water. The term for this agreement was ten years. In 2020, 9,500 AF of water was withdrawn from this exchange account, completing the execution of this agreement.

SCV Water also entered into a Two-for-One Water Exchange Program with the West Kern Water District (WKWD) in Kern County and SCV Water delivered 5,000 AF in 2011, resulting in a recoverable total of 2,500 AF. The term of the agreement was ten years. In 2014, 2,000 AF of water was withdrawn from this exchange program leaving a balance of 500 AF. In 2020, the remaining balance of 500 AF of water was withdrawn, completing the execution of this agreement.

In 2014, SCV Water entered into an unbalanced exchange agreement to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with the Newhall Land and Farming Company (NLF), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to NLF's Semitropic Water Storage District Banking Program. SCV Water transferred 10,000 AF of water to the program in 2014 and recovered 4,950 AF in 2014, fully executing the exchange. Additional details on the Semitropic Banking Program are provided in Section 4.5.1.

In 2016, SCV Water entered into an unbalanced exchange agreement to enhance the management of its water supplies. SCV Water executed a Two-for-One Water Exchange Program with the Central Coast Water Agency (CCWA) on behalf of the Santa Barbara County Flood Control and Water Conservation District (Santa Barbara), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to CCWA. SCV Water delivered 1,500 AF to the program in 2016 and recovered 750 AF in 2019, fully executing the exchange.

In 2019, SCV Water entered into three separate unbalanced exchange agreements to enhance the management of its water supplies. First, SCV Water executed a Two-for-One Water Exchange Program with RRBWSD whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to RRBWSD (less losses). SCV Water delivered 11,000 AF to the program in 2019 and recovered 5,500 AF in 2020, fully executing the exchange.

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with Antelope Valley-East Kern Water Agency (AVEK), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to AVEK. SCV Water delivered 7,500 AF to the program in 2019 and has 3,750 AF of recoverable water. In 2020, 1,406 AF of Water was withdrawn from this exchange program leaving a balance of 2,344 AF. The term for this agreement is for ten years.

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with United Water Conservation District (UWCD), whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to UWCD. SCV Water delivered 1,000 AF to the program in 2019 and has 500 AF of recoverable water. The term for this agreement is for ten years.

## 4.5 Groundwater Banking Programs

With the development of conjunctive use and groundwater banking, the water supply reliability for SCV Water has improved significantly. Conjunctive use is the coordinated operation of multiple water supplies to achieve improved supply reliability. Most conjunctive use concepts are based on storing surface supplies in groundwater basins in times of surplus for withdrawal and use during dry periods and drought when surface water supplies would likely be reduced.

Groundwater banking programs involve storing available SWP surface water supplies during wet years in groundwater basins in, for example, the San Joaquin Valley. Water would be stored either directly by surface spreading or injection, or indirectly by supplying surface water to farmers for their use in lieu of their intended groundwater pumping. During water shortages, the stored water could be pumped out and conveyed through the California Aqueduct to SCV Water as the banking partner or used by the farmers in exchange for their surface water allocations, which would be delivered to SCV Water as the banking partner through the California Aqueduct.

SCV Water is a partner in two existing groundwater banking programs, the Semitropic Banking Program and RRBWSD Banking Program, discussed below in Sections 4.5.1 and 4.5.2, respectively. Newhall Land is also a partner in the Semitropic Banking Program, described below. In addition, SCV Water has updated its plan to enhance its overall supply reliability, including the need for additional banking programs, as discussed in Section 4.5.4.

### 4.5.1 Semitropic Banking Program

Semitropic Water Storage District (Semitropic) provides SWP Water to farmers for irrigation. Semitropic is located in the San Joaquin Valley in the northern part of Kern County immediately east of the California Aqueduct. Using its available groundwater storage capacity (approximately 1.65 million AF), Semitropic has developed a groundwater banking program, that takes available SWP supplies in wet years and returns the water in dry years. As part of this dry-year return, Semitropic can either leave its SWP Water in the Aqueduct for delivery to a banking partner and increase its groundwater production for its farmers, or Semitropic can pump groundwater that can be pumped into a Semitropic canal and, through reverse pumping plants, be delivered to the California Aqueduct. Semitropic's original banking program currently has six long-term first priority banking partners: the Metropolitan Water District of Southern California (Metropolitan), Santa Clara Valley Water District, Alameda County Water District, Alameda County Flood Control and Water Conservation District Zone 7, Newhall Land and Farming, and San Diego County Water Authority. The total amount of storage capacity under contract in the original banking program is 1 million AF, with approximately 700,000 AF currently in storage. Under its original program, Semitropic can pump back a maximum of 90,000 AFY of water into the California Aqueduct.

Semitropic has recently expanded its groundwater banking program to incorporate its Stored Water Recovery Unit (SWRU). This supplemental program includes an additional storage capacity of 650,000 AF and an expansion of pumpback recovery capacity by 200,000 AFY. That pumpback capacity includes well connections and conveyance facility improvements to increase the existing Semitropic pumpback capacity to the California Aqueduct by an additional 50,000 AFY, and the future development of a new well field with approximately 65 wells along with new collection and transmission facilities to convey an additional 150,000 AFY to the California Aqueduct. Participants in the SWRU include Poso Creek Water Company, San Diego County Water Authority, City of Tracy, Homer LLC, Harris Farms, Shows Family Farms, Lazy Dog Orchard, and SCV Water.

In 2002, SCV Water entered into a temporary storage agreement with Semitropic, and stored an available portion of its Table A supply (24,000 AF) in an account in Semitropic's program. In 2004, 32,522 AF of SCV Water's available 2003 Table A supply was stored in a second temporary Semitropic account. In accordance with the terms of SCV Water's storage agreements with Semitropic, 90 percent of the banked amount, or a total of 50,870 AF, was recoverable through 2013 to meet SCV Water demands when needed. SCV Water executed an amendment for a ten-year extension of each banking agreement with Semitropic in April 2010. After storage withdrawals in 2009, 2010, and 2014 (and with 5,000 AF given to Newhall Land in consideration for SCV Water's use of Newhall Land's first priority extraction capacity), the storage balance available to SCV Water was 35,970 AF.

In 2015 SCV Water entered into an agreement with Semitropic to participate in the SWRU. Under this agreement, the two short-term accounts containing 35,970 AF were transferred into this new program. Under the SWRU agreement, SCV Water can store and recover additional Water within a 15,000 AF storage account. SCV Water increased storage in the SWRU by 4,806 AF in 2017, and 4,502 AF in 2019, and recovered 5,000 AF in 2020, leaving the total storage available at 40,278 AF. The term of the Semitropic Banking Program extends through 2035 with the option of two 10-year renewals. SCV Water may withdraw up to 5,000 AFY from its account.

Current operational planning includes use of the water stored in Semitropic for dry-year supply. Accordingly, it is reflected in the available supplies delineated in this section and in the Annual Reports prepared for SCV Water. It is also reflected as contributing only to dry-year supply reliability in Section 7, through 2045.

### 4.5.2 Rosedale-Rio Bravo Banking Program

Also located in Kern County, immediately adjacent to the Kern Water Bank, RRBWSD has developed a Water Banking and Exchange Program. SCV Water has entered into a long-term agreement with RRBWSD with a total storage capacity of 100,000 AF. Between 2005 and 2012 SCV Water delivered sufficient water from the SWP and other supplies to fill its 100,000 AF account. SCV Water began storing water in this program in 2005 and has stored water in 2005, 2006, 2007, 2010, 2011, and 2012. In 2012, the maximum storage capacity of 100,000 AF was reached. Withdrawals from the water bank occurred in 2014, 2015 and 2020. Storage into the water bank occurred in 2016 leaving storage at 98,800 AF currently available for withdrawal.

SCV Water's existing firm withdrawal capacity in this program is 10,000 AFY. To enhance dry-year recovery capacity, in 2015 SCV Water in cooperation with RRBWSD and Irvine Ranch Water District initiated construction of additional facilities that were completed in 2019. These facilities became available in 2020 and increased the firm extraction capacity for SCV Water to 10,000 AFY. In addition, SCV Water has the right under the contract to develop four additional wells which would bring the firm recovery capacity to 20,000 AFY. This additional capacity is anticipated to be available by 2030. In addition to existing firm recovery capacity, in moderately dry years Rosedale is required to use other available recovery capacity to meet its recovery obligations under the banking agreement, up to 20,000 AFY.

This project is a water management program to improve the reliability of SCV Water's existing dry-year supplies. It is not an annual supply that could support growth. Accordingly, it is reflected in the available supplies delineated in this section and it is also reflected as contributing only to dry-year supply reliability in Section 7.

### 4.5.3 Semitropic Banking Program – Newhall Land

As mentioned above, one of Semitropic's long-term groundwater banking partners is Newhall Land (now owned by Five Point). In its agreement with Semitropic, Newhall Land has available to it a pump-back capacity of 4,950 AFY and a total storage capacity of 55,000 AF. At the end of 2020, Newhall Land had a storage balance of approximately 38,000 AF. This storage volume is primarily the result of Newhall Land storing its annual allotment of Nickel Water in the program as well as 5,000 AF of exchange water provided by SCV Water.

Newhall Land entered into this groundwater banking program in anticipation of the development of Newhall Ranch. It provides a supply that is committed by Newhall Land under the Newhall Ranch Specific Plan to make up shortfalls in water supply for Newhall Ranch should such shortfall be shown to exist. Under its agreement with Semitropic, Newhall Land may transfer its rights to this program to SCV Water (as the successor to CLWA). In this UWMP, it is assumed for planning purposes construction of the Newhall Ranch Specific Plan will be completed by 2035 and that Newhall Land's rights in this banking program will be transferred to SCV Water at that time. Based on previous cooperation between CLWA and Newhall Land in 2009 and 2014, when Newhall Land effectively made its withdrawal capacity available to CLWA, it is likely that this practice would continue and SCV Water could access additional water from its Semitropic account using Newhall Land's firm extraction capacity. However, as no such contract to accomplish this is currently in place a conservative assumption has been made in this Plan that supplies associated with this source will not be available prior to 2035 when SCV Water is presumed to control this program.

### 4.5.4 Other Opportunities

In addition to those dry year water supplies identified in this plan or a substitute for some portion of those dry year supplies the Agency has identified two additional groundwater banking programs.

The first is the High Desert Water Bank being developed by the Antelope Valley East Kern Water Agency. The project overlies an adjudicated groundwater basin in the Antelope Valley. The Metropolitan Water District of Southern California has contracted with AVEK to develop the first phase of the project's four phases. The first phase will store up to 200,000 AFY with 70,000 AFY of recovery capacity. AVEK is currently working with SCV Water and other SWP contractors on defining the second phase. The second phase may incorporate a direct connection to the West Branch of the California Aqueduct to facilitate return deliveries. The location of this water bank is desirable as it is located south of the San Andreas Fault. The second phase could provide SCV Water with up to 80,000 AF of storage with recovery capacity of up to 20,000 AFY.

The second is the Aquaterra Water Bank being developed by the McMullin Groundwater Sustainability Agency. This water bank in Fresno County adjacent to Delta Mendota Pool, is projected to store up to 800,000 AF and have an extraction capacity of 146,000 AFY. Water would be available to SWP Contractors through an exchange with the Central Valley Project participating Contractors. The McMullin GSA intends to initiate environmental review for this project in 2021. SCV Water could potentially participate in this project at levels similar those contemplated for the AVEK High Desert Water Bank.

## 4.6 Planned Water Supply Projects and Programs

SCV Water prepared the Water Resources Reconnaissance Study (Study) (Carollo, 2015). The Study discusses the potential for acquiring additional water supplies. The Study evaluated a series of supply measures in the hopes that an additional 10,000 AFY of supply could be made available to the service area. The study identified two local measures that might enable SCV Water to get at least part way to that goal: (1) a groundwater recharge project using recycled water and (2) an imported water injection project during wet years to augment Saugus formation groundwater storage. Both of these projects were evaluated at the conceptual level, but significantly more investigation would need to be completed before either would be implemented.

While the recycled groundwater recharge measure is not currently being pursued, as detention and dilution challenges were analyzed by Trussell Technologies Inc in its Upper Santa Clara River Watershed Recharge Feasibility Study, 2017. SCV Water continues investigating the potential to spread imported water directly into the Alluvial Aquifer at several sites. Promising infiltration tests have been conducted on Agency owned property adjacent to Castaic Creek. Additional siting is being conducted along the easterly portions of the Santa Clara River. Further, the potential exists to cooperated with the City of Santa Clarita to use future storm water detention facilities. One such site is located near along the Santa Clara River near the intersection of Whites Canyon Road and Via Princessa.

## 4.7 Development of Desalination

The California UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631[i]). SCV Water has explored such opportunities, and they are described in the following section, including opportunities for desalination of brackish water, groundwater and sea water. However, at this time, none of these opportunities are practical or economically feasible for SCV Water and SCV Water has no current plans to pursue them. Therefore, desalinated supplies are not included in the supply summaries in this Plan.

### 4.7.1 Opportunities for Brackish Water and/or Groundwater Desalination

As discussed in Section 4.3, the two sources of groundwater in the Santa Clarita Valley are drawn from the Alluvial Aquifer and from the Saugus Formation. Neither of these supplies can be considered brackish in nature, and desalination is not required.

However, SCV Water could team with other SWP contractors and provide financial assistance in construction of other regional groundwater desalination facilities in exchange for SWP supplies. The desalinated water would be supplied to users in communities near the desalination plant, and a similar amount of SWP supplies would be exchanged and allocated to SCV Water from the SWP contractor. A list summarizing the groundwater desalination plans of other SWP contractors is not available; however, SCV Water would begin this planning effort should the need arise.

In addition, should an opportunity emerge with a local agency other than a SWP contractor, an exchange of SWP deliveries would most likely involve a third party, such as Metropolitan. Most local groundwater desalination facilities would be projects implemented by retail purveyors of SWP contractors and, if an exchange program was implemented, would involve coordination and wheeling of water through the contractor’s facilities to SCV Water.

### 4.7.2 Opportunities for Seawater Desalination

Because the Santa Clarita Valley is not in a coastal area, it is neither practical nor economically feasible for SCV Water to implement a sea water desalination program. However, similar to the brackish water and groundwater desalination opportunities described above, SCV Water could provide financial assistance to other SWP contractors in the construction of their sea water desalination facilities in exchange for SWP supplies.

Table 4-12 provides a summary of the status of several municipal/domestic sea water desalination facilities that span the California coast. As shown in the table, most of the existing and proposed sea water desalination facilities are/would be operated by agencies that are not SWP contractors. However, in these cases as described above, an exchange for SWP deliveries could potentially involve a third party (SWP contractor), the local water agency and SCV Water.

### TABLE 4-12 EXISTING AND PROPOSED SEAWATER DESALINATION FACILITIES ALONG THE CALIFORNIA COAST [a]

| Project | Member Agency Service Area or Project Developer | MGD | Status |
|---|---|---|---|
| Carlsbad Desalination Plant | San Diego County Water Authority/Poseidon Water | 50 | Operational |
| Marina Desalination Plant | Marina Coast Water District | 0.27 | Idle |
| Sand City Coastal Desalination Facility | City of Sand City | 0.3 | Operational |
| Monterey Bay Aquarium | Monterey Bay Aquarium | 0.008 | Operational |
| Morro Bay Desalination Facility | City of Morro Bay | 0.6 | Idle |
| Diablo Canyon Power Plant | Pacific Gas and Electric | 0.58 | Operational |
| Gaviota Oil Heating Facility | Chevron Corporation | 0.41 | Operational |
| Charles E. Meyer Desalination Plant[b] | City of Santa Barbara | 3 | Operational |
| Pebbly Beach Desalination Plant (Santa Catalina Island)[c] | City of Avalon/Southern California Edison | 0.2 | Operational |
| San Nicolas Island | U.S. Navy | 0.024 | Operational |
| West Basin Seawater Desalination Project | West Basin Municipal Water District | 20-60 | Proposed |
| Huntington Beach Seawater Desalination Project | Orange County Water District/Poseidon Water | 50 | Proposed (Scheduled operation by 2023[d]) |
| Monterey Bay Regional Water Supply Project[e] | Deep Water Desal, LLC | 25 | Proposed |
| Repurpose Diablo Canyon Nuclear Power Plant Desalination | PG&E and San Luis Obispo County | 1.5 | Proposed |
| Monterey Peninsula Water Supply Project | Cal Am, Monterey County, Monterey Peninsula Regional Water Authority, Monterey Peninsula Water Management District | 6.4 to 9.6 | Proposed |
| Doheny Ocean Desalination Project | South Coast Water District and Laguna Beach County Water District | 15 to 20 | Proposed |

Notes:

(a) Data in this table is based on the following source and updated with information from additional sources listed below: Pacific Institute, December 2015, Available at: http://pacinst.org/publication/key-issues-in-seaWater-desalination-proposed-facilities

(b) https://www.santabarbaraca.gov/gov/depts/pw/resources/system/sources/desalination/default.asp

(c) https://www.Waterboards.ca.gov/rwqcb4/board_decisions/tentative_orders/individual/npdes/Southern_California_Edison/CA0061191_SCEPebbly%20Beach%20Desal_Tent%20Permit.pdf

(d) https://www.poseidonWater.com/huntington-beach-desalination-plant.html

(e) https://www.deepWaterdesal.com/monterey-bay-regional-Water-project-summary.htm

## 4.8 Energy Intensity

This section provides information on energy consumption related to SCV Water's water management processes, specifically within its operational control.

As described above, SCV Water provides water supplies from various sources, including imported supplies, local groundwater, and a small volume of local recycled water. Within the SCV Water service area, those supplies involve a range of processes, including well production, pumping, storage, treating, and distribution. These processes have been captured in the energy intensity estimates described in this section. Additionally, water delivery types were broken down by retail potable, retail non-potable, and wholesale potable.

For estimating energy intensity, energy consumption was calculated from utility (Southern California Edison) bills for the meters that collect energy data for the SCV Water facilities, during the 2020 calendar year. This data was evaluated in combination with the total water use for the same 12-month period.

Results of the assessment showed an energy intensity of 854.7 kWh/AF for 2020, as summarized in Table 4-13. The energy intensity calculations are also captured in DWR Table O-1C (provided in Appendix L).

**TABLE 4-13 ENERGY INTENSITY OF SCV WATER OPERATIONS FOR 2020**

| Unit | Sum of all Water Management Processes |
|---|---|
| Volume of Water Entering Process (AF) | |
| Retail potable deliveries (AF) | 65,528[(a)] |
| Retail non-potable deliveries (AF) | 468[(b)] |
| Total Volume of Water (AF) | 65,996 |
| Energy Consumed (kWh) | 56,403,587[(c)] |
| **Energy Intensity (kWh/AF)** | **854.7** |

Notes:
(a) Total SCV Water potable demands in 2020. Includes LAWWD36.
(b) Total recycled water demands in 2020.
(c) Energy data from SCE bills for SCV Water meters, excluding most administration-related use.

### 4.8.1 Green Energy and Energy Efficiency Activities

This section provides information on SCV Water's Green Energy and Energy Efficiency Activities.

As part of its ongoing sustainability goals and energy efficiency operational practices, SCV Water developed on-site photovoltaic (solar) energy production and participated in demand reduction and energy efficiency programs.

In 2011, SCV Water's import division (formerly CLWA) entered in a Power Purchase Agreement (PPA) to construct a .95 MW solar array. In 2013, a 3.5 MW solar array was developed via similar mechanics. Combined, the 4.5 megawatt (MW) solar array supplied approximately 30% of the import division's annual Water use. In 2021, SCV Water purchased the 4.5 MW solar array and estimates that on-site energy produced supplies about 17% (average 9,773,204 kWh annually) of the agencies combined (import and retail divisions) annual energy demand.

In addition to its Green Energy activities, SCV Water also participated in the demand response program (EnerNOC). With EnerNOC, SCV Water collaborated with Southern California Edison (SCE) to provide real-time demand reductions during peak energy demand conditions. Regarding efficiency practices, SCV Water continues to work with SCE for pump efficiency testing and participation in efficiency upgrade incentives for boosters, motors, and other appurtenances.

Currently, SCV Water is developing its long-term Sustainability and Climate Action Plan. The Sustainability and Climate Action Plan will include, but is not limited to, Green House Gas (GHG) benchmarks and reduction goals, assess applicable cost-effective energy efficiency improvement measures, develop strategic implementation performance monitoring and tracking. The plan is expected to be completed by June 2022.

# Section 5: Recycled Water

This section of the Plan describes the existing and future recycled water opportunities available to the SCV Water service area. The description includes estimates of potential recycled water supply and demand through 2050 in five-year increments, as well as SCV Water's proposed incentives and implementation plan for recycled water.

As discussed below, SCV Water's source of supply for current and planned recycled water consists of flows coming from the Valencia Water Reclamation Plant and the future Newhall Ranch Water Reclamation plant as well as the Vista Canyon Ranch Water Factory (Vista Canyon WRP). SCV Water recently extended the term of its recycled water purchase agreement with the Santa Clarita Valley Sanitation District (SCVSD) and is currently negotiating a recycled water purchase agreement with the City of Santa Clarita for supplies from the Vista Canyon WRP. An additional recycled water purchase agreement with the Newhall Ranch Sanitation District is anticipated when it becomes operational. Collectively these sources are anticipated to make 8,961 AFY available to SCV Water. That supply includes 450 AFY to existing users identified under SCVSD's approved State Water Resources Control Board petition. Currently planned additional supplies would be developed under the Agency's New Drop Program, which is based on using wastewater flows from new customers rather than treated wastewater that has historically been discharged into the Santa Clara River. The New Drop Program would not require a requested change to the SCVSD's existing petition. This is particularly important because there are potential regulatory challenges to using additional recycled water that would reduce flows in the Santa Clara River. This is discussed in more detail below.

Recycled water is dependent on potential user demands, availability of supplies, and the economics and feasibility of serving those users. The Draft Update of the Recycled Water Master Plan identified over 20,000 AFY of existing and future landscape demands that could potentially be irrigated using recycled water. However, due to the potential need for instream flows and feasibility considerations including costs, SCV Water plans call for a recycled water distribution system that would be sufficient to meet demands of 9,749 AFY. This includes SCV Water's Phase 1 project, that is currently serving 450 AF of demand, along with its Phase 2 projects and certain non-potable irrigation systems to be constructed by a developer for a specific project described in more detail below.

As discussed below, additional opportunities to further expand recycled water use will be evaluated as part of the Agency's Water Resilience Initiative, however, these have not been incorporated into the prospective water supplies accounted for in Section 7.

## 5.1 Recycled Water Master Planning Efforts

It is anticipated that water demands will continue to increase as a result of a growing population. Accordingly, SCV Water is planning to secure additional reliable sources of water to help meet projected water demands. SCV Water recognizes that recycled water is an important and reliable source of additional water that should be pursued as an integral part of the SCV Water's water supply portfolio. Recycled water enhances reliability in that it provides an additional source of supply and allows for more efficient utilization of potable groundwater and imported water supplies. Draft Recycled Water Master Plans for the SCV Water service area were completed in 1993 and 2002. These master plans considered various factors affecting recycled water sources, supplies, users and demands so that SCV Water could develop a cost-effective recycled water system within its service area. In 2007, SCV Water completed CEQA analysis of the 2002 Recycled Water Master Plan (RWMP). This analysis consisted of a Programmatic EIR covering the various phases for a recycled water system as outlined in the RWMP. The Programmatic EIR was certified by the, then, CLWA Board in March 2007.

An update to the RWMP was initiated in 2016 (Kennedy/Jenks 2016) based on recent developments affecting recycled water sources, supplies, uses and demands. The update was not completed but it provides important guidance on feasible projects in the short term. One reason the study was not finalized was in part due to ongoing litigation related to recycled water supplies between the Affordable Clean Water Alliance and SCVSD, which is SCV Water's main supplier of recycled water. Further, SCV Water anticipates undertaking a water resiliency planning process that would in part explore the interconnection of future groundwater operations, recycled water usage and environmental uses of water in the Upper Santa Clara River Watershed. It is anticipated that this effort would inform future environmental evaluations and permitting for future projects and programs. Overall, recycled water uses included in this UWMP update include uses prioritized in the Kennedy/Jenks 2016 report and available supplies from the Agency's New Drop program.

Table 5-1 provides a list of entities that participate in the implementation of the RWMP and RWMP Update. In accordance with Water Code section 10633, the preparation of this Plan was also coordinated with these entities.

**TABLE 5-1 PARTICIPATING ENTITIES[(a)]**

| Participating Entities | Role in Plan Development |
|---|---|
| SCV Water | Retail and Wholesale water provider |
| Los Angeles County Waterworks District No. 36 | Retail water purveyor |
| Santa Clarita Valley Sanitation District | Recycled Water supplier |
| Berry Petroleum | Potential recycled water supplier |
| City of Santa Clarita[(b)] | Potential recycled water supplier |

Notes:
(a) The Newhall Ranch Water Reclamation Plant would serve the Newhall Ranch Specific Plan and will be owned and operated by the Newhall Ranch Sanitation District.
(b) The City of Santa Clarita will eventually operate the Vista Canyon Water Reclamation Plant.

SCV Water has constructed Phase1 of the 2002 RWMP (Kennedy/Jenks 2002), which delivers on average approximately 450 AFY. Although the original SCVSD contract and applicable permits anticipate the use of 1,600 AFY for this initial phase project, demands for recycled water have not developed at all of the specific places of use identified in the SCVSD's SWRCB Water Code Section 1211 petition. Deliveries of recycled water began in 2003 for irrigation water supply and currently serve a golf course, a shopping center, and roadway median strips. Use of the remaining volumes at new locations would require submission and approval of a revised petition, triggering a similar State Water Resources Control Board petition process to the new petition described below.

Phase 2 is planned to expand recycled water use within Santa Clarita Valley and consists of four projects currently in various stages of design and/or construction. Additional details are presented in Table 5-2. All of the available recycled water from the Agency's New Drop Program in the peak summer months is anticipated to be used to meet the demands of these Phase 2 expansions currently in design and construction, including planned developments by Five Point that are referred to as the Westside communities.

## 5.2 Existing Wastewater Treatment Facilities

SCVSD owns and operates two Water Reclamation Plants (WRPs), the Saugus WRP and the Valencia WRP, within the SCV Water service area. The water is treated to disinfected tertiary levels and, with the exception of water used in Phase I of the RWMP, is discharged to the Santa Clara River. The Newhall Ranch and Vista Canyon developments will have their own dedicated tertiary treatment WRPs, and non-potable recycled water from these sources, when available, is anticipated to be incorporated directly into the recycled water system.

The Valencia WRP, completed in 1967, is located on The Old Road near Magic Mountain Amusement Park. The Valencia WRP has a current treatment capacity of 21.6 million gallons per day (MGD), equivalent to 24,190 AFY, developed over time in stages. The average annual production is 15,500 AFY of tertiary recycled water. Use of recycled water from the Valencia WRP for irrigation uses is permitted under Los Angeles Regional Water Quality Control Board (LARWQCB) Order Nos. 87-48 and 97-072.

The Saugus WRP, completed in 1962, is located southeast of the intersection of Bouquet Canyon Road and Soledad Canyon Road. The Saugus WRP has a current treatment capacity of 6.5 MGD (7,280 AFY). No future expansions are possible at the plant due to space limitations at the site. In 2020 the Saugus WRP produced 5,150 AFY of tertiary recycled water. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-49 and 97-072.

The Saugus and Valencia WRPs operated independently of each other until 1980, at which time the two plants were linked by a bypass interceptor. The interceptor was installed to transfer a portion of flows received at the Saugus WRP to the Valencia WRP. Together, the Valencia and Saugus WRPs have a design capacity of 28.1 MGD (31,470 AFY) and produce 20,450 AFY of treated effluent on average. The primary sources of wastewater to the Saugus and Valencia WRPs are domestic. Both plants are tertiary treatment facilities and produce high quality effluent. Historically, the effluent from the two WRPs has been discharged to the Santa Clara River. The Saugus WRP effluent outfall is located at Bouquet Canyon Road. Effluent from the Valencia WRP is discharged to the Santa Clara River at a point approximately 2,000 feet downstream (west) of The Old Road Bridge.

SCVSD is currently constructing advanced treatment facilities (AWT) to desalinate tertiary recycled water with a capacity of approximately 6,000 AFY to comply with the Regional Water Quality Control Board, Los Angeles Region Chloride Total Maximum Daily Load (TMDL). The facilities are sized to treat enough disinfected tertiary recycled water to blend down the chloride levels for discharge to the Santa Clara River at the design capacity of the combined Saugus and Valencia WRPs at chloride levels during a drought. Since design capacities will not be reached for a decade or more and chloride levels on average are much lower during average precipitation years, the AWT will have excess capacity that could be utilized to produce desalinated water for reuse purposes for sale to SCV Water. Desalinated recycled water could be used to improve water quality or for indirect potable reuse in the future but only with the construction of additional treatment.

## 5.3 Wastewater Treatment Facility Improvements and Expansions

A third reclamation plant, the Vista Canyon Water Factory (Vista Canyon WRP), has been constructed as a part of the Vista Canyon Project. The plant is located near Highway 14, just south of the Santa Clara River and will be operated by the City of Santa Clarita. The plant will have an ultimate capacity of 440 AFY (Kennedy Jenks, 2015). The Vista Canyon Development is anticipated to use 137 AFY of the recycled water supply and the remaining excess flow would be available for reuse as part of Vista Canyon Recycled Water Main Extension (Phase 2B) of the RWMP currently under construction.

It is intended that the Vista Canyon WRP would not discharge recycled water into the Santa Clara River with the possible exception of winter months. Excess recycled water production from the Vista Canyon WRP would be sent to the Valencia WRP.

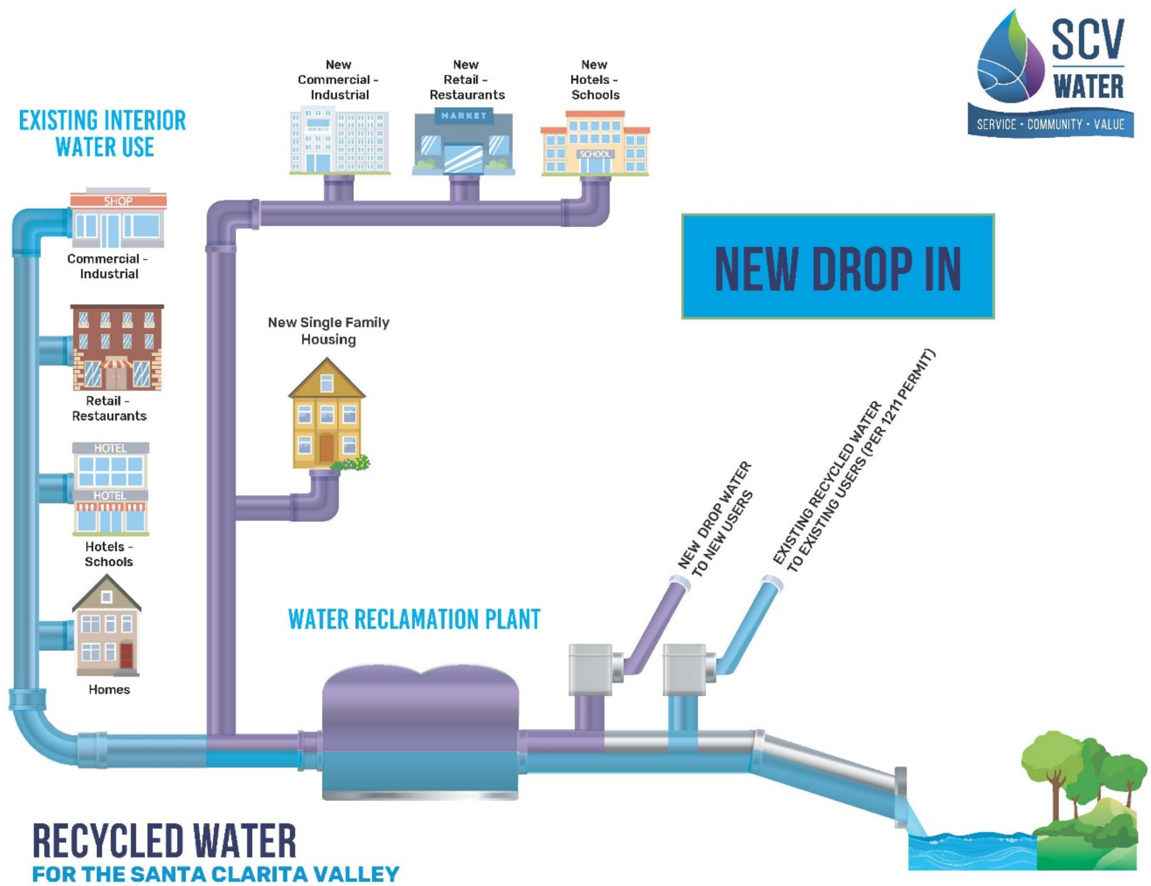
A fourth Santa Clarita Valley (Valley) reclamation plant, the Newhall Ranch WRP, is proposed as part of the Newhall Ranch project. This proposed facility would be located near the western edge of the development project along the south side of State Route 126. The Newhall Ranch WRP would serve the Newhall Ranch Specific Plan and will be owned and operated by the

Newhall Ranch Sanitation District. Prior to Newhall Ranch WRP being available, Newhall Ranch Specific Plan generated wastewater would be temporarily treated at the Valencia WRP, based on the need to build up an adequate, steady flow of wastewater before constructing the initial increment of capacity at Newhall Ranch WRP. The Valencia WRP has sufficient capacity to tertiary-treat wastewater from the Newhall Ranch Specific Plan during this interim period, consistent with the Interconnection Agreement approved by SCVSD in 2002 and the Joint Sewerage Services Agreement entered into between SCVSD and NRSD in 2017. The Newhall Ranch WRP currently has a permitted capacity of 2.0 MGD (approximately 2,200 AFY) but is anticipated to produce 4,200 AFY at ultimate buildout. Recycled water from the Valencia WRP would be used to meet the remainder of the non-potable demands there, to the extent available in accordance with the Interconnection Agreement. If for any reason, however, recycled water supplies from the Valencia WRP and/or other local WRPs are not available in the amounts anticipated to meet the projected recycled water demands for that development, other sources of supply available to SCV Water as provided in this Plan would be utilized to serve non-potable demands until such time as recycled water supplies may become available.

## 5.4 New Drop Program

As a means of developing additional recycled water supplies, without increasing the diversion of recycled water flows discharged to the Santa Clara River, SCV Water has developed the New Drop Program to utilize and account for “new” recycled water flows. These additional recycled water supplies would be derived from wastewater flows generated from new residential and commercial development. The New Drop Program accounts for the increase in wastewater flows associated with new development and separates these projected wastewater flows from existing flows discharged to the Santa Clara River. As new development occurs, potential additional recycled water supplies would be quantified through calculations and measurements. The New Drop Program is illustrated in Figure 5-1 below.

**FIGURE 5-1 NEW DROP PROGRAM PROCESS**




The use of recycled water under the New Drop Program does not constitute a reduction to a surface stream, specifically a reduction in flow in the Santa Clara River. As a result, a Section 1211 wastewater change petition is not required to implement the recycled water program. However, in order to utilize these recycled water supplies in accordance with SWRCB requirements, SCV Water has been working to obtain formal approvals. A Notice of Applicability under the General Order No. WQ 2016-0068-DDW, Water Reclamation Requirements for Recycled Water Use, was issued in April 2020 for SCV Water's use of recycled water from the Valencia WRP for non-irrigation uses as part of the New Drop Program. Upon review of the Title 22 Report and related project documentation, the Los Angeles Regional Water Quality Control Board and the SWRCB determined that the New Drop Program satisfies the general and specific conditions of the General Order and does not require a change of use permit under Water Code section 1211. SCV Water is also in the process of requesting expanded use of the New Drop Program recycled water from the Valencia WRP for irrigation uses, currently allowed under Order No. 97-072. An addendum to the original Title 22 Engineering Report was submitted in December 2020 for Phase 2D.

## 5.5 Instream Flow Requirements

In general, the use of recycled water from the WRPs is limited and can be affected by various state water laws, codes, and regulatory and court decisions, which are summarized in the RWMP Update. The production, discharge, distribution, and use of recycled water are subject to federal, state, and local regulations; the primary objectives of which are to protect public health. Appendix B of the RWMP summarizes the regulatory requirements and their administration, with an emphasis on regulations relating to the distribution and use of recycled water in California. Use of recycled water from the Valencia and Saugus WRPs is permitted under Los Angeles RWQCB Order Nos. 87-48 and 87-49, respectively, re-adopted by Order No. 97-072. Copies of these recycled water permits along with SCVSD Ordinances and Requirements for Recycled Water Users in Santa Clarita Valley and Los Angeles County Department of Public Health (LACDPH) guidelines and inspection requirements are provided in the Santa Clarita Valley Rules and Regulations Handbook (Kennedy Jenks 2016b).

SCV Water has a contract with the SCVSD to use recycled water from the Valencia WRP, which was recently extended through 2026. The contract permits SCV Water to receive 1,600 AFY, corresponding to the amount of recycled water permitted for reuse by the SWRCB. However, as noted above that permit limited uses to specific approved sites and because demand at some of those sites has not materialized, current use is limited to only about 450 AFY.

The New Drop Program will generate additional supplies and those supplies will be available to multiple new use sites when and as they are connected to the expanding recycled water system.

At this time, SCVSD is not seeking an amendment to its SWRCB petition to increase the amount of recycled water it may deliver that has historically been discharged into the Santa Clara River. In the future, if SCV Water develops feasible projects to use recycled water in amounts greater than the New Drop Program supplies, it is anticipated that SCV Water and SCVSD would cooperate in obtaining any necessary permits from the SWRCB. Obtaining an approved petition will require compliance with CEQA. However, as indicated above and described in more detail below, SCVSD's previous evaluations of potential withdrawals of discharge from the Santa Clara River to use for recycled water have been the subject of litigation.

In October 2013, the SCVSD Board certified an EIR (2013 EIR) that included two components: (1) the Chloride Compliance Project to remove chloride from wastewater to meet the Chloride TMDL and (2) a Recycled Water Project to make treated wastewater available for reuse. The Chloride Compliance Project consists of 3 main elements that include ultraviolet disinfection at the Saugus and Valencia WRPs, AWT at Valencia WRP, and brine management and disposal. The Recycled Water Project was designed to support municipal reuse of recycled water and was solely focused on proposed future reductions in discharges of recycled water to the Santa Clara River.[5]

[5] No recycled water infrastructure, such as treatment, pump stations or pipelines, were included in the scope of the Recycled Water Project.

The 2013 EIR was subsequently challenged by the Affordable Clean Water Alliance (ACWA) on the grounds that the document failed to comply with CEQA. The LA Superior Court (the Court) did not find any deficiencies in the environmental analysis related to the Chloride Compliance Project; however, the Court found two aspects of the 2013 EIR did not fully comply with CEQA. First, the Court found that the 2013 EIR lacked substantial evidence to support the conclusion of no significant impacts on populations of the unarmored threespine stickleback fish (UTS) with respect to the reduced discharge to the Santa Clara River associated with the Recycled Water Project; and second, the 2013 EIR lacked a clear brine management alternative because of the "abandonment" of the deep well injection brine management method approved in the 2013 EIR, making the Chloride Compliance Project incomplete.

In an effort to move forward with the Chloride Compliance Project, SCVSD separated the Chloride Compliance Project from the Recycled Water Project and, in 2017, certified a Recirculated EIR evaluating the Chloride Compliance Project separate from the Recycled Water Project.

SCVSD proceeded with the Recycled Water Project on a separate, but parallel path. SCVSD retained a consultant and engaged in consultations with CDFW. SCVSD released a Notice of Preparation (NOP) in August 2016. In response to the NOP, CDFW wrote a letter indicating that they could not conclude that the project would not result in take of UTS and recommended that SCVSD do additional studies and consider applying for an Incidental Take Permit under the California Endangered Species Act prior to implementing the project. Further, in summer 2018, CDFW requested additional review to analyze potential impacts to groundwater and surface water levels as a result of the proposed reduction in discharge from the Valencia WRP. At the time, a comprehensive model needed to evaluate surface water and groundwater level impacts did not exist. Given that the SWRCB defers to CDFW in matters related to habitat when considering petitions for reduction in discharges and the positions expressed by CDFW, SCVSD determined that obtaining a 1211 petition from the SWRCB for a reduction in discharge would be very difficult.

By resolution dated February 2019 SCVSD stated it had no current intent to proceed with an EIR related to the support of additional recycled water development by reducing existing discharge to the Santa Clara River. The decision by SCVSD to remove the recycled water component and approve the modified chloride compliance project has been challenged in separate lawsuits filed in Los Angeles Superior Court from 2017-2019 and the case is ongoing.

SCV Water would undertake thorough and careful evaluation of effects on the Santa Clara River and would consult with CDFW before proposing any project to reduce existing discharges and supply additional recycled water within the SCV service area.

## 5.6 Other Potential Sources of Recycled Water

Oilfield produced water is a by-product of oil production generated when oil is extracted from the oil reservoir. It is generally of poor quality and unsuitable for potable, industrial or irrigation use without treatment. Because of the poor water quality, reinjection has often been the most cost-effective disposal option. Treatment processes can produce potable quality water; yet, because of the poor initial water quality and the organic constituents, it is often more appropriate for treated oilfield produced water to be used for irrigation or industrial purposes to offset potable water demand. The economics of oil production are market-driven and are different from those of drinking water supplies. As oil prices rise or drop, oilfield production is increased or decreased as dictated by economics.  Also, oilfields are eventually depleted of supply and abandoned.  Therefore, while oilfield produced water should be considered as long-term, it is not a completely firm supply and is not permanent.

Berry Petroleum has expressed interest in the past in treating oilfield produced water from the Placerita Oilfield for sale to SCV Water for non-potable uses.  Studies of the potential reuse of treated oilfield produced water from the Placerita Oilfield have indicated that approximately 44,000 barrels per day (1.8 MGD or 2,016 AFY) of treated oilfield produced water may be available.  Pilot studies performed at the Placerita Oilfield have indicated that, even with reverse osmosis (RO) treatment, some organic compounds such as naphthalene, 2-butanone and ethylbenzene can be detected in the RO effluent.  For irrigation reuse, the produced water would need to be cooled and treated to remove hardness, silica, total dissolved solids (TDS), boron, ammonia and total organic carbon (TOC).

Due to water reliability and water quality issues, the use of oilfield produced water for a source of recycled water was not considered in the 2016 Salt and Nutrient Management Plan (SNMP) or in the RWMP Update, and is not included as a supply opportunity in this UWMP.

## 5.7 Recycled Water Supply and Demand

Recycled water has the potential to play a critical role in meeting a portion of future water demands in the Valley, as the population grows.  The Agency is in various stages of planning and constructing its Phase 2 projects.  The Agency has included Phase 2 projects in its capital program.  Phase 2 D is currently under construction with construction of Phase 2 B slated to begin this summer.  Further, Phase 2C is currently under design.  Additionally, Five Point's Westside development projects are proceeding with construction of the Mission Village project currently underway.  A summary of demands anticipated from these activities are shown in Table 5-2.  Section 5.8 below provides additional information on recycled water demands.

**TABLE 5-2 EXISTING AND PROJECTED RECYCLED WATER DEMAND**

| Phase/Project | Demand (AFY) | Timeframe for Coming Online | Source of Recycled Water | Location of Use/Water Service Area |
|---|---|---|---|---|
| Phase 1 | 450 | Existing | Valencia WRP | VWD |
| Phase 2A | 560 | 2029 | Valencia WRP | NCWD, VWD |
| Phase 2B | 300 | 2021-2023 | Vista Canyon WRP | SCWD |
| Phase 2C | 759 | 2021-2023 | Valencia WRP | NCWD, VWD |
| Phase 2C – Golf Course[a] | 600 | 2023 | Valencia WRP | Valencia Golf Course |
| Phase 2D | 221 | 2021-2023 | Valencia WRP | VWD |
| FivePoint[b] | 5,174-6,505 | 2021-2043 | Newhall Ranch/ Valencia WRP | Newhall Ranch/Five Point |
| **Total** | **8,064-9,395** | 2050 | As shown above | As shown above |
| **Total w/ CC** | **8,368-9,749[c]** | 2050 | | |

Notes:

(a) Raw water conversion to recycled water (not an existing potable offset).

(b) Range reflects estimated demand using MEWLO and observed over watering of 25.6% in recently developed irrigation systems.

(c) Assumes 3.77% demand increase due to climate change.

As previously discussed, aside from the existing 450 AFY of recycled water supply, planned recycled water supplies from the Valencia, Newhall Ranch and Vista Canyon WRPs would come from the New Drop Program. Importantly, as indicated above, water from these New Drop Program sources would not be required to maintain environmental discharges to the Santa Clara River. As a result, it would be available to meet a considerable portion of the total projected long-term recycled water demands.

Total projected recycled water use projections through 2050 are summarized in Table 5-3. As annual demands, discussed above, exceed supplies, recycled water usage is based on available supplies. In the later years, it is projected that seasonal storage may be needed to store recycled water during the winter months to help meet peak summer demands. Additionally, potable make-up water will be needed to help meet summer peaking demands in the non-potable irrigation system.

**TABLE 5-3 PROJECTED RECYCLED WATER USE**

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| Existing Recycled Water Use | 450 | 450 | 450 | 450 | 450 | 450 |
| New Recycled Water Use | 1,849 | 3,696 | 5,091 | 6,498 | 7,499 | 8,511 |
| **Total Projected Recycled Water Use[(a)]** | **2,299** | **4,146** | **5,541** | **6,948** | **7,949** | **8,961** |
| **Total Potential Recycled Water Demand[(b)]** | **4,559** | **6,514** | **8,441** | **9,191** | **9,469** | **9,749** |

Notes:
(a) Total projected water use is equal to total projected recycled water supply as total potential recycled water demand exceeds total projected supply.
(b) Difference in recycled water supply and total potential recycled water demand will be made up by potable water supplies, i.e., make-up water. See Table 2-12.

In accordance with the UWMP Act, this Chapter and other portions of the Plan describe and quantify the potential uses of recycled water in the Valley based on the substantial wastewater flows and recycled water generated by the local WRPs. However, as noted above, if recycled water supplies from the local WRPs are not available in the amounts identified in Table 5-3 to meet potential uses because of regulatory or other constraints, other sources of supply available to SCV Water as provided in this Plan would be utilized to meet non-potable demands until such time as recycled water supplies may become available.

## 5.8 Recycled Water Demand

Currently, an average of 450 AFY of recycled water is served to landscape irrigation customers, including The Oaks Club golf course (formerly known as the Tournament Players Club Golf Course). Potential recycled water users have been identified through a number of sources including:

- 1993 Recycled Water Master Plan
- Water consumption records for SCV Water and LACWWD 36
- Land use maps

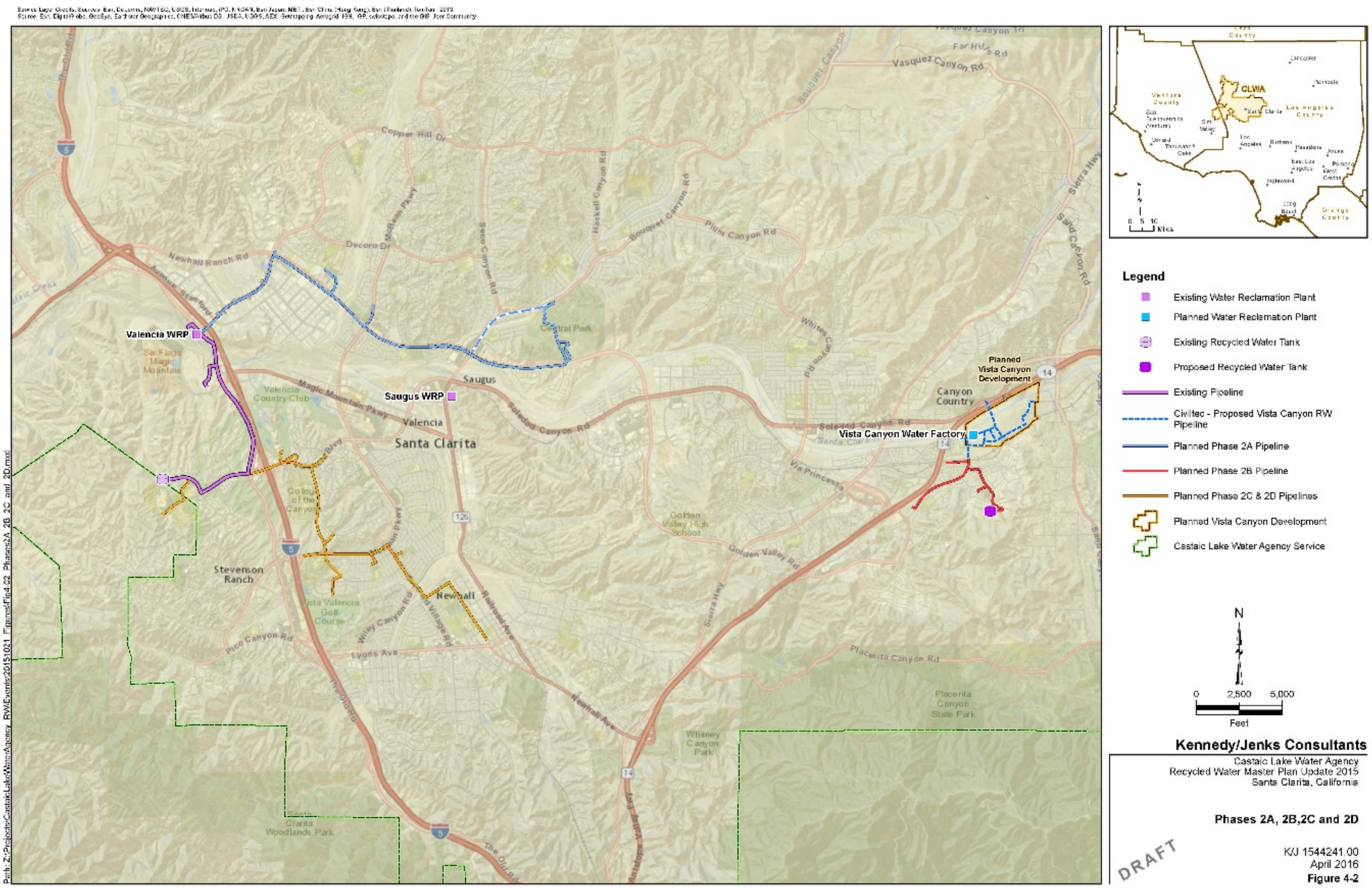
- General Plans and Specific Plans for the City of Santa Clarita and County of Los Angeles
- Discussions with City, County, SCV Water, LACWWD 36 and land developer staff
- On-site surveys of the SCV Water service area
- 2002 Recycled Water Master Plan
- 2016 Recycled Water Master Plan Update (in development)

In order to be considered as a potential recycled water user, the user has to be located within SCV Water's service area and have a potential non-potable water demand of at least 50,000 gallons per day. At this time no specific or Valley-wide ordinance(s) or other enactments are proposed that would require the installation of dual distribution systems for recycled water, or that would require the use of recycled water for recirculating uses. A total existing demand of approximately 12,000 AFY (based on current non-potable uses from irrigation meters) and a future demand of 8,511 AFY (based on planned developments), totaling approximately 21,000 AFY. The majority of recycled water uses are projected to be landscape irrigation.

As noted above, Phase 1 of the RWMP has been constructed and begins with a 4,000 gpm pump station at the Valencia WRP that connects to a 1.5 MG reservoir in the Westridge area with 15,600 linear feet of 24- and 20-inch pipeline. It serves landscape customers along The Old Road and The Oaks Club at Valencia.

Four projects planned to expand recycled water use within Santa Clarita Valley, which are collectively known as Phase 2, are depicted in Figure 5-2, and are currently in various stages of design and construction.

## FIGURE 5-2 RECYCLED WATER MASTER PLAN PHASES



Phase 2A, 2C and 2D would use recycled water from the Valencia WRP and Phase 2B would use recycled water produced at the Vista Canyon WRP, which will treat flows from the planned Vista Canyon Development. Phase 2A would serve Central Park and customers along the path from the Valencia WRP to the park. Phase 2B would serve the proposed Vista Canyon Development and nearby irrigation customers. Phase 2C would serve Valencia Country Club, Vista Valencia Golf Course, College of the Canyons, California Institute of the Arts, Hart High School, and Newhall Elementary School. Phase 2D would serve West Ranch High School, Ranch Pico Junior High School, Oak Hills Elementary School and customers along the way.

Anticipated annual demands and completion dates for Phase 2 components are listed below:

- Phase 2A: 560 AFY in 2029
- Phases 2B, 2C, 2D: 1880 AFY between 2021 and 2023 (1,200 AFY would consist of raw water conversion to non-potable at the Valencia golf course by 2023). Phase 2D and 2B are under construction.

In addition, the Five Point project is anticipated to result in 5,174 AFY of demand between 2021 and 2043. These Phase 2 and Five Point anticipated demands are reflected in Table 5-2 and take into account demand adjustment factors over the planning period.

Future recycled water use expansion beyond Phase 2 was explored as part of the RWMP Update and could potentially include extensions of the Phase 2 alignments to utilize any additional available recycled water resulting from a decrease in discharges from the Valencia WRP. However, as discussed above there are no current plans to pursue reduction of discharges from the Valencia WRP to the Santa Clara River. Current plans call for reliance on the SCV Water's New Drop Program. Consistent with the New Drop Program there is currently no plan to use recycled water from the Saugus WRP since the majority of the effluent is committed to meeting discharge requirements in the Santa Clara River.

The RWMP Update also included a high-level assessment of opportunities for potable reuse within the Santa Clarita Valley via groundwater recharge, surface water augmentation and direct potable reuse and the development of seasonal storage (Woodard and Curran 2021). In general, due to the seasonal variability of recycled water demand, SCV Water has an excess of recycled water supply during the winter months. Excess recycled water flows are currently discharged to the Santa Clara River. These excess flows could be better utilized by constructing seasonal storage facilities which can store recycled water during winter months when the demands are low and feed the system with the stored supply in the summer months when demands exceed the operational supply. These opportunities would be evaluated further in future UWMP updates.

- **Groundwater recharge ("indirect potable reuse") via surface spreading** at an off-stream location near the Santa Clara River could provide for recharge of excess available recycled water in the winter and off-peak irrigation months. A more detailed feasibility study would be required to confirm the volume of recycled water that could be recharged and recovered based on current regulations, source water quality, operational and cost considerations.

- **Surface Water augmentation** at Castaic Lake would require full advanced treatment of the recycled water from SCVSD, brine disposal and significant conveyance requirements at a very high cost. It is also uncertain at this time whether a surface water augmentation project would be able to meet applicable regulatory criteria and how much water could be augmented.

- **Direct potable reuse (DPR)**, though not currently permitted in California, would involve the purposeful introduction of highly purified recycled water into a drinking water supply, immediately upstream of a drinking Water treatment plant or directly into the potable water supply distribution system downstream of a water treatment plant. A DPR concept could potentially utilize recycled water not already allocated or planned for non-potable reuse or determined necessary for instream use, and would require full advanced treatment of the recycled water from SCVSD, brine disposal and only minimal conveyance requirements. SCV Water intends to track direct potable reuse developments in California and revisit the feasibility of DPR in the future.

## 5.9 Recycled Water Comparison

The 2015 UWMP projected a total recycled water demand of 1,015 AFY by the year 2020. Actual data shows 468 AF was served in 2020 which reflects the existing golf course and landscape demands. 2020 demand is lower than originally predicted because the recycled water distribution system expansion did not occur as anticipated. Table 5-4 provides a comparison of the projected versus the actual 2020 demand. Based on current estimates, recycled water demand over the next five years is anticipated to increase 10-fold as shown in Table 5-3.

**TABLE 5-4 RECYCLED WATER USES - PROJECTION COMPARED WITH ACTUAL USE (AFY)**

| User Type | 2015 Projection for 2020 | 2020 Actual Use |
|---|---|---|
| Landscape | 622 | 99 |
| Golf Course Landscape | 393 | 375 |
| **Total** | **1,015** | **468** |

## 5.10 Methods to Encourage Recycled Water Use

Currently, to the extent feasible SCV Water is offering recycled water as available at a lower rate to encourage the use of recycled water and to help offset some of the conversion costs. SCV Water is considering pricing options to encourage participation in the recycled water program. In addition to pricing incentives SCV Water is committed to a Valley-wide messaging regarding recycled water benefits and costs. At its March 2, 2021 Board Meeting, SCV Water authorized the General Manager to implement a Purple PREP (Planning Readiness and Effectuating Program) Pilot to facilitate conversion of the Phase 2B and 2D customer irrigation systems to recycled water. Under the program customers can chose either direct installation of required retrofit materials or receive a financial incentive up to the actual cost of the retrofit. Other incentives may include financial assistance to offset the costs to convert (or retrofit) potable water systems or the development of a Valley-wide recycled water ordinance, which would require the use of recycled water if available, rather than relying solely on pricing incentives and voluntary connections.

It is important to note that SCV Water's New Drop Program is a critical component for optimizing recycled water use across the service area. As described above, this program allows SCV Water to develop additional recycled water supplies from wastewater flows generated from new residential and commercial development, without increasing the diversion of recycled water flows discharged to the Santa Clara River.

## 5.11 Optimization Plan for Recycled Water

Currently, the amount of recycled water available from the WRPs is not adequate to meet the total demands of the completed recycled water system, which relates to both infrastructure and regulatory factors. Notably, however, as potable water demands increase in the Valley over time, wastewater flows will increase and the amount of recycled water production to meet future system demands would also increase. Therefore, SCV Water anticipates that construction of the recycled water system will be phased to utilize the increases in WRP production. A detailed discussion of the recommended phasing plan was provided in the RWMP Update.

Phasing implementation of the recycled water system is recommended for the following reasons:

- A number of the potential recycled water users are future users that do not yet need recycled water.
- The current amount of recycled water available from the local WRPs is not yet adequate to meet the total demands of all the existing *and* planned future identified recycled water users.
- Capital funding requirements would be spread over current planning period through 2050.

The implementation phases are prioritized based on the status of the potential recycled water users (existing or future), the anticipated construction schedule of future users and the proximity of the users to the non-potable water source (e.g., Valencia WRP, Vista Canyon WRP and Newhall Ranch WRP).

As discussed in Section 5.8, Phase 2A, 2B, 2C and 2D are planned for construction over the next 10 years and would increase recycled water deliveries by approximately 2,440 AFY. These projects are being prioritized to take advantage of available funding for recycled water projects under Proposition 1 and to align with the construction schedule for the Vista Canyon Development.

The Newhall Ranch/Five Point project represents the next major increase in recycled water use and is anticipated to be constructed over the next 20 to 25 Years.

Once these uses are on-line, recycled water may be limited in the summer months to serve irrigation demands, thus the implementation for future users would be based on the following considerations:

- Service area boundaries,
- Ease or willingness of customers to connect to recycled water,
- Capital and operational costs,
- Funding availability,
- Community impacts and development requirements,
- Supply reliability and system flexibility considerations, and
- Availability of recycled water supplies due to regulatory or other legal constraints.

## 5.12 Additional Considerations Relating to the Use of Recycled Water

### 5.12.1 SCVSD Chloride Compliance Plan

Salinity and nutrient management concerns in the Upper Santa Clara River Watershed are primarily driven by salt sensitive crops located downstream. High chloride levels are of particular concern since high value, chloride sensitive crops like strawberries and avocados grown in the lower Watershed utilize surface waters or ground water influenced by surface water for irrigation.

Findings from previous reports cite that the potable water supply and residential self-regenerating water softeners (SRWS) are the primary sources of chloride in the SCVSD's service area. Of these two sources, the SCVSD can only control residential SRWS. As a result, the SCVSD passed two ordinances to control residential SRWS. The first ordinance was adopted in 2003 which prohibited the installation of new residential SRWSs, and in 2008 the second ordinance[6] was adopted which required the removal of all residential SRWS in the SCVSD's service area. Since 2009, over 8,300 residential SRWS have been removed but source control alone was not enough to meet the Santa Clara River chloride water quality objectives. In response, the SCVSD developed a plan to meet water quality objectives for chloride.

In October 2013, the SCVSD Board of Directors completed its Facilities Plan to comply with the State-mandated chloride limit after nearly two years of extensive public input, meetings, hearings, and environmental review. As explained above, the SCVSD's initial approval of the Plan and related Final EIR was challenged in court. The chloride compliance project will add

[6] The *Santa Clara River Chloride Reduction Ordinance of 2008* became effective after Santa Clarita Valley residents overwhelming approved it with almost two-thirds voting in favor with passage of Measure S.

ultraviolet (UV) disinfection at both the Saugus and Valencia WRPs and an advanced water treatment facility (AWTF) at the Valencia WRP to reduce effluent chloride levels. The AWTF uses a highly selective application of Reverse Osmosis technology where dissolved chloride ions are preferentially concentrated into a brine solution. The resulting brine is minimized, and this concentrated stream is removed by trucking, to the Joint Water Pollution Control Plant in Carson, which treats wastewater from much of the Los Angeles Basin (over 340 MGD) and discharges to the ocean. The project is designed to meet the chloride compliance requirement in an efficient manner. It is, in this regard, unrelated to the recycled water program.

As discussed above, SCVSD's approval of the chloride compliance project has been challenged in court. But it is under construction and nearing completion.

Since, the adoption of the Facilities Plan, in 2014 the LARWQCB adopted Resolution No, R4-2014-010, which amended the *Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) with new chloride water quality objectives for Reaches 4B, 5, and 6 of the Upper Santa Clara River and incorporated conditional site specific objectives (SSOs) for chloride in Reaches 5 and 6 (Table 5-5). Further, the resolution revised the TMDL for chloride in the Upper Santa Clara River to reflect the amended water quality objectives and conditional SSOs (LARWQCB 2014).

In 2014 the SWRCB and in 2015 the Office of Administrative Law (OAL) and US EPA approved the Basin Plan amendment adopted under Resolution No. R4-2014-010. The Basin Plan amendment became effective on April 28, 2015.

New surface water quality objectives for Reaches 4B, 5, and 6 of the Santa Clara River are as follows:

**TABLE 5-5 SANTA CLARA RIVER SURFACE WATER QUALITY OBJECTIVES**

| Reach | Chloride (mg/L) | Rolling Average Period |
|---|---|---|
| 6 | 150[(a)] | 3-month |
| 5 (upstream of Valencia WRP outfall 001) | 150[(a)] | 3-month |
| 5 (downstream of Valencia WRP outfall 001) | 100 | 3-month |
| 4B | 100 | 3-month |

Note:

(a) The SSO shall apply and supersede the existing water quality objective of 100 mg/L as a 3-month rolling average only when flow weighting projects are in operation by the SCVSD.

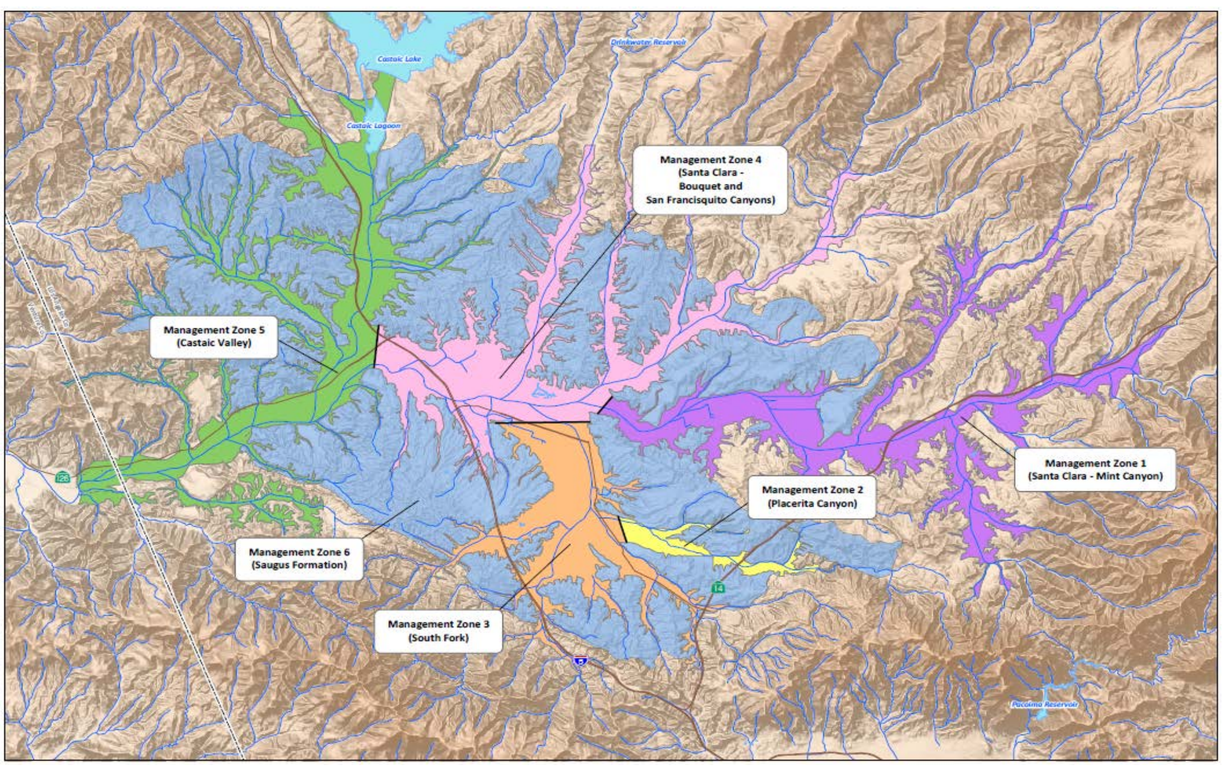
### 5.12.2 Salt and Nutrient Management Plan

In February 2009 (subsequently amended in 2013 and 2019), the SWRCB adopted a Recycled Water Policy. This Policy encourages the use of recycled water from municipal wastewater sources as a safe alternative source of water supply. The goal of the Recycled Water Policy is to increase the use of recycled water in the state over 2002 levels by at least one million AFY by 2020 and at least two million AFY by 2030.

The SWRCB recognized that some groundwater basins in the state contain salt and nutrients which exceed, or threaten to exceed, water quality objectives (WQOs) established in the Water Quality Control Plans, and that not all basin plans include adequate implementation procedures for achieving or ensuring compliance with the water quality objectives for salt and nutrients. Therefore, the SWRCB determined that the appropriate way to address salt and nutrient issues is through the development of regional or sub-regional salt and nutrient management plans (SNMPs), rather than through imposing requirements solely on individual recycled water projects.

In compliance with this Policy, the Upper Santa Clara River Integrated Regional Water Management Group (IRWMG), which is comprised of SCV Water, the City of Santa Clarita, LACFCD, San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy, and the SCVSD entered into a Memorandum of Understanding (MOU) to prepare the SNMP for the Santa Clara River Valley East Groundwater Subbasin (East Subbasin). This group of agencies, collectively known as the SNMP Task Force was facilitated by SCV Water (formerly CLWA) and directed the preparation of the SNMP for the East Subbasin which was adopted in December of 2016. The location of the East Subbasin and the management areas are depicted on Figure 5-1 below. The plan was prepared using guidance set forth by the Los Angeles Regional Water Quality Control Board (LARWQCB) and presents an evaluation of salt and nutrient concentrations (TDS, Sulfate, Nitrate, Chloride) for current and proposed water resource management practices in the Santa Clarita Valley in compliance with the Basin Plan.

**FIGURE 5-3 SNMP MANAGEMENT ZONES FOR THE EAST SUBBASIN**



### 5.12.3 Water Quality Control Plan (Basin Plan)

The LARWQCB established water quality objectives for the Santa Clara River Watershed in the Basin Plan. Water quality objectives were established, by specific water body or reach, to protect the various beneficial uses within that water body or reach. Table 5-6 shows the water quality objectives for salt and nutrients for the Santa Clara River Watershed outlined in the Basis Plan amendment.

## TABLE 5-6 GROUNDWATER QUALITY IN THE UPPER SANTA CLARA RIVER BASIN (2001-2011)

| Management Zone | Groundwater Subunit | | TDS (mg/L) | Cl (mg/L) | Nitrate- N (mg/L) | Sulfate (mg/L) |
|---|---|---|---|---|---|---|
| 1a | Santa Clara-Mint Canyon | Water Quality Objective | 800 | 150 | 10 | 150 |
| | | Water Quality | 728 | 89 | 4.5 | 138 |
| | | Available Assimilative Capacity | **72** | **61** | **5.5** | **12** |
| 1b | Santa Clara-Mint Canyon | Water Quality Objective | 800 | 150 | 10 | 150 |
| | | Water Quality | 833 | 72 | 4.7 | 269 |
| | | Available Assimilative Capacity | **-33** | **78** | **5.3** | **-119** |
| 2 | Placerita Canyon[1] | Water Quality Objective | 700 | 100 | 10 | 150 |
| | | Water Quality | NA | NA | NA | NA |
| | | Available Assimilative Capacity | **NA** | **NA** | **NA** | **NA** |
| 3 | South Fork[2] | Water Quality Objective | 700 | 100 | 10 | 200 |
| | | Water Quality | NA | NA | NA | NA |
| | | Available Assimilative Capacity | **NA** | **NA** | **NA** | **NA** |
| 4 | Santa Clara- Bouquet and San Francisquito Canyons | Water Quality Objective | 700 | 100 | 10 | 250 |
| | | Water Quality | 710 | 77 | 3.6 | 189 |
| | | Available Assimilative Capacity | **-10** | **23** | **6.4** | **61** |
| 5 | Castaic Valley | Water Quality Objective | 1000 | 150 | 10 | 350 |
| | | Water Quality | 727 | 77 | 1.8 | 246 |
| | | Available Assimilative Capacity | **273** | **73** | **8.2** | **104** |
| 6 | Saugus Formation[3] | Water Quality Objective | 700 | 100 | 10 | NA |
| | | Water Quality | 636 | 28 | 3.2 | 235 |
| | | Available Assimilative Capacity | **64** | **72** | **6.8** | **NA** |

Notes:

[1] Currently no data. Investigating new location(s) for data collection opportunities to establish baseline water quality for this reach.

[2] Limited data (1 well). Additional locations are under evaluation for inclusion in this Reach.

[3] WQOs have not been established for the Saugus Formation. The most conservative of the alluvial management zone WQOs was used for calculation of assimilative capacity for TDS, chloride and nitrate.

### 5.12.4 Nutrients

The LARWQCB previously found that the Santa Clara River was being impacted by ammonia and nitrate plus nitrite (nitrogen compounds) with the primary source being wastewater discharge into the river. Nitrogen compounds can cause or contribute to eutrophic effects such as low dissolved oxygen, algae blooms and reduced benthic macro invertebrates. Three reaches in the Santa Clara River have been identified as impaired due to ammonia (Reaches 3, 7 and 8), two of which exceed Basin Plan water quality objectives. These findings led to a Basin Plan Amendment for a nitrogen compounds TMDL for the Santa Clara River which became effective on March 23, 2004. The TMDL values in the Upper Santa Clara River for ammonia are summarized in Table 5-7 below, and for nitrate plus nitrite in Table 5-8.

Following 2003 upgrading and optimizing Saugus and Valencia WRPs with nitrification/denitrification (NDN) treatment processes, the 2011 average ammonia levels in the Valencia and Saugus WRP recycled water were 1.02 mg/L and 1.32 mg/L, respectively. The 2011 average nitrate plus nitrite levels in Valencia and Saugus WRP recycled water were 2.60 mg/L and 4.36 mg/L, respectively. These levels are within the regulatory limits and the Santa Clara River is no longer considered to have impairments related to nitrate. The river no longer appears on the 303(d) list for nitrate.

**TABLE 5-7 TMDL FOR AMMONIA AS NITROGEN ON THE SANTA CLARA RIVER**

| Reach | One-hour NT Average Numeric Target (mg-N/L) | Thirty-day Average Numeric Target (mg-N/L) |
|---|---|---|
| Reach 8 | 14.8 | 3.2 |
| Reach 7 above Valencia | 4.8 | 2.0 |
| Reach 7 below Valencia | 5.5 | 2.0 |
| Reach 7 at County Line | 3.4 | 1.2 |
| Reach 3 above Santa Paula | 2.4 | 1.9 |
| Reach 3 at Santa Paula | 2.4 | 1.9 |
| Reach 3 below Santa Paula | 2.2 | 1.7 |

Source: LARWQCB Basin Plan, Chapter 7, Updated May 2019.

**TABLE 5-8 TMDL FOR NITRATE PLUS NITRITE ON THE SANTA CLARA RIVER**

| Reach | Thirty-day Average (mg-N/L) |
|---|---|
| Reach 8 | 9.0 |
| Reaches 3 and 7 above Valencia | 4.5 |

Source: LARWQCB Basin Plan, Chapter 7, Updated May 2019.

# Section 6: Water Quality

## 6.1 Overview

The quality of any natural water is dynamic in nature. This is true for both the SWP and the local groundwater of the Basin. During periods of intense rainfall or snowmelt, routes of surface water movement may change resulting variable quantities of constituents being mobilized. The quality of water changes over the course of a year. These same basic principles apply to groundwater. Depending on water depth, groundwater will pass through different layers of rock and sediment and potentially dissolve different materials from those strata, change concentrations due to oxidation or reduction reactions or precipitate constituents due to oversaturation. Water depth is a function of recharge from local rainfall and from adjacent basins due to subsurface inflow and withdrawal from groundwater pumping. Water quality is not a static feature of surface water and groundwater, and these dynamic variables must be recognized.

Water quality regulations also change. This is the result of the discovery of new contaminants, updated understanding of the health effects of previously known as well as new contaminants, development of new analytical technology and the introduction of new treatment technology. Most water suppliers in California are subject to drinking water standards set by the United States Environmental Protection Agency (USEPA) and the SWRCB DDW, formerly the California Department of Public Health (DPH). Additionally, each year prior to July 1$^{st}$, a Consumer Confidence Report or Water Quality Report (WQR) is made available to all Valley residents who receive water from SCV Water. That report includes detailed information about the results of quality testing of the groundwater and treated SWP Water supplied during the preceding year (2020 WQR). Water quality is also addressed in the annual Santa Clarita Valley Water Report, which describes the current water supply conditions in the Valley and provides information about the water requirements and water supplies of the Santa Clarita Valley.

The quality of water received by individual customers will vary depending on whether they receive imported water, groundwater or a blend. Some will receive only imported water at all times, while others will receive only groundwater. Others may receive water from one well at one time, water from another well at a different time, different blends of well and imported water at other times, and only imported water at yet other times. These times may vary over the course of a day, a week, or a year.

This section provides a general description of the water quality of the supplies within the Valley, aquifer protection and a discussion of potential water quality impacts on the reliability of these supplies.

## 6.2 Water Quality Constituents of Interest

SCV Water is committed to providing its customers with high quality water that meets all federal and state primary drinking water standards. Some contaminants are naturally-occurring minerals and radioactive material. In some cases, the presence of animals or human activity can contribute to the constituents in the source waters. The following sections address constituents reported in the 2020 WQR and the 2019 Santa Clarita Valley Water Report (July 2020) that may impact water quality.

### 6.2.1 Perchlorate

Perchlorate, a chemical used in making rocket and ammunitions propellants as well as flares and fireworks, has been a water quality concern in the Santa Clarita Valley since 1997 when it was originally detected in four wells operated by SCV Water in the eastern part of the Saugus Formation, near the former Whittaker-Bermite facility. In late 2002, the contaminant was detected in a fifth well, this one located in the Alluvial Aquifer (Stadium Well) but also located near the former Whittaker-Bermite site, and which was immediately taken out of service. Of those wells, two (Well 157 and Stadium Well) were sealed and replaced by new wells (201 and Valley Center), and two others (Saugus 1 and 2) were returned to service with treatment by 2011. Well N-11 was taken out of service and remains out of service.

Perchlorate was detected again in early 2005 in a second Alluvial well (Well Q2) near the former Whittaker-Bermite site, and in 2006 in very low concentrations (below the detection limit for reporting) in a fifth Saugus well (Well N13) near one of the originally impacted wells.

In response to the detection of perchlorate at alluvial Well Q2, it was removed from active service, and the preparation of an analysis and report assessing the impact of, and response to, the perchlorate contamination of that well was commissioned. A capture zone analysis utilizing the numerical groundwater flow model was conducted to assess the potential risk of perchlorate migration to Well Q2 and other nearby alluvial wells. This analysis determined that there was a low risk of perchlorate migration to Well Q2. The response for Well Q2 was to obtain permitting for installation of wellhead treatment, followed by the installation of treatment facilities and returning the well to water supply service in October 2005. After nearly two years of operation with wellhead treatment, including regular monitoring specified by the DPH, all of which resulted in no detection of perchlorate in Well Q2, it was requested that DPH allow treatment to be discontinued. DPH approved that request in August 2007, and treatment was subsequently discontinued. In 2019, perchlorate was detected again in Well Q2. In response, a treatment system for Well Q2 was completed in early 2021, and the well is expected to be back online by summer 2021. Additional details on DDW permitting and associated operational timeline for Well 201 are provided in Section 6.7.

Well N-13 has remained in service with regular sampling per DDW requirements. Perchlorate concentrations in Well N13 (and Well N12) are currently below the detection limit for reporting (DLR). In 2007, the DPH (currently the DDW) established a maximum contaminant level (MCL) for perchlorate of 6 micrograms per liter (µg/L). However, it is expected that DDW may lower the MCL for perchlorate which may impact Wells N12 and N13. In addition, DDW is in the process of lowering the current DLR of 4ug/L to 2 ug/L and subsequently to 1ug/L by 2024. Additional details on DDW permitting and associated operational timeline for Well 205 are provided in Section 6.7. It is currently assumed that, if required due to changes in future regulations, a centralized treatment system will be installed for Wells N12 and N13 at the Well N12 location.

For Wells Saugus 1 and Saugus 2, DDW has imposed a requirement that perchlorate levels be below the Detection Level for Reporting (DLR) of 4 µg/L. These wells are in active service utilizing approved perchlorate treatment.

In August 2010, perchlorate was detected in a sixth Saugus Formation well (Well 201) and was removed from service. Confirmation sampling in the months that followed confirmed the detection of perchlorate at concentrations that ranged from 5.7 to 12 µg/L. A perchlorate treatment system is currently installed for Well V-201 and SCV Water is working with DDW to finalize a permit for operation of that treatment system. Based on the current schedule, the well may come back online by the end of 2021.

Following the detection of perchlorate in Well 201 in 2010, pumping from a nearby Saugus Formation well (Well 205) was minimized to reduce potential perchlorate migration. In April 2012, Well 205 was voluntarily taken out of service entirely when perchlorate was detected in low concentrations below the DLR (<4.0 µg/L). As of the date of this report, planning and CEQA activities for Well 205 treatment are in progress. The completion of a treatment system for Well 205 is anticipated to occur by early 2024. To date, perchlorate has been detected in a total of nine wells, seven located in the Saugus Formation and two in the Alluvium. Table 6-1 summarizes the current remediation status of all wells where perchlorate has been detected.

Long-term efforts toward the remediation of perchlorate contamination since first detected in 1997 continues to this day. The objective of the perchlorate restoration and containment plan has been to stop the migration of the contaminant plume and restore lost well capacity through pump and treat methods and replacement wells. The following discussion is provided to illustrate the work that has occurred over the last 20 years to reactivate the impacted Saugus 1 and Saugus 2 groundwater supply wells, and that has been expanded to include Wells 201 and 205. SCV Water's Saugus Perchlorate Treatment Facility has been online since 2011, treating Wells Saugus 1 and Saugus 2. A second Perchlorate Treatment Facility came online in 2017 at the Well 201. Until the facility is permitted, treated Water from Well 201 is discharged to the Santa Clara River, under a National Pollutant Discharge Elimination System (NPDES) discharge permit, where it recharges the alluvial aquifer.

The groundwater model that was developed for use in analyzing the operating yield and sustainability of groundwater in the Basin was also used to analyze the capture and control of perchlorate contamination in the originally impacted Saugus wells. As part of the evaluation of the containment system's effectiveness, the Basin groundwater model was updated and recalibrated using actual pumping data (see LSCE & GSI, 2009). The updated model was also utilized in 2014 and 2015 to evaluate restoration and containment options and select the preferred approach to contain the migration of perchlorate downgradient of the Whittaker-Bermite site and restore Wells 201 and 205 to service (GSI and LSCE, 2014).

In addition to the offsite containment and restoration activities, significant work has continued at the Whittaker-Bermite facility to advance a Saugus Aquifer Containment and Extraction Program. To date the following efforts have been completed. A Work Plan, Saugus Aquifer Pilot Remediation Well Network, OU7 was approved on December 31, 2008; and subsequently, implementation of the Work Plan started. A multi-layer groundwater flow model was developed to simulate various groundwater pumping scenarios for capture of impacted groundwater in the Saugus Aquifer beneath the site and the surrounding areas. The optimum number and locations of extraction wells were determined based on the modeling scenarios, and the extraction wells and performance monitoring wells were installed.

Construction of the Saugus Aquifer Treatment Plant (SATP) was completed and operation of the pump and treat system started in August 2017. The SATP includes liquid granular activated carbon (LGAC) for removal of VOCs and a fluidized bed reactor (FBR) for biological treatment of perchlorate in extracted groundwater. The treated water is discharged to the Santa Clara River, under full compliance with provisions of the NPDES permit issued by the Regional Water Quality Control Board - Los Angeles Region (RWQCB). Treated water discharged to river percolates through the riverbed and recharges the alluvial aquifer beneath the riverbed.

Approximately 446,741,200 gallons of water have been treated and discharged since start-up.

**TABLE 6-1 STATUS OF IMPACTED WELLS**

| Year Perchlorate Detected | Well | Groundwater Aquifer | Status |
|---|---|---|---|
| 1997 | Saugus 1 | Saugus | DPH (now DDW) approved well return to service in January 2011; well in active service utilizing approved perchlorate treatment. |
| 1997 | Saugus 2 | Saugus | DPH (now DDW) approved wells return to service in January 2011; well in active service utilizing approved perchlorate treatment. |
| 1997 | Well 157 | Saugus | Sealed and capacity replaced by new well. |
| 1997 | Well N11 | Saugus | Out of service. |
| 2002 | Stadium Well | Alluvium | Sealed and capacity replaced by new well. |
| 2005 | Well Q2 | Alluvium | Due to perchlorate detection again in 2019, a treatment system was completed in early 2021 and the well is expected to be back online by summer 2021. |
| 2006 | Well N13 | Saugus | Regular DDW monitoring, concentrations currently below DLR; well remains in service. |
| 2010 | Well 201 | Saugus | A perchlorate treatment system was installed in 2017 and treated water discharged to Santa Clara River beginning in 2018. The treated groundwater from the well may be used for supply by the end of 2021. |
| 2012 | Well 205 | Saugus | Voluntarily out of service. Planning for treatment at Well 205 in progress with estimated well restoration by 2024. |

**<u>Saugus 1 and Saugus 2</u>**

In 2002 SCV Water and the U.S. Army Corps of Engineers (ACOE) signed a cost-sharing agreement for a feasibility study of the area. Under federal and state law, the owners of the Whittaker-Bermite property have the responsibility for the groundwater cleanup. SCV Water and the Department of Toxic Substances Control (DTSC) signed an oversight agreement in 2003 (amended in 2012) regarding studies of treatment technologies for removing perchlorate from water supplies, and also worked with DDW to obtain the necessary permits for these treatment processes. Treatment method pilot studies were conducted during 2003, and in 2004 SCV Water and the purveyors selected ion exchange as the preferred treatment method for removing perchlorate.

Although that agreement expired in January 2005 the parties, under DTSC oversight, jointly developed a plan to “pump and treat” contaminated water from two of the purveyors’ impacted wells to stop migration of the contaminant plume and to partially restore the municipal well capacity that had been impacted by perchlorate. The containment plan specified that wells Saugus 1 and Saugus 2 operate at an initial continuous pumping rate of 1,100 gpm (1,772 AFY) at each well, for a combined total of 2,200 gpm (3,544 AFY) from the two wells. The annual pumping volume of 1,772 AFY per well assumes that pumping will occur continuously, except for occasional maintenance purposes.

A final settlement to fund, remediate and treat the contaminated water was completed and executed by the parties in April 2007. Construction of the treatment facility and pipelines began in November 2007 and treatment of the water began in 2010. Water from Wells Saugus 1 and Saugus 2 was initially treated and discharged into the Santa Clara River. DDW issued an amendment to the Operating Permit in December 2010, and the wells were placed back in water supply service in January 2011. Since then, SCV Water has included this water as part of its supply and has been delivering this water to purveyors. This water is shown as part of the regional supply in Section 4.

**Wells 201 and 205**

A recommendation plan was submitted to restore Well 201 to service that utilized funding from the Whittaker Corporation and its insurer for installing wellhead treatment of contaminated water from Well 201. During the time Wells 201 and 205 have been removed from service, the temporary loss of capacity was made up for from the remaining, non-impacted Saugus production facilities and imported water supplies. Restoration of Well 201, operation of Well 205, and new Saugus well construction to replace lost capacity and to expand production capacity from the Saugus Formation are planned to achieve target Saugus Formation capacity through single and multiple dry years as discussed in Section 4.3.

Returning the impacted Saugus well (Well 201) to municipal water supply service by installing treatment requires DDW approval before the water can be considered potable and safe for delivery to customers. The permit requirements are contained in Process Memo 97-005 for direct domestic use of impaired water sources.

Before issuing a permit to a water utility for use of an impaired source as part of the utility's overall water supply permit, DDW requires that studies and engineering work be performed to demonstrate that pumping the well and treating the water will be protective of public health for users of the water. The Process Memo 97-005 requires that DDW review the water utility's plan, establish appropriate permit conditions for the wells and treatment system, and provide overall approval of returning the impacted wells to service for potable use.

The Process Memo 97-005 requires, among other things, the completion of a source water assessment for the impacted well intended to be returned to service. The purpose of the assessment is to determine the extent to which the aquifer is vulnerable to continued migration of perchlorate and other contaminants of interest from the Whittaker-Bermite site. The assessment was completed and initially submitted to DDW for approval in 2015. The assessment includes the following:

- Delineation of the groundwater capture zone caused by operating the impacted wells.
- Identification of contaminants found in the groundwater at or near the impacted wells.
- Identification of chemicals or contaminants used or generated at the Whittaker-Bermite facility.

- Determination of the vulnerability of pumping the impacted wells to these contaminant sources.

A perchlorate treatment system is currently installed for Well 201 and the well is expected to be back online for domestic use by the end of 2021. Well 205 is also subjected to Process Memo 97-005 and planning for treatment at Well 205 is in progress with an estimated well restoration date by 2024, as shown in Table 6-1. Additional details on DDW permitting and associated operational timeline for Wells 201 and 205 are provided in Section 6.7.

Ultimately, restoration plans and the DDW requirements are intended to ensure that the water introduced to the potable water distribution system has no detectable concentration of perchlorate and all water currently discharged from the potable water distribution system complies with all applicable drinking water standards.

### 6.2.2 Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have been utilized in a wide array of industrial processes, including among others, production of stain- and water-resistant fabrics, cookware, food packaging, and fire-fighting foams. Among the nearly 5,000 types of PFAS, the two long-chained PFAS, perflurooctane sulfonate (PFOS) and perfluorooctonoic acid (PFOA) have been produced in the largest amounts. While the use of PFAS has been reduced since the early 2000s, PFOS and PFOA are persistent in the environment and resistant to typical environmental degradation processes which has led to their accumulation and widespread contamination of natural resources, including groundwater supplies.

Recently, the United States Environmental Protection Agency (USEPA) implemented a new lifetime health advisory level of 70 parts per trillion (or 70 nanogram per liter [ng/L]) for the combined concentrations of PFOA and PFOS in drinking water. In August 2019, DDW set a notification level (NL) of 5.1 and 6.5 ng/L for PFOA and PFOS, respectively. Subsequently, in February 2020, the DDW set a response level (RL) of 10 ng/L for PFOA and 40 ng/L for PFOS, based on a running annual average (RAA). RL is the concentration at which DDW recommends that a well is taken out of service, pending treatment. If a chemical concentration is greater than its NL (but below the RL) in drinking water that is provided to consumers, DDW recommends that the utility inform its customers and consumers about the presence of the chemical, and about health concerns associated with exposure to it. Potential regulatory limits for several short chain PFAS compounds are currently undecided.

On February 22, 2021, USEPA published notice in the federal register that the agency is in the process of developing a maximum contaminant level (MCL) for PFAS under the federal Safe Drinking Water Act. At this time, it is unclear whether the federal MCL will match the health advisory level of 70 parts per trillion, or if it will be a lower level, similar to the RL adopted DDW. SCV will monitor EPA's regulatory decisions and comply with all applicable requirements. Groundwater delivered by SCV to ratepayers will need to be treated to ensure it meets Safe Drinking Water Act standards, if the groundwater contains PFAS at levels that exceed the MCL

In accordance with an Order issued by DDW in March 2019, SCV Water was required to sample 15 wells for four consecutive quarters for PFAS. Initial quarterly samples were collected in May 2019 and one well (Valley Center), exceeded the EPA RL of 70 ng/L for combined levels of PFOA and PFOS and the well was immediately taken out of service. In addition, 10 of the initial 15 wells sampled exceeded one or both NLs for PFOS and PFOA. Public notification was provided to the SCV Water Board of Directors, the Santa Clarita City Council and Los Angeles

County Board of Supervisors. At this time, SCV Water decided to voluntarily sample all wells quarterly for PFAS. PFOA and/or PFOS levels higher than NLs and RLs were observed in over 60% of the wells. Subsequent public notifications were provided to SCV Water customers, and one well that was found to exceed the RL was immediately taken out of service. In response to the revised RL from February 2020, SCV Water proactively shutdown numerous wells that were anticipated to exceed the RAA for either PFOA or PFOS.

The preparation of a Groundwater Treatment Implementation Plan was initiated in 2020 with the purpose to evaluate the feasibility and costs of PFAS and perchlorate treatment options (Kennedy Jenks 2021). A total of 28 existing SCV Water wells were identified to be impacted by PFAS, being wells showing representative values of PFOA and PFOS above 80% of the DDW RLs. Based on preliminary results of the alternatives analysis, ion exchange was identified as the preferred treatment option. According to the plan, out of the 28 wells requiring treatment, five wells would have wellhead treatment system and groundwater from the remaining wells would be treated at eight centralized treatment locations. To date, one centralized treatment system was completed for the three N-wells (N, N7 and N8). Restoration of the remaining wells is estimated to occur between 2022 and 2030 as describe further in Section 4 and the Santa Clarita Valley Water Agency, Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks, April 2021.

### 6.2.3 Metals and Salts

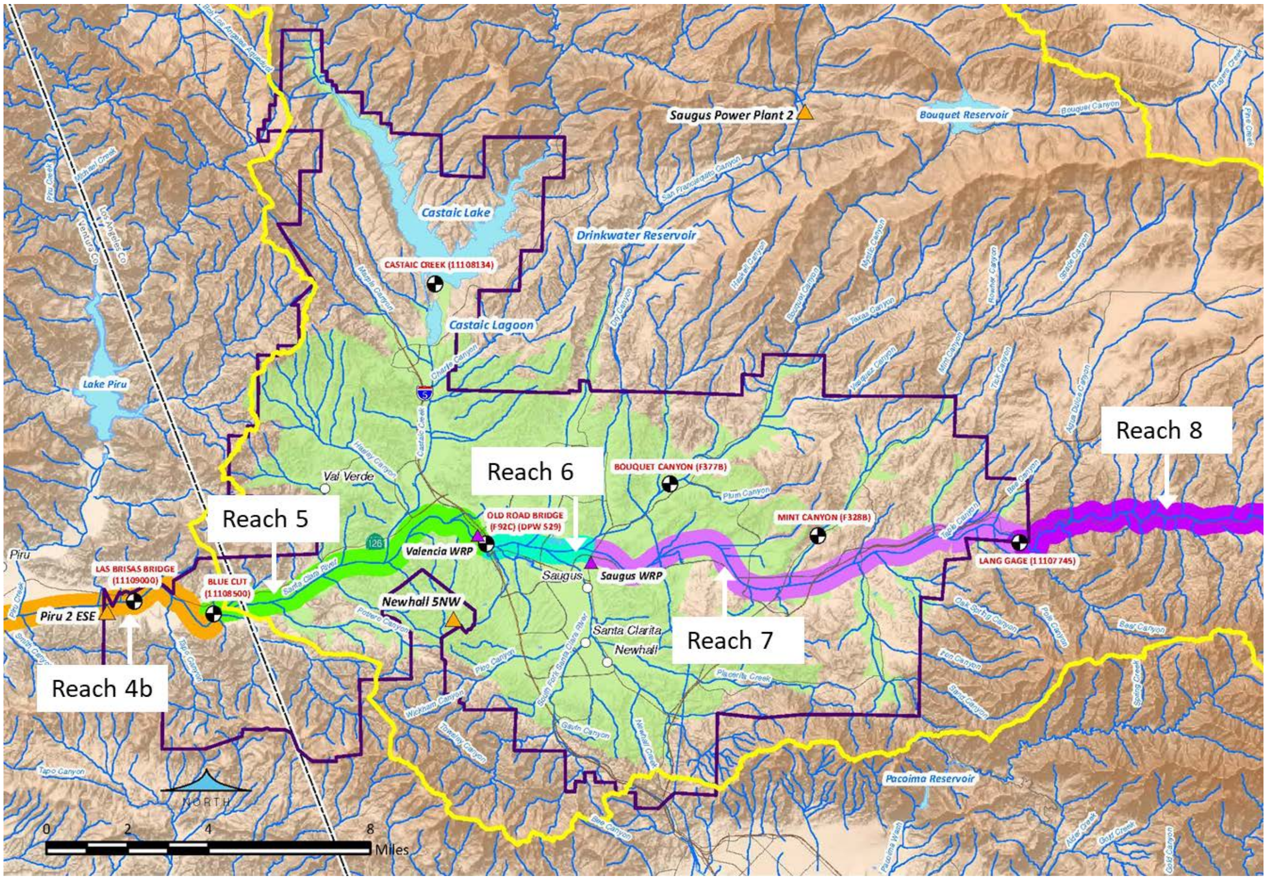
Metals and salts are tested in wells at least every three years and in Castaic Lake water every month. Concentrations of arsenic at levels less than the drinking water standard of 0.01 milligrams per liter that occur naturally from geologic materials are found in Castaic Lake and in a few wells. Inorganic compounds such as salts and metals can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming. Arsenic levels in the Santa Clarita Valley have regularly been below the MCL (10 ug/L) and oftentimes below the DLR (2 ug/L), as was the case during 2019 monitoring (LSCE, 2020).

Nitrate in drinking water at concentrations above 45 mg/L is a health risk for infants less than six months of age due to the possibility of methemoglobinemia. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. Principal sources of nitrogen to a watershed typically include discharges from water reclamation plants, septic systems, and recharge from agricultural activities. Nitrates are tested at least annually and the drinking water meets federal and state MCL standards (2020 WQR).

A TMDL for chloride in the Upper Santa Clara River (Reaches 5 and 6, see Figure 6-1) was adopted by the LARWQCB and became effective on May 5, 2005. The Basin Plan Amendment for the chloride TMDL in the Upper Santa Clara River was unanimously adopted by the LARWQCB on December 11, 2008. The TMDL identifies the Valencia and Saugus WRPs as the largest sources of chloride to the Upper Santa Clara River and established waste load allocations of 100 mg/L for the Saugus and Valencia WRPs. In 2014, the LARWQCB adopted the most recent version of the Upper Santa Clara River Chloride TMDL, Resolution R4-2014-010, which incorporated special study findings and assigned waste load allocations of less than 150 mg/L as a 3-month rolling average at the Saugus, and less than 100 mg/L as a 3-month rolling average for the calculated “combined effluents” of the Saugus and Valencia WRPs.
In response to the adopted chloride TMDL, the SCVSD developed a chloride compliance plan that includes source control, construction of ultraviolet (UV) disinfection facilities at the Saugus

and Valencia WRPs, and construction of the AWTF at the Valencia WRP. The AWTF will help meet the chloride TMDL and is anticipated to be completed by 2022.

**FIGURE 6-1 SANTA CLARA RIVER REACHES**




## 6.2.4 Disinfection By-Products

SCV Water uses ozone and chloramines to disinfect its water supply. Disinfection By-Products (DBPs), which include Trihalomethanes (THMs) and Haloacetic Acids (HAA5), are generated by the interaction between naturally occurring organic matter and disinfectants such as chlorine and ozone. THMs and HAA5 are measured at several points throughout the distribution system. Each location is averaged once per quarter and reported as a running annual average.

Ozone is a very powerful disinfectant that not only kills organisms that no other disinfectant can, but also destroys organic chemicals that cause unpleasant tastes and odors. However, ozone can also interact with bromide, a naturally occurring salt, to produce bromate. Bromate is measured weekly in the surface water treatment plant and compliance is based on a running annual average.

### 6.2.5 Total Trihalomethanes

Total Trihalomethanes (TTHMs) are byproducts created when chlorine is used as a means for disinfection. The Stage 2 Disinfectants and Disinfection Byproducts Rule, implemented by EPA in 2005, requires water systems to apply an MCL of 80 ug/L for TTHM at each compliance monitoring location (instead of as a system-wide average as in previous rules). SCV Water implements a combination of chlorination (using calcium hypochlorite) and chloramination across its system and maintains TTHM levels below the MCL, as documented in the 2020 WQR.

### 6.2.6 Microbiological

Microbial contaminants, such as viruses and bacteria, can be naturally occurring or result from urban storm Water runoff, sewage treatment plants, septic systems, agricultural livestock operations and wildlife. Water is tested throughout the systems weekly for Total Coliform bacteria and testing for *Escherichia coli* (*E. coli*) occurs when coliform testing is positive. No *E. coli* was detected in any drinking waters in 2019. The MCL for total coliforms is 5 percent of all monthly tests showing positives for larger systems. Bacteriological tests met federal and state requirements. Additional microbiological tests for the water-borne parasites *Cryptosporidium parvum* and *Giardia lamblia* were performed on Castaic Lake water, and none were detected.

### 6.2.7 Radiological Tests

Radioactive compounds can be found in both ground and surface waters and can be naturally occurring or be the result of oil and gas production and mining activities. Testing is conducted for two types of radioactivity: alpha and beta. If none is detected at concentrations above five picoCuries per liter no further testing is required. If it is detected, the water must be checked for uranium and radium. Although naturally occurring radioactivity can be detected, existing monitoring data indicate that alpha and beta levels are below the federal and state MCL standards.

### 6.2.8 Organic Compounds

Organic chemical contaminants, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems. Organic compounds also include pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. Water is tested for two types of organic compounds, volatile organic compounds (VOCs) and non-volatile synthetic organic compounds (SOCs). These organic compounds are synthetic chemicals produced from industrial and agricultural uses. Castaic Lake water is checked annually for VOCs and SOCs.

Although VOCs tend to escape from surface water through volatilization (evaporation) into the air, once dissolved in groundwater they are more persistent. Local wells are tested at least annually for VOCs and periodically for SOCs. Saugus 1, Saugus 2 and 201 wells are tested up to weekly for VOCs. VOCs have been measured in trace levels in some of the SCV Water wells. Trichloroethylene (TCE) represents the major VOC constituent detected in these wells. Tetrachloroethylene (PCE) has also been detected in a few samples. However, the measured levels of these constituents in these wells are well below their respective MCLs.

SCV Water's Water Supply Permit for Wells Saugus 1 and 2 sets an operational goal of no VOCs above the DLR (0.5 ug/L) in its distribution system and SCV Water. Over the last 5 years, the operational goal has been achieved in more than 95% of the samples collected. When there are detections, they are well below the MCL and just slightly above the DLR. SCV Water performed a VOC source identification study in July 2015 which concluded that the likely source was the Whittaker-Bermite site. SCV Water is currently working with DTSC to develop additional monitoring requirements for both sites. During start up of the 201 perchlorate treatment facility, TCE was detected slightly above the DLR. Detections of TCE in Well 201 have ranged from a high of 1.3 ug/L to <DLR. Average detections are slightly above the DLR at around 0.6 ug/L. SCV Water has completed the Process Memo 97-005 requirements for Well 201, which includes Maximum Contaminant Level Equivalent (MCLe) calculations. Based on these results, DDW will determine how the low TCE concentrations in Well 201 will be addressed. SCV Water and DDW anticipate a public review of the Process Memo 97-005 permit amendment in late spring 2021, which is one of the last remaining steps in the permitting process.

In order to address contamination at the Whittaker-Bermite site, a remedial action plan (RAP) and associated CEQA document were approved by DTSC on December 2, 2014. The RAP presents an evaluation of identified remedial alternatives for containment and cleanup of impacted groundwater at the Whittaker-Bermite site. In accordance with the RAP, a Saugus Aquifer Treatment Plant was constructed and began operation in August 2017. The treatment plant includes a fluidized bed reactor (FBR) system which provides biological treatment of perchlorate and liquid granular activated carbon which is used to remove VOCs in groundwater. Approximately 393,462,900 gallons of water have been treated since start-up.

Based on the low levels of detection and blending practices with imported water supplies, VOCs are not anticipated to impact groundwater supply availability or reliability.

## 6.3 Imported Water Quality

SCV Water provides SWP and other imported water to the Valley. The source of SWP water is rain and snow of the Sierra Nevada, Cascade and Coastal mountain ranges. This water travels to the Delta through a series of rivers and various SWP structures. From there it is pumped into a series of canals and reservoirs, which provide water to urban and agricultural users throughout the San Francisco Bay Area and central and southern California. The most southern reservoir on the West Branch of the SWP California Aqueduct is Castaic Lake. SCV Water receives water from Castaic Lake and distributes it to its customers following treatment.

SCV Water operates two water treatment plants, the Earl Schmidt Filtration Plant located near Castaic Lake and the Rio Vista Water Treatment Plant located in Saugus. SCV Water 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 400 mg/L, and lower hardness (as calcium carbonate) of about 105 to 135 mg/L. Historically, the chloride content of SWP Water varies widely from over 100 mg/L to below 40 mg/L, depending on Delta conditions. In addition, changes in SWP operations, as described below, can also result in water quality variations.

Historically, the SWP delivered only surface water from the Sacramento-San Joaquin River Delta. However, SCV Water along with other SWP contractors have integrated water supply programs also include “water banking” programs where SWP Water is stored or exchanged during wet years and withdrawn in dry years. Withdrawn water can either be delivered by exchange with SWP supplies allocated to others, or by pumping it into the SWP system. During dry periods, a greater portion of water in the SWP includes banked water supplies. The banked water has met all water quality standards established by DWR under its pump-in policy for the SWP. Source water from SCV Water’s Semitropic Bank can require treatment for arsenic prior to introduction into the Aqueduct depending on the mix of wells used for recovery. To date Semitropic has successfully treated its source water and meets DWR pump-in policy. Supplies from SCV Water’s Rosedale Bank have also met DWR pump-in criteria. In general, the pumped-in water serves to reduce the chloride concentration in SWP Water. The SWP water chemistry may fluctuate and is influenced by its passage through the Delta, where large amounts of organic material are present and where mixing with salt water from the San Francisco Bay, which contributes bromide and chlorides, may occur. Chloride levels from the Delta elevate chloride locally resulting in concern for local agriculture that grows chloride sensitive crops. Additionally, bromide and TOC may react with disinfectants such as ozone, chlorine, or DBPs. All constituents met the federal and state MCL levels as reported in the 2020 WQR.

## 6.4 Surface Water Quality

SCV Water does not deliver and treat water from the Santa Clara River as a source of supply; however, this supply is a source of recharge to the underlying groundwater basin.

The LARWQCB Basin Plan (Basin Plan, 1994) provides water quality objectives for surface water in the Upper Santa Clara River. These objectives were established to protect the various beneficial uses for that particular Water body or reach. The water bodies of the Upper Santa Clara River Watershed, which include streams, natural lakes and reservoirs, span a wide variety of existing, potential and/or intermittent beneficial uses. The following is a list of the beneficial uses identified in the Upper Santa Clara River:

- Municipal and Domestic Supply
- Industrial Service Supply
- Industrial Process Supply
- Agricultural Supply
- Groundwater Recharge
- Freshwater Replenishment
- Hydropower Generation

- Water Contact and Non-contact Water Recreation
- Warm and Cold Freshwater Habitat
- Wildlife Habitat
- Rare, Threatened, and Endangered Species
- Spawning, Reproduction, and/or Early Development

All of the surface water bodies in the Upper Santa Clara River Watershed support the designated beneficial uses (either existing or intermittent) of municipal and domestic supply, agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, wildlife habitat, and warm fresh water habitat. In addition, many water bodies (such as Bouquet, San Francisquito, and Soledad Canyons) support the designated beneficial uses (either existing or intermittent) of rare, threatened or endangered species; wetland habitat; and/or spawning, reproduction, and/or early development.

Regional reservoirs that support hydropower generation include Elderberry Forebay, Castaic Lake, Dry Canyon Reservoir, Bouquet Reservoir, and Pyramid Lake. Local surface waters are not a direct source of drinking water supply in the Region, but they are a continual source of recharge to groundwater which is used to meet municipal water demands.

Based on the 2014 and 2016 California Integrated Report and related Clean Water Act Section 303(d) list, there are a number of impairments identified for Reaches 5, 6 and 7 of the Santa Clara River, and for Lake Hughes, Lake Elizabeth and Munz Lake, all of which are within the Upper Santa Clara River Watershed.

The Santa Clara River currently has two approved TMDLs due to non-attainment of water quality objectives, one pertaining to chloride (see Section 6.2.3) and another pertaining to bacteria (see Section 6.2.6). Another TMDL is in place for three lakes within the Region that are impaired with trash. Other pollutants impacting local surface waters include nutrients, metals, pesticides and others.

Surface water quality is monitored in numerous locations throughout the Valley. Continuous sampling records are taken at two gaging stations at the Old Highway 99 Bridge and at the Los Angeles-Ventura County Line ("Blue Cut").

## 6.5 Groundwater Quality

The groundwater basin has two sources of groundwater, the Alluvial Aquifer whose quality is primarily influenced by recharge from rainfall and stream flow, and the Saugus Formation, which is a much thicker aquifer and recharged primarily by a combination of rainfall and deep percolation from the partially overlying Alluvium. A larger part of the Valley's groundwater supply is from the Alluvial Aquifer, between 30,000 to 40,000 AFY; and a smaller portion of the Valley's water supply is drawn from the Saugus Formation, with a target production level between 7,500 and 15,000 AFY in normal water years.

Local groundwater does not have microbial water quality problems. Parasites, bacteria and viruses are filtered out as the water percolates through the soil, sand and rock on its way through the vadose zone to the water table (the top of the aquifer). Even so, disinfectants (hypochlorite) are added to local groundwater when it is pumped by wells to protect public health. Local groundwater has very little TOC and generally has very low concentrations of bromide, minimizing potential for DPB formation. Taste and odor problems from algae are not an issue with groundwater.

The mineral content of local groundwater is very different from SWP water. The groundwater is very “hard,” and it has high concentrations of calcium and magnesium (approximately 250 to 600 mg/L total hardness as $CaCO_3$). Groundwater may also contain higher concentrations of nitrates and sulfates when compared to SWP water. However, all groundwater meets drinking water standards.

### 6.5.1 Water Quality - Alluvium

Groundwater quality is 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 previously in the annual Water Reports and in the 2015 UWMP. Historical groundwater quality as represented by TDS (which is a measure of the amount of dissolved minerals and salts in water expressed in mg/L) from representative wells in the Valley have been reviewed relative to DDW Secondary Maximum Contaminant Levels (SMCL) (Recommended, Upper and Short-term Levels). While concentrations of TDS generally respond to wet periods by exhibiting a downward trend, followed by an increasing trend during a dry period, the historical TDS data does not exhibit a long-term increasing trend and, therefore, no long-term decline in Alluvial groundwater quality. In general, groundwater quality exhibits a “gradient” from east to west, with lowest dissolved mineral content to the east, increasing in a westerly direction; and periodic fluctuations in some parts of the basin, where groundwater quality has inversely varied with recharge from precipitation and stream flow. Those variations are typically characterized by increased mineral concentrations through dry periods of lower stream flow and lower groundwater recharge, followed by lower mineral concentrations through wetter periods of higher stream flow and higher groundwater recharge.

Overall, water quality analyses demonstrate that, with the exception of occasional variances above the SMCL for TDS, groundwater of the Alluvium 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 is a viable ongoing water supply source in terms of groundwater quality.

The most notable groundwater quality issue in the Alluvium is PFAS contamination, described in Section 6.2.2.

### 6.5.2 Water Quality - Saugus Formation

As discussed above for the Alluvium, groundwater quality is a key factor in also assessing the Saugus Formation as a municipal and agricultural water supply. Long-term Saugus groundwater quality data is 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 fifty years, groundwater quality in the Saugus has exhibited a slight overall increase in dissolved mineral content. Between 2000 and 2005, several wells within the Saugus Formation exhibited an increase in TDS concentrations, similar to the short-term changes in the Alluvium, possibly as a result of recharge to the Saugus Formation from the Alluvium. Between 2006 and 2010, these concentrations steadily declined, followed by an increasing trend through 2016 and decreasing trend through 2019, except for Well N12 which remained stable.

TDS concentrations in the Saugus Formation remain within the range of historic concentrations and below the (aesthetic) MCL upper level. Groundwater quality within the Saugus will continue to be monitored to ensure that degradation which could present concern relative to the long-term viability of the Saugus as an agricultural or municipal water supply does not occur.

The most notable groundwater quality issue in the Saugus Formation is perchlorate contamination (described in detail in Section 6.2.1), although VOC contamination is also being closely monitored.

## 6.6 Water Quality Impacts on Reliability

Three factors affecting the availability of groundwater are sufficient source capacity (wells and pumps), sustainability of the groundwater resource to meet pumping demand on a renewable basis and protection of groundwater sources (wells) from known contamination, or provisions for treatment in the event of contamination. The first two of those factors are addressed in Section 4.3. The resolution of contamination for aquifer protection is addressed below.

Among the main constituents of concern with potential to impact groundwater availability are perchlorate, VOCs and PFAS. Based on the low levels of detection and blending practices with imported water supplies, VOCs are not anticipated to impact groundwater supply availability or reliability. Additionally, TCE detected at the Well 201 perchlorate treatment facility will be addressed as part of the Process Memo 97-005 DDW drinking Water permitting process with specific focus on the MCL calculations for Well 201. New standards for PFAS and subsequent testing results have indicated groundwater impacts in the Alluvial Aquifer from this constituent group and resulted in SCV Water's decision to shut down several wells in the recent past.

Perchlorate has been a water quality concern in the Valley since 1997 and long-term efforts are ongoing for the containment and remediation of perchlorate contamination. Currently, efforts are focused on stopping the migration of the contaminant plume and restoring the lost well capacity through pump and treat methods. SCV Water has sealed and replaced the capacity of some perchlorate impacted wells with new wells, and it has treated some of the wells and brought them back online. Some impacted wells are subjected to impaired water (97-005) compliance requirements, while others are currently in operation with a DDW approved monitoring program. Additionally, other perchlorate-impacted wells are currently offline awaiting installation (or permit) of treatment process. As noted above, two perchlorate treatment facilities have come online since 2011 and a third system was completed in early 2021.

Recognizing the existing water quality issues that affect the local groundwater, from perchlorate and VOCs, and more recently PFAS, SCV Water has developed a groundwater treatment and implementation plan (Kennedy Jenks 2021) to improve the reliability of its local groundwater supplies and ensure suitable water quality for meeting its customer potable demands. It is understood that groundwater treatment and implementation must be developed consistent with SCV Water's GSP, such that any relevant information pertaining to the adequacy, availability, and sustainability of supplies be consistent with the GSP and GSP implementation Plan.

Overall, the plans being developed for groundwater operation will allow SCV Water to meet near term and long-term demand within the SCV Water service area. The loss of capacity of wells impacted by water quality issues and removed from service in the near term will be met by near-term excess capacity in non-impacted wells, other water sources including imported water supplies, and/or through the installation of replacement well(s), if necessary, until remediation alternatives, including wellhead treatment, and DDW approval is obtained for restoration of the impacted supply. Therefore, no anticipated change in reliability or supply due to water quality is anticipated based on the present data, as is shown in Table 6-2. Additional details on the permitting process and anticipated timeline for water quality permitting of Saugus wells are provided in Section 6.7.

**TABLE 6-2 CURRENT AND PROJECTED WATER SUPPLY CHANGES DUE TO WATER QUALITY (PERCENTAGE CHANGE)**

| Water source | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|---|
| Groundwater | | | | | | | |
| Alluvial[(a)] | 63% | 16% | 0% | 0% | 0% | 0% | 0% |
| Saugus[(b)] | 25% | 0% | 0% | 0% | 0% | 0% | 0% |
| Imported Water | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Recycled Water | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Banking Programs | 0% | 0% | 0% | 0% | 0% | 0% | 0% |

Notes:

(a) Based on 24,170 AFY and 25,660 AFY being available to SCV Water in 2020 and 2025 respectively. Calculated from Table 4-9 for normal years. Net reduction in Alluvial pumping is 15,270 and 4,230 in 2020 and 2025 respectively. Full Alluvial well capacity is restored by 2030 per groundwater treatment and implementation plan (Kennedy Jenks 2021). As discussed in Section 7 this interim reduction in supply does not result in an overall supply shortfall.

(b) Based on forgone pumping capacity of 5,950 for well 201 and 205 per Table 4-8C and at total pumping capacity of 23,930 AFY (14,980 existing capacity + 5,950 of recovered capacity). As discussed in Section 7 this interim reduction in supply does not result in an overall supply shortfall.

## 6.7 Review of Pending Water Quality Permitting for Saugus Wells

Based on the anticipated process for water quality permitting and current status, this section provides information supporting the proposed timeline for operation of existing Saugus wells 201, 205, and future additional Saugus wells (Saugus 3 and 4, Saugus 5 and 6, and Saugus 7 and 8) following DDW water quality permitting requirements as summarized in Table 6-3.

## TABLE 6-3 ANTICIPATED SCHEDULE FOR PERMITTING AND OPERATION OF SAUGUS WELLS

| Well | Well Status | Treatment Status | DDW Permit Requirements | DDW Permit Status | Anticipated Schedule |
|---|---|---|---|---|---|
| 201 | Existing and operating (discharge to surface water) | Perchlorate treatment since 2017 | 97-005 Process Memo | - March 2021: Final Draft 97-005 documentation complete (including operational data)<br>- Amended water supply permit application submitted<br>- Pending public hearing<br>- CEQA complete | - 2Q2021: DDW review and approval of 97-005 draft documentation and ancillary documents<br>- 3Q 2021: Public Hearing<br>- 3Q-4Q2021: Amended Water Supply Permit and Operation |
| 205 | Existing and not operating | Preliminary design complete | 97-005 Process Memo | - Pending draft 97-005 documentation sections (most information from Well 201 documentation is applicable) and DDW sequential review<br>- Pending water supply permit amendment application and public hearing<br>- Pending CEQA | - June 2021: CEQA<br>- 2021-22: Treatment design<br>- 2022: draft 97-005 documentation sections 1-5 and sequential DDW review/approval<br>- 2Q2022 – 2Q2023: System construction<br>- 3Q-4Q2023: Startup testing and submittal of testing data to DDW<br>- 1Q2024: DDW review and approval of 97-005 draft documentation and ancillary documents<br>- 2Q2024: Water supply permit application<br>- 3Q2024: Public Hearing<br>- 4Q2024: Water supply permit application Amended Water Supply Permit and Operation (as applicable) |

| Well | Well Status | Treatment Status | DDW Permit Requirements | DDW Permit Status | Anticipated Schedule |
|---|---|---|---|---|---|
| Saugus 3 and 4 | Designed and drilling pending DDW permit | Not applicable, it is anticipated that technical documents to address some elements of 97-005 process memo may be required by DDW because of proximity of abandoned oilfield but treatment will not be required | Drinking Water Source Assessment Plan | - Preliminary Drinking Water Source Assessment Plan complete<br>- Pending submittal and DDW review of Drinking Water Source Assessment Plan<br>- CEQA completed and approved in 2005 | - 2Q2021-2Q2022: Draft Drinking Water Source Assessment Plan and DDW review and drilling approval<br>- 3Q2022 – 4Q2023: Wells installation and testing<br>- 2024: Amended Water Supply Permit |
| Saugus 5 and 6 | Locations identified and secured | Anticipated not applicable | Drinking Water Source Assessment Plan | - Pending draft Drinking Water Source Assessment Plan and DDW review (anticipated that wells are not subject to Process Memo 97-005)<br>- Pending CEQA | - 2022-2023: Draft Drinking Water Source Assessment Plan, and DDW review and drilling approval<br>- 2023: CEQA<br>- 2024: Wells installation and testing<br>- 2025-2027: Amended Water Supply Permit |
| Saugus 7 and 8 | Locations TBD | Anticipated not applicable | Drinking Water Source Assessment Plan | - Pending draft Drinking Water Source Assessment Plan and DDW review (anticipated that wells are not subject to Process Memo 97-005)<br>- Pending CEQA | - 2021-2023: Location identifications<br>- 2024 Draft Drinking Water Source Assessment Plan and DDW review and drilling approval<br>- 2024: CEQA<br>- 2025-2026: Wells installation and testing<br>- 2027-2030: Amended Water Supply Permit |

### 6.7.1 Process Memo 97-005 Requirements

Operation of Saugus wells 201 and 205 for drinking water supply will require an amended Water Supply Permit subjected to Process Memo 97-005 for direct domestic use of extremely impaired sources. Based on the revised Process Memo 97-005-R2020 issued by DDW in September 2020, the following studies and documents are required prior to DDW issuance of the water supply permit:

- Process Memo 97-005 documentation, including the following elements:
  - Drinking Water Source Assessment and Contaminant Assessment
  - Full Characterization of Raw Water Quality
  - Drinking Water Source Protection
  - Effective Treatment and Monitoring
  - Evaluation of Human Health Risks Associated with the Failure of the Proposed Treatment
  - Operations Maintenance and Monitoring Plan (OMMP)
- California Environmental Quality Act (CEQA) documentation
- Water supply permit application
- Treatment facility compliance/startup testing plan
- Startup testing data and documentation
- Public hearing

The process outlined by DDW in the revised Process Memo 97-005-R2020 is as follows:

- The water purveyor prepares and submits draft Process Memo 97-005 documentation sections to DDW
- DDW review and provide written approval of the draft Process Memo 97-005 documentation sections sequentially
- The water purveyor completes startup testing of the treatment facility and submit testing data for DDW review and approval
- The Process Memo 97-005 documentation is deemed complete by DDW, including written approval of each section
- The water purveyor submits an application for an amended Water Supply Permit
- The Process Memo 97-005 documentation and ancillary documents are provided for public review

- DDW and the water purveyor hold a public hearing
- DDW determine whether to issue the amended Water Supply Permit for the extremely impaired source

The anticipated schedule for operation of the Saugus wells have been determined based on the requirements and process outlined above and the current status.

## 6.7.2 Existing and Future Saugus Wells

### 6.7.2.1 Saugus Well 201

SCV Water has completed the draft Process Memo 97-005 documentation for Saugus well 201, including collection and documentation of operational data since the system started operating with discharge to surface water in 2017. The draft 97-005 documentation includes the elements required by DDW and is anticipated to be deemed completed by DDW in 2021 based on communication with DDW case reviewer. CEQA has been completed for this project and documentation was provided to DDW. SCV Water has applied for an Amended Water Supply Permit and submitted all required technical documentation including the required elements of the Process Memo 97-005. Therefore, issuance of the water Supply Permit amendment by DDW is anticipated in mid-2021, after which Saugus well 201 can be operated for drinking water supply.

### 6.7.2.2 Saugus Well 205

Saugus well 205 is located in the vicinity of Saugus well 201, and evaluation of the anticipated capture zone under different operating conditions has been completed (GSI and LSCE 2014). Because of the close proximity of Saugus well 205 to Saugus well 201 and the similarity of the anticipated wellhead treatment, it can be assumed that significant portions of the draft Process Memo 97-005 documentation for Saugus well 201 will be applicable to Saugus well 205, including:

- Drinking Water Source Assessment and Contaminant Assessment
- Drinking Water Source Protection
- Effective Treatment and Monitoring
- Operations Maintenance and Monitoring Plan (OMMP)

The preliminary design for the treatment system is complete and the final design is anticipated to be completed by the end of 2021. Following completion of the final design, it is anticipated that SCV Water will prepare the draft Process Memo 97-005 documentation in 2022 in close collaboration with DDW, including sequential review of draft sections and requirement of written approval. Treatment system construction and testing is anticipated in 2022-2023, and completion of Process Memo 97-005 documentation, DDW review, and public hearing is anticipated in 2024.

#### 6.7.2.3 Saugus Wells 3 and 4

Sites for Saugus wells 3 and 4 have been identified and secured. The sites are located within approximately 2,500 feet of abandoned oilfield wells. SCV Water has been in communication with DDW about these well locations. Based on these communications and the descriptions of "extremely impaired source" in the revised Process Memo 97-005-R2020, it is not anticipated that Saugus wells 3 and 4 will be subject to Process Memo 97-005. SCV Water is working on providing the following information to DDW to confirm this assumption:

- Description of the local hydrogeology and drinking water well design information
- Drinking Water Source Assessment Plan
- Water quality data from monitoring wells located within the anticipated capture area

Following review and drilling approval by DDW, wells installation and testing are anticipated in late 2022-2023.

#### 6.7.2.4 Saugus Wells 5 and 6

Sites for Saugus wells 5 and 6 have been identified and secured in the Castaic Junction area. Based on the descriptions of "extremely impaired source" in the revised Process Memo 97-005-R2020, it is not anticipated that Saugus wells 5 and 6 will be subject to Process Memo 97-005. Similar to Saugus wells 3 and 4, it is anticipated that SCV Water will provide the following information to DDW prior to well installation:

- Description of the local hydrogeology and drinking water well design information
- Drinking Water Source Assessment Plan
- Water quality data from monitoring wells located within the anticipated capture area

Following review and drilling approval by DDW, wells installation and testing are anticipated in 2024.

#### 6.7.2.5 Saugus Wells 7 and 8

Sites for Saugus wells 7 and 8 have not been identified. Therefore, the schedule for operation of those wells for drinking water supply is anticipated for 2030.

# Section 7: Reliability Planning and Drought Risk Assessment

## 7.1 Overview

The Act requires urban water suppliers to assess water supply reliability that compares total projected water use with the expected water supply over the next twenty years in five-year increments. The Act also requires an assessment for a single dry year and multiple dry years (a drought lasting five consecutive water years). This section presents the reliability assessment for SCV Water's service area.

It is the stated goal of SCV Water to deliver a reliable and high-quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions over the next thirty years in combination with conservation of non-essential demand during certain dry years, the Plan demonstrates that SCV Water can successfully achieve this goal.

## 7.2 Reliability of Water Supplies

Each water supply source has its own reliability characteristics. In any given year, the variability in weather patterns around the state may affect the availability of supplies to the Valley differently, depending on whether supplies are from local sources or are imported from other parts of the state. For example, from 2000 through 2002, southern California experienced dry conditions in all three years, while during that same period northern California experienced one dry year and two normal years. The Valley is typical in terms of Water management in southern California; local groundwater supplies are used to a greater extent when imported supplies are less available due to dry conditions in the north, and larger amounts of imported water supplies are used during periods when northern California has wetter conditions. This pattern of "conjunctive use" has been in effect since SWP supplies first came to the Valley in 1980. SWP and other imported water supplies have supplemented the overall supply of the Valley, which previously depended solely on local groundwater supplies.

To supplement these local groundwater supplies, SCV Water contracted with DWR for delivery of SWP water, providing an imported water supply to the Valley. However, the variability in SWP supplies affects the ability of SCV Water to meet the overall water supply needs for the service area. While each of the Valley's available supply sources has some variability, the variability in SWP supplies has the largest effect on overall supply reliability.

As discussed in Section 4.2, each SWP contractor's Water Supply Contract contains a Table A Amount that identifies the maximum amount of Table A Water that contractor may request each year. However, the amount of SWP water actually allocated to contractors each year is dependent on a number of factors than can vary significantly from year to year. The primary factors affecting SWP supply availability include the availability of water at the source of supply in northern California, the ability to transport that water from the source to the primary SWP diversion point in the southern Delta and the magnitude of total contractor demand for that water. In most years, the availability of SWP supplies to SCV Water and the other SWP contractors is less than their maximum Table A Amounts and can be significantly less in very dry years.

DWR's 2019 DCR, prepared biennially, assists SWP contractors and local planners in assessing the reliability of the SWP component of their overall supplies. In its reports, DWR presents the results of its analysis of the availability of SWP supplies, based on model studies of SWP operations. In general, DWR model studies show the estimated amount of SWP supply that would be available for a given SWP water demand, given an assumed set of physical facilities and operating constraints, based on 82 years of historic hydrology. The results are interpreted as the capability of the SWP to meet the assumed SWP demand, over a range of hydrologic conditions, for that assumed set of physical facilities and operating constraints.

DWR's 2019 DCR presents the results of model studies to estimate SWP delivery capability under both current (2020) and future (2040) conditions. In these model studies, DWR assumed existing SWP facilities and operating constraints, with all contractor demand at maximum Table A Amounts, for both current and future conditions. The primary difference between the two studies are the inclusion in the future conditions study of the potential impacts on historic hydrology of the effects of climate change and accompanying sea level rise. In the report, DWR presents the SWP delivery capability resulting from these studies as a percent of maximum contractor Table A Amounts. To estimate delivery capability in intermediate years between 2020 and 2040, DWR has suggested interpolating between the results of those two studies. SWP delivery capability for years beyond 2040 is assumed to be the same as for 2040.

## 7.3 Normal, Single-Dry, and Multiple-Dry Year Planning

SCV Water and the LAWWD36 have various water supplies available to meet demands during normal, single-dry, and multiple-dry years. The following sections elaborate on the different supplies available including groundwater, recycled water and imported supplies.

### 7.3.1 Groundwater

As described in Sections 4.3 and Section 6, SCV Water's current and proposed groundwater supplies from the Alluvial Aquifer and the Saugus Formation are sustainable. Current and future pumping levels when combined with non-purveyor pumping for average year, single dry year and multiple dry years remain within the basin yield as shown on Tables 4-9, 4-10, and 4-11 respectively and are consistent with 2020 SCV-GSA Draft Water Budget Development Tech Memo and the updated Basin Yield Analysis (LSC & GSI 2009). The 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI, 2021) incorporated an updated climate change analysis consistent with DWR guidance for preparation of groundwater sustainability plans. To achieve the planned groundwater supplies, installation of groundwater quality treatment facilities on existing wells along installation of additional wells will be required as indicated in Table 4-7 for Alluvial wells and Table 4-8A for Saugus Formation Wells. The timing for installation of new groundwater treatment and new wells is shown Appendix M in Table 4-7B and Table 4-7C for Alluvial wells and Table 4-8B and Table 4-8C for Saugus Formation wells. Further discussion of the feasibility of installing treatment is contained in Appendix M Groundwater Treatment Implementation Plan Technical Memorandum (Kennedy Jenks, 2021).

With the installation of groundwater treatment facilities and new wells, estimated to occur by 2035, SCV Water estimates its Alluvial pumping to be 30,790 AFY during normal years and when combined with 6,410 AFY of pumping by others totals 37,200 AFY. This is within the 30,000-40,000 AF operating range for the groundwater basin. For locally dry years, pumping is reduced to 26,090 AFY and when combined with 6,401 AFY of pumping by others totals 32,500. This is within the groundwater operating range of 30,000-35,000 AFY for dry years.

With the installation of groundwater treatment facilities and new wells, estimated to occur by 2035, SCV Water estimates its Saugus Formation pumping to be 10,400 AFY during normal years and when combined with 1,200 AFY of pumping by other totals 11,600 AFY. This is within the 7,600-15,000 AF operating range for the basin. For a single dry year scenario, pumping increases to 33,800 AFY and when combined with 1,200 AFY of pumping by others totals 35,000. This is at the top the operating range of 21,000-35,000 AFY operating range.

### 7.3.2 Recycled Water

The existing and projected availability of recycled water supplies, including various factors having the potential to affect the amounts and availability of those supplies, are discussed in detail in Section 5.

An update to the RWMP was initiated in 2016 (Kennedy/Jenks 2016) based on recent developments affecting recycled water sources, supplies, uses and demands. SCV Water has constructed Phase I of the RWMP, which currently averages deliveries of 450 AFY. Deliveries of recycled water began in 2003 for irrigation water supply at a golf course and in roadway median strips. Phase 2 is planned to expand recycled water use within Santa Clarita Valley and consists of four projects currently in various stages of construction and design. Additional recycled water demand of between 5,175-6,500 AFY are anticipated for new development in the western portion of the service area. Additional details are presented in Section 5.7 Recycled Water Supply and Demand.

SVC Water currently projects providing up to 8,960 AFY of treated (tertiary) recycled water suitable for reuse on golf courses, landscaping and other non-potable uses in Santa Clarita Valley to the extent those supplies are available as discussed in Section 5.

### 7.3.3 State Water Project Table A Supply

For this Plan, the availability of SWP supplies to SCV Water was based primarily on DWR's 2019 DCR. For the three hydrologic conditions evaluated here, the SWP deliveries to the Agency were taken from DWR's analyses based on the following: average/normal year based on the average deliveries over the studies' 82-year historical hydrologic study period (1922-2003), single-dry year based on a repeat of the worst-case actual allocation of 2014 and over a five-year dry period based on a repeat of the historical drought of 1988-1992.

While contractors may store their unused Table A supply as carryover, and additional types of water such as Article 21 Water and Turnback Pool water may periodically be available from the SWP, these are not included as supplies in Section 4 because of the uncertainty in their availability. However, to the extent SCV Water is able to make use of these supplies when available, the Agency may be able to improve the reliability of its SWP supplies beyond the values used in this section.

As discussed in more detail in Section 4 (see Section 4.2.1.7), a planning effort to increase long-term supply reliability for both the SWP and CVP is taking place through the Delta Conveyance Project. It is unclear at this time what impact on reliability the project may provide and therefore are not included in this Plan.

### 7.3.4 Flexible Storage Account

Under the Supply Contracts with DWR for SWP Water, the contractors that share in the repayment of Castaic Lake may access a portion of the storage in that reservoir. This accessible storage is referred to as “flexible storage.” The contractors may withdraw water from flexible storage, in addition to their allocated Table A supplies, on an as-needed basis. A contractor must return any water it withdraws from this storage within five years of withdrawal. As one of the three contractors sharing in the repayment of Castaic Lake, SCV Water has access to this flexible storage. Its share of the total flexible storage is currently 4,684 AF. After negotiations with Ventura County water agencies in 2005 and again in 2015, SCV Water gained access to their 1,376 AF of flexible storage through 2025. The terms of the existing flexible storage agreement will expire after 2025, and in this Plan is not assumed to be available beyond 2025.

SCV Water plans to use this supply only in dry years. For the single-dry year condition, it was assumed the entire amount would be available. For the five multiple-dry years conditions, it was assumed that the entire amount would be used sometime during the dry period although the potential exists to replenished during less critical years. Any water withdrawn was assumed to be returned to storage in intervening average and wet years and would be available again for use in the next dry year.

### 7.3.5 Buena Vista-Rosedale

BVWSD and RRBWSD, both member districts of KCWA, have jointly developed a program that provides both a firm Water supply of 11,000 AFY and a water banking component. This supply program provides a firm annual Water supply available every year based on existing and long-standing Kern River water rights, which is delivered by exchange of Buena Vista’s and Rosedale’s SWP Table A supplies or directly to the California Aqueduct via the Cross Valley Canal. As discussed in Section 4.2.3.1, up to 3,378 AF of this supply is reserved for specific development annexations.

### 7.3.6 Nickel Water-Newhall Land

This supply is similar to the Buena Vista-Rosedale supply both in regard to its source (Kern River water rights) and level of reliability. The supply from this program is up to 1,607 AFY of firm supply, which is available beginning in 2035 and in every subsequent year. It was acquired by the developer of the Newhall Ranch project to supplement groundwater and recycled water sources of supply for that project, which is in the SCV Water service area as discussed in 4.2.3.2.

### 7.3.7 Yuba Accord Water

In 2008, SCV Water entered into the Yuba Accord Agreement, which allows for the purchase of water from the Yuba County Water Agency through DWR to 21 SWP contractors) and the San Luis and Delta-Mendota Water Authority. Yuba Accord Water comes from north of the Delta, and the Water purchased under this agreement is subject to losses associated with transporting it through the Delta. These losses can vary from year to year, depending on Delta conditions at the time the water is transported. Under the agreement, an estimated average of up to 1,000 AFY of non-SWP supply (after losses) is available to SCV Water in dry years, through 2025. Under certain hydrologic conditions, additional water may be available to SCV Water from this program.

SCV Water plans to use this supply only in dry years. For the single-dry and multiple-dry year periods, it was assumed that SCV Water would purchase the maximum it could, at an average of 1,000 AFY (after losses) during the dry period.

### 7.3.8 Semitropic Banking Program

In 2015 the Agency entered into an agreement with Semitropic to participate in the SWRU. Under this agreement, the two short-term accounts containing 35,970 AF were transferred into this new program. Under the SWRU agreement the Agency can store and recover additional Water within a 15,000 AF account. The term of the Semitropic Banking Program extends through 2035 with the option of a 20-year renewal. The Agency may withdraw 5,000 AFY from its account. Current operational planning includes use of the water stored in Semitropic for dry-year supply. It was assumed that 5,000 AFY of supplies would be available in both single-dry year and multiple-dry year periods, through 2055.

### 7.3.9 Semitropic Banking Program - Newhall Land

As was the case for the Nickel water, the banking program was entered into by the developer of the Newhall Ranch project to firm up the reliability of the water supply for the project, which is in the SCV Water service area. The storage capacity of this program is 55,000 AF. At the end of 2020, Newhall Land had 38,330 AF stored in this program. For purposes of this plan, it is anticipated that this supply will be available to the Agency as discussed in Section 4.5.3.

SCV Water plans to use this supply only in dry years. For the single-dry year, supplies were assumed at the program's maximum withdrawal capacity of 4,950 AFY. For the multiple-dry year period, supplies in each year of the dry period were assumed at the program's maximum withdrawal capacity of 4,950 AFY and that additional supplies would be banked during wetter years to allow withdrawal of this amount.

### 7.3.10 Rosedale-Rio Bravo Banking Program

RRBWSD has also developed a water banking and exchange program. SCV Water has entered into a long-term agreement with RRBWSD which provides it with a total storage capacity of 100,000 AF. Withdrawals from the program can be made by exchange of Rosedale's SWP Table A supply, or by pumpback into the California Aqueduct. SCV Water began storing water in this program in 2005. At the beginning of 2014, the recoverable storage in the program after groundwater and other losses was 100,000 AF. At the beginning of 2021, approximately 98,800 AF was available for withdrawal.

SCV Water's existing firm withdrawal capacity in this program is 10,000 AFY. To enhance dry-year recovery capacity, in 2015 SCV Water in cooperation with RRBWSD and Irvine Ranch Water District initiated construction of additional facilities that were completed in 2019. These facilities became available in 2020 and increased the firm extraction capacity for SCV Water from 3,000 to 10,000 AFY. In addition, SCV Water has the right under the contract to develop four additional wells which would bring the firm recovery capacity to 20,000 AFY. This additional capacity is anticipated to be available by 2030. In addition to this firm recovery capacity, in moderately dry years Rosedale is required to use up to 20,000 AFY of other available recovery capacity to meet its recovery obligations under the banking agreement.

For both the single-dry year and multiple-dry year periods, it was assumed that only the firm withdrawal capacity would be available, with the existing capacity of 10,000 AFY available through 2050, and planned expansions of an additional 10,000 AFY (to a total of 20,000 AFY) available by 2030. While during a multiple-dry year period RRBWSD would likely be able to use its other recovery capacity to make additional withdrawals, to be conservative in this Plan, no additional withdrawals were assumed to be made.

### 7.3.11 Antelope Valley-East Kern Exchange Program

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with Antelope Valley-East Kern Water Agency (AVEK) whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to AVEK. SCV Water delivered 7,500 AF to the program in 2019 and has 3,750 AF of recoverable water. In 2020, 1,406 AF of water was withdrawn from this exchange program leaving a balance of 2,344 AF. The term for this agreement is for ten years.

### 7.3.12 United Water Conservation District Exchange Program

In 2019, SCV Water also executed a Two-for-One Water Exchange Program with United Water Conservation District (UWCD) whereby SCV Water could recover one acre-foot of water for every two acre-feet SCV Water delivered to UWCD. SCV Water delivered 1,000 AF to the program in 2019 and has 500 AF of recoverable water. The term for this agreement is for ten years.

## 7.4 Supply and Demand Comparisons

The available supplies and water demands for SCV Water's service area were analyzed to assess the region's ability to satisfy demands during four scenarios: a normal water year, a single-dry year, and a multiple-dry year (5-year drought) period. The tables in this section present the supplies and demands for these scenarios for the projected planning period of 2020-2050 in five-year increments.

The base years for the development of water year data are discussed in the following sections and indicated in Table 7-1, below. The basis is derived from 2019 DCR analyses for SWP supply availability in average/normal years (based on the average delivery over a repeat of the historic hydrologic period from 1922 through 2003), a single dry year (based on a repeat of the historic hydrologic conditions of 1977, as well as the worst-case actual allocation of 2014) and over a five-year multiple dry year period (based on a repeat of the historic four-year drought of 1988 through 1992).

Tables 7-2, 7-3 and 7-4 summarize, respectively, Normal Water Year, Single-Dry Year and Five-Year Dry Period supplies and demands.

**TABLE 7-1 BASIS OF WATER YEAR DATA**
[DWR Table 7-1]

| Year Type | Base Year | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | Volume Available (AF) | % of Average Supply |
| Average Year[(a)] | 2021 | 93,550 | 100% |
| Single-Dry Year[(b)] | 2021 | 80,140 | 86% |
| Consecutive Dry Years 1st Year[(c)] | 2021 | 85,860 | 92% |
| Consecutive Dry Years 2nd Year[(c)] | 2022 | 124,220 | 133% |
| Consecutive Dry Years 3rd Year[(c)] | 2023 | 80,020 | 86% |
| Consecutive Dry Years 4th Year[(c)] | 2024 | 98,760 | 106% |
| Consecutive Dry Years 5th Year [(c)] | 2025 | 98,780 | 106% |

Notes:
(a) Average or Normal year assumes total of 58% SWP delivery of Table A referenced in DWR's 2019 DCR, plus other base supplies available in 2021. Detailed water availability in Supply Worksheets in Appendix E.
(b) Single Dry Year assumes total of 5% SWP delivery of Table A, DWR's 2019 DCR states 2014 was the worst single dry year on record, and all base and augmentation supplies available in 2021. Detailed water availability in Supply Worksheets in Appendix E.
(c) Consecutive Dry Year Assessment assumes 1988-1992 hydrology (driest consecutive five years on record) from 2021-2025. SWP supplies delivery reference from DWR’s 2019 DCR. The quantities of groundwater extracted by existing or future and recovered well capacity will vary depending on operating conditions. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M also Table 4-7B, Table 4-7C, Table 4-8B and Table 4-8C in Appendix E. However, overall pumping remains within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis(LSC & GSI 2009).

### 7.4.1 Normal Water Year

Table 7-2 summarizes the supplies available to meet demands over the 30-year planning period during an average/normal year. As presented in the table, the water supply is broken down into existing and planned water supply sources, including wholesale (imported) water, local supplies and banking programs. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings.

## TABLE 7-2 PROJECTED AVERAGE/NORMAL YEAR SUPPLIES AND DEMANDS (AF)

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| **Existing Supplies** | | | | | | |
| Existing Groundwater[(a)] | | | | | | |
| Alluvial Aquifer | 8,900 | 8,180 | 7,300 | 7,300 | 7,300 | 7,300 |
| Saugus Formation | 14,440 | 7,110 | 7,110 | 7,110 | 7,110 | 7,110 |
| **Total Groundwater** | **23,340** | **15,290** | **14,410** | **14,410** | **14,410** | **14,410** |
| Recycled Water[(b)] | | | | | | |
| **Total Recycled** | **450** | **450** | **450** | **450** | **450** | **450** |
| Imported Water | | | | | | |
| State Water Project[(c)] | 55,220 | 53,310 | 51,410 | 49,500 | 49,500 | 49,500 |
| Flexible Storage Accounts[(d)] | - | - | - | - | - | - |
| Buena Vista-Rosedale | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| Nickel Water - Newhall Land[(e)] | - | - | 1,607 | 1,607 | 1,607 | 1,607 |
| Yuba Accord Water[(f)] | 1,000 | - | - | - | - | - |
| **Total Imported** | **67,220** | **64,310** | **64,017** | **62,107** | **62,107** | **62,107** |
| Existing Banking and Exchange Programs[(g)] | | | | | | |
| Rosedale Rio-Bravo Bank[(g)] | - | - | - | - | - | - |
| Semitropic Bank[(g)] | - | - | - | - | - | - |
| Semitropic – Newhall Land Bank[(g)] | - | - | - | - | - | - |
| Antelope Valley East Kern Water Agency Exchange[(g)] | - | - | - | - | - | - |
| United Water Conservation District Exchange[(g)] | - | - | - | - | - | - |
| **Total Bank/Exchange** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Total Existing Supplies** | **91,010** | **80,050** | **78,877** | **76,967** | **76,967** | **76,967** |
| **Planned Supplies** | | | | | | |
| Future and Recovered Groundwater[(h)] | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Alluvial Aquifer[i] | 12,530 | 19,870 | 23,490 | 23,490 | 23,490 | 23,490 |
| Saugus Formation[j] | 3,010 | 2,790 | 2,790 | 2,790 | 2,790 | 2,790 |
| **Total Groundwater** | **15,540** | **22,660** | **26,280** | **26,280** | **26,280** | **26,280** |
| Recycled Water[k] | | | | | | |
| **Total Recycled** | **1,849** | **3,696** | **5,091** | **6,498** | **7,499** | **8,511** |
| Planned Banking Programs | | | | | | |
| Rosedale Rio-Bravo Bank[h][l] | - | - | - | - | - | - |
| **Total Banking** | **0** | **0** | **0** | **0** | **0** | **0** |
| **Total Planned Supplies** | **17,389** | **26,356** | **31,371** | **32,778** | **33,779** | **34,791** |
| **Total Supplies (Existing and Planned)** [m] | **108,399** | **106,406** | **110,248** | **109,745** | **110,746** | **111,758** |
| **Demands**[n] | | | | | | |
| Demands with passive conservation[m] | 82,100 | 89,300 | 97,600 | 104,300 | 109,600 | 115,100 |
| Demands with passive and active conservation[m] | 76,400 | 81,700 | 88,700 | 93,600 | 97,500 | 101,000 |

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing Recycled Water is based on current average annual use.

(c) SWP supplies are based on average deliveries from DWR's 2019 DCR (58% - 52% at buildout due to climate change).

(d) Supplies not needed in average years.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) Supply available for purchase every year, however, shown is amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2025.

(g) Supplies not needed in average years.

(h) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing Agency and non-Agency groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-9 and 4-10 and is within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo(GSI 2020) and the updated Basin Yield Analysis(LSC & GSI 2009).

(i) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M.

(j) Future and Recovered Saugus wells include perchlorate-impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.

(k) Planned recycled water is the total projected recycled water use from Table 5-3 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 5 for additional details on recycled water demands and supplies.

(l) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).

(m) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-10. Further, LACWWD 36's Saugus groundwater supplies shown in Table 4-8A.

(n) Total demands with passive and active conservation from Table 2-10.

### 7.4.2 Single-Dry Year

The water supplies and demands for the water suppliers over the 30-year planning period were analyzed in the event that a single-dry year occurs, based on the worst single dry year on record. Table 7-3 summarizes the existing and planned supplies available to meet demands during a single-dry year. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings. The demand during dry years was assumed to increase by 6 percent.

## TABLE 7-3 PROJECTED SINGLE-DRY YEAR SUPPLIES AND DEMANDS (AF)

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| **Existing Supplies** | | | | | | |
| Existing Groundwater[(a)] | | | | | | |
| Alluvial Aquifer | 7,300 | 6,330 | 5,590 | 5,590 | 5,590 | 5,590 |
| Saugus Formation | 16,630 | 16,630 | 16,630 | 16,630 | 16,630 | 16,630 |
| **Total Groundwater** | **23,930** | **22,960** | **22,220** | **22,220** | **22,220** | **22,220** |
| Recycled Water[(b)] | | | | | | |
| **Total Recycled** | **450** | **450** | **450** | **450** | **450** | **450** |
| Imported Water | | | | | | |
| State Water Project[(c)] | 4,760 | 4,760 | 4,760 | 4,760 | 4,760 | 4,760 |
| Flexible Storage Accounts[(d)] | 6,060 | 4,680 | 4,680 | 4,680 | 4,680 | 4,680 |
| Buena Vista-Rosedale | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| Nickel Water - Newhall Land[(e)] | - | - | 1,607 | 1,607 | 1,607 | 1,607 |
| Yuba Accord Water[(f)] | 1,000 | - | - | - | - | - |
| **Total Imported** | **22,820** | **20,440** | **22,047** | **22,047** | **22,047** | **22,047** |
| Existing Banking and Exchange Programs | | | | | | |
| Rosedale Rio-Bravo Bank[(g)] | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Semitropic Bank[(h)] | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Semitropic – Newhall Land Bank[(h)(i)] | - | - | 4,950 | 4,950 | 4,950 | 4,950 |
| Antelope Valley East Kern Water Agency Exchange[(j)] | - | - | - | - | - | - |
| United Water Conservation District Exchange[(j)] | - | - | - | - | - | - |
| **Total Bank/Exchange** | **15,000** | **15,000** | **19,950** | **19,950** | **19,950** | **19,950** |
| **Total Existing Supplies[(p)]** | **62,200** | **58,850** | **64,667** | **64,667** | **64,667** | **64,667** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Planned Supplies** | | | | | | |
| Future and Recovered Groundwater[j] | | | | | | |
| Alluvial Aquifer[k] | 12,970 | 17,020 | 20,500 | 20,500 | 20,500 | 20,500 |
| Saugus Formation[l] | 9,090 | 15,920 | 15,920 | 15,920 | 15,920 | 15,920 |
| **Total Groundwater** | **22,060** | **32,940** | **36,420** | **36,420** | **36,420** | **36,420** |
| Recycled Water[m] | | | | | | |
| **Total Recycled** | **1,849** | **3,696** | **5,091** | **6,498** | **7,499** | **8,511** |
| Planned Banking Programs | | | | | | |
| Rosedale Rio-Bravo Bank[n] | - | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| **Total Banking** | **0** | **10,000** | **10,000** | **10,000** | **10,000** | **10,000** |
| **Total Planned Supplies** | **23,909** | **46,636** | **51,511** | **52,918** | **53,919** | **54,931** |
| **Total Supplies (Existing and Planned)[p]** | **86,109** | **105,486** | **116,178** | **117,585** | **118,586** | **119,598** |
| **Demands[o][p]** | | | | | | |
| **Demands with passive conservation** | **87,000** | **94,700** | **103,500** | **110,600** | **116,200** | **122,000** |
| **Demands with passive and active conservation** | **81,000** | **86,600** | **94,000** | **99,200** | **103,400** | **107,100** |

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Dry-year production represents anticipated maximum dry year production. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing recycled water is based on current average annual use.

(c) SWP supplies are based on driest SWP delivery on record, 5% in 2014. Deliveries from DWR's 2019 DCR state single dry year are (7% -11%).

(d) Includes both SCV Water and Ventura County entities flexible storage accounts. Extended term of agreement with Ventura County entities expires after 2025.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) Supply shown is amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2025.

(g) Supplies shown are annual amounts that can be withdrawn using existing firm withdrawal capacity and would typically be used only during dry years.

(h) Existing Newhall Land supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035.

(i) Supplies shown are totals recoverable under the exchange and would typically be recovered only during dry years with SWP allocation greater than 30%.

(j) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing Agency and non-Agency groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-10 and 4-11 and is within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis(LSC & GSI 2009).

(k) Future and Recovered Alluvial groundwater includes PFAS and perchlorate impacted alluvial wells, one replacement well (S 9), and future wells, including those for Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M.

(l) Future and Recovered Saugus wells include perchlorate impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.
(m) Planned recycled water is the total projected recycled water use from Table 5-3 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 5 for additional details on recycled water demands and supplies.
(n) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).
(o) Demands assume a 6% increase above normal demand during dry years.
(p) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-10. Further, LACWWD 36's Saugus groundwater supplies shown in Table 4-8A.

### 7.4.3 Multiple-Dry Year

The water supplies and demands over the 30-year planning period were analyzed in the event that a five-year dry period occurs, similar to the drought that occurred during the years 1988-1992. Table 7-4 summarizes the existing and planned supplies available to meet demands during a five-year dry period. Supply volumes shown represent averages for the consecutive five-year period, assuming each 5-year interval (2025, 2030, etc.) is the midpoint of the five-year period. The demands shown include reductions from projected passive conservation savings, and both with and without active conservation savings. As in the single-dry year scenario, demand during dry years was assumed to increase by 6 percent.

See DWR Submittal Table 7-4 in Appendix C for summary by year.

## TABLE 7-4 PROJECTED FIVE-YEAR DRY YEAR SUPPLIES AND DEMANDS (AF)

| Supplies Available | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| **Existing Supplies** | | | | | | |
| Existing Groundwater[(a)] | | | | | | |
| Alluvial Aquifer | 7,300 | 6,720 | 5,890 | 5,590 | 5,590 | 5,590 |
| Saugus Formation | 17,880 | 17,610 | 17,610 | 17,610 | 17,610 | 17,610 |
| **Total Groundwater** | **25,180** | **24,330** | **23,500** | **23,200** | **23,200** | **23,200** |
| Recycled Water[(b)] | | | | | | |
| **Total Recycled** | **450** | **450** | **450** | **450** | **450** | **450** |
| Imported Water | | | | | | |
| State Water Project[(c)] | 24,040 | 24,090 | 24,130 | 24,180 | 24,180 | 24,180 |
| Flexible Storage Accounts[(d)] | 4,980 | 4,680 | 4,680 | 4,680 | 4,680 | 4,560 |
| Buena Vista-Rosedale | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| Nickel Water - Newhall Land[(e)] | - | - | 964 | 1,607 | 1,607 | 1,607 |
| Yuba Accord[(f)] | 600 | - | - | - | - | - |
| **Total Imported** | **40,620** | **39,770** | **40,774** | **41,467** | **41,467** | **41,347** |
| Banking and Exchange Programs | | | | | | |
| Rosedale Rio-Bravo Bank[(g)] | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Semitropic Bank[(h)] | 5,000 | 5,000 | 5,000 | 5,000 | 4,929 | 1,859 |
| Semitropic - Newhall Land Bank[(i)] | - | - | 2,970 | 4,950 | 4,950 | 4,950 |
| AVEK Exchange[(j)] | 450 | 450 | - | - | - | - |
| UWCD Exchange[(j)] | 100 | 100 | - | - | - | - |
| **Total Bank/Exchange** | **15,550** | **15,550** | **17,970** | **19,950** | **19,879** | **16,809** |
| **Total Existing Supplies[(q)]** | **81,800** | **80,100** | **82,694** | **85,067** | **84,996** | **81,806** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Planned Supplies** | | | | | | |
| Future and Recovered Groundwater[k] | | | | | | |
| Alluvial Aquifer[l] | 11,930 | 16,310 | 19,800 | 20,500 | 20,500 | 20,500 |
| Saugus Formation[m] | 5,750 | 8,020 | 8,020 | 8,020 | 8,020 | 8,020 |
| **Total Groundwater** | **17,680** | **24,330** | **27,820** | **28,520** | **28,520** | **28,520** |
| Recycled Water[n] | | | | | | |
| **Total Recycled** | **1,823** | **3,603** | **5,045** | **6,498** | **7,499** | **8,389** |
| Planned Banking Programs | | | | | | |
| Rosedale Rio-Bravo Bank[o] | - | 6,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| **Total Banking** | **0** | **6,000** | **10,000** | **10,000** | **10,000** | **10,000** |
| **Total Planned Supplies** | **19,503** | **33,933** | **42,865** | **45,018** | **46,019** | **46,909** |
| **Total Existing and Planned Supplies** | **101,303** | **114,033** | **125,559** | **130,085** | **131,015** | **128,715** |
| **Demands** | | | | | | |
| **Demands with Passive Conservation**[p][q] | **83,570** | **91,380** | **99,670** | **106,660** | **112,100** | **117,010** |
| **Demands with Passive and Active Conservation**[p][q] | **77,830** | **83,620** | **90,570** | **95,780** | **99,670** | **102,870** |

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Dry-year production represents anticipated maximum dry year production. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing recycled water is based on current average annual use.

(c) SWP supplies based on 1988-1992 hydrology from 2019 DCR interpolated from 2020-2040 from current to proposed future SWP supplies.

(d) Includes both SCV Water and Ventura County entities flexible storage accounts through 2025 and only SCV Water portion beyond 2025.

(e) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(f) 1,000 AFY assumed to be available during dry and critically dry years. Lower quantity in table reflects averaging of supply over the five year period. This supply is only available through 2025.

(g) SCV Water has an existing firm withdrawal capacity of 10,000 AFY and a storage capacity of 100,000 AF. There is currently 98,800 AF of recoverable Water in storage.

(h) SCV Water has a maximum firm withdrawal capacity of 5,000 AFY and a storage capacity of 15,000 AF. Additionally, SCV Water has 40,270 AF of recoverable Water stored which may be recovered using this withdrawal capacity.

(i) Existing Newhall Land supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035.

(j) Exchange recovery was assumed to occur one year during the five-year dry period, for an average annual supply of one-fifth of the total recoverable water available (total recoverable is 2,250 AF from Antelope Valley East Kern Water Agency (AVEK) and 500 AF from United Water Conservation District exchange programs).

(k) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing Agency and non-Agency groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-9 and 4-10 and is within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(l) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan. Schedule for recovered well capacity based on Groundwater Treatment Implementation Plan Technical Memorandum, Kennedy Jenks 2021 Appendix M.

(m) This includes Saugus perchlorate impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.

(n) Planned recycled water is the total projected recycled water use from Table 5-3 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 5 for additional details on recycled water demands and supplies.

(o) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).

(p) Demands are weather adjusted for dry 1988-1992 hydrology.

(q) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-10. Further, LACWWD 36's Saugus groundwater supplies shown in Table 4-8A.

### 7.4.4 Drought Risk Assessment

CWC Section 10635(b) requires every urban water supplier to include, as part of its UWMP, a drought risk assessment (DRA) for its water service as part of information considered in developing its DMMs and water supply projects and programs.

CWC Section 10612 requires the DRA to be based on the five driest consecutive years on record for the agency's water supply. However, CWC Section 10635 also requires that the analysis consider plausible changes in climate, regulations, and other locally applicable criteria which may impact supplies and demands. Accordingly, the 2020 DWR UWMP Guidebook suggests that the historic five driest consecutive years on record may be considered a starting point in the analysis which is then informed by other factors. Suppliers may then use these estimated supply conditions to prepare the DRA analysis, assuming they occur over the next five years. As noted in Section 7.4.3, the five-consecutive years of 1988-1992 represent the driest five-consecutive year historic sequence applicable to the SCV Water service area. As such, this five-year historic sequence applies to the DRA presented in this section.

SCV Water's DRA is summarized in Table 7-5A and detailed in Table 7-5B. These tables show the total water supplies and total projected use for the next five years, from 2021 to 2025, assuming a 5 consecutive-year drought. SCV Water utilized the historical drought scenario of 1988-1992 for the DRA, as this was the worst 5 consecutive-year drought on record. For additional purposes Appendix E includes Table 7-5C which presents a five-year DRA summary that incorporates actual 2021 conditions for the first year of the DRA.

**TABLE 7-5A FIVE-YEAR DROUGHT RISK ASSESSMENT – SUMMARY (AF)**
[DWR Table 7-5]

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| Total Water Use | 70,292 | 74,383 | 76,796 | 75,187 | 77,908 |
| Total Water Supplies | 63,800 | 102,160 | 57,970 | 76,690 | 76,720 |
| **Surplus/Shortfall w/o WSCP Action** | **(6,492)** | **27,777** | **(18,826)** | **1,503** | **(1,188)** |
| **Planned WSCP Actions (use reduction and supply)** | | | | | |
| WSCP - supply augmentation benefit | 22,060 | 22,060 | 22,060 | 22,060 | 22,060 |
| WSCP - use reduction savings benefit | - | - | - | - | - |
| Revised Surplus/(shortfall) | 15,568 | 49,837 | 3,234 | 23,563 | 20,872 |
| Resulting % Use Reduction from WSCP Action | - | - | - | - | - |

## TABLE 7-5B FIVE-YEAR DROUGHT RISK ASSESSMENT (AF)

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| **Existing Supplies** | | | | | |
| Existing Groundwater[(a)] | | | | | |
| Alluvial Aquifer | 7,300 | 8,900 | 7,300 | 7,300 | 7,300 |
| Saugus Formation | 14,980 | 16,500 | 17,880 | 17,880 | 17,880 |
| **Total Groundwater** | **22,280** | **25,400** | **25,180** | **25,180** | **25,180** |
| Recycled Water[(b)] | | | | | |
| **Total Recycled** | **450** | **450** | **450** | **450** | **450** |
| Imported Water | | | | | |
| State Water Project[(c)] | 10,470 | 57,120 | 12,380 | 23,800 | 16,180 |
| State Water Project Carryover Supply[(d)] | 13,500 | - | - | - | - |
| Flexible Storage Accounts[(e)] | 6,060 | 6,060 | 6,060 | 6,060 | 6,060 |
| Buena Vista-Rosedale | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| Nickel Water - Newhall Land[(f)] | - | - | - | - | - |
| Yuba Accord Water[(g)] | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| **Total Imported** | **42,030** | **75,180** | **30,440** | **41,860** | **34,240** |
| Existing Banking and Exchange Programs | | | | | |
| Rosedale Rio-Bravo Bank[(h)] | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Semitropic Bank[(h)] | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Semitropic – Newhall Land Bank[(h)(i)] | - | - | - | - | - |
| Exchange Programs[(j)] | - | - | - | - | - |
| **Total Bank/Exchange** | **15,000** | **15,000** | **15,000** | **15,000** | **15,000** |
| **Total Existing Supplies** | **79,760** | **116,030** | **71,070** | **82,490** | **74,870** |

| Planned Supplies | | | | | |
|---|---|---|---|---|---|
| Future and Recovered Groundwater(k) | - | - | - | - | - |
| Alluvial Aquifer(l) | 5,680 | 7,360 | 7,960 | 11,770 | 12,970 |
| Saugus Formation(m) | - | - | - | 3,050 | 9,090 |
| **Total Future Recovered Groundwater** | **5,680** | **7,360** | **7,960** | **14,820** | **22,060** |
| Future Recycled Water(n) | | | | | |
| **Total Future Recycled Water** | **420** | **830** | **1010** | **1440** | **1850** |
| Planned Banking Programs | - | - | - | - | - |
| Rosedale Rio-Bravo Bank(o) | - | - | - | - | - |
| **Total Planned Banking** | **0** | **0** | **0** | **0** | **0** |
| **Total Planned Supplies** | **6,100** | **8,190** | **8,960** | **16,260** | **23,910** |
| **Total Existing and Planned Supplies(p)** | **85,860** | **124,220** | **80,030** | **98,750** | **98,780** |
| **Total Base Supplies** | **63,800** | **102,160** | **57,970** | **76,690** | **76,720** |
| **Total Dry Year Augmentation Supplies** | **22,060** | **22,060** | **22,060** | **22,060** | **22,060** |
| **Demands with Passive and Active Conservation(q)** | **70,290** | **74,380** | **76,800** | **75,190** | **77,910** |

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells. Declines from 2025 pumping levels reflect transfer of normal year pumping from existing wells to future and recovered wells.

(b) Existing recycled water is current average annual use.

(c) SWP supplies assume 1988-1992 hydrology (driest consecutive five years on record) from 2021-2025. Delivery reference from DWR's 2019 DCR.

(d) SWP carryover (Article 56) supplies are actual total for SCV Water in 2021.

(e) Includes both SCV Water and Ventura County entities flexible storage accounts. Extended term of agreement with Ventura County entities expires after 2025.

(f) Existing Newhall Land supply committed under approved Newhall Ranch Specific Plan. Water is available from 2021 -2034 to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Assumed to be transferred to SCV Water once Newhall Ranch development is completed around 2035.

(g) Supply shown is amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2025.

(h) Supplies shown are annual amounts that can be withdrawn using existing firm withdrawal capacity and would typically be used only during dry years.

(i) Existing Newhall Land supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035.

(j) Supplies shown are totals recoverable under the exchange and would typically be recovered only during dry years with SWP allocation greater than 30%.

(k) Future and Recovered groundwater supplies include recovered impacted wells and new groundwater well capacity that may be required by SCV Water's production objectives in the Alluvial Aquifer and the Saugus Formation. When combined with existing Agency and non-Agency groundwater supplies, total groundwater production remains within the sustainable ranges identified in Tables 4-9 and 4-10 and is within the groundwater basin yields per the 2020 SCV-GSA Draft Water Budget Development Tech Memo (GSI 2020) and the updated Basin Yield Analysis (LSC & GSI 2009).

(l) Future Category includes all wells restored from PFAS and Perchlorate water quality issues, and other future alluvial wells including those associated with development under the Newhall Ranch Specific Plan.

(m) Future and Recovered Saugus wells include perchlorate-impacted Well 205, two replacement wells (Saugus 3 & 4), and up to four new wells (Saugus 5-8) planned to provide additional dry-year supply. New dry-year wells would not typically be operated during average/normal years.
(n) Planned recycled water is the total projected recycled water use from Table 5-3 less existing use. Projections reflect demands that can be cost-effectively served with projected supplies. Refer to Section 5 for additional details on recycled water demands and supplies.
(o) Firm withdrawal capacity under existing Rosedale Rio-Bravo Banking Program to be expanded by 10,000 AFY by 2030 (for a combined total of 20,000 AFY).
(p) For completeness, LAWWD36 sales are included in demands and supplies. Breakdown of LACWWD 36 and SCV Water Demands are shown in Table 2-10. Further, LACWWD 36's Saugus groundwater supplies shown in Table 4-8A.
(q) Demands are weather-adjusted for dry 1988-1992 hydrology.

### 7.4.5 Water Supply Reliability Report

In In addition to the analysis presented above in this Plan, SCV Water has undertaken an update of its 2017 Water Supply Reliability Report. The Draft 2021 Update (Geosyntec April 2021) analyzes the reliability of this plan along with alternative scenarios involving different program mixes to determine if there are other viable paths to achieving reliability should some of the planned supplies assumed in this Plan cannot be developed.

The Reliability Plan Update uses an analytic spreadsheet model developed by MBK Engineers to assess the reliability of existing and planned water supplies. The model performs annual water operations for the SCV Water service area over the study period using supplies that would be available under multiple hydrologic sequences. For each hydrologic sequence, the model steps through each year of the study period, comparing annual supplies to demands and simulating operation of storage programs as needed. The model adds water to storage in years when supplies exceed demand and withdraws water from storage programs or exchanges when demands would otherwise exceed supplies. The results from the multiple hydrologic sequences are then compiled and summarized to provide a statistical assessment of the reliability of SCV Water's supplies and storage programs to meet projected demands.

The Water Reliability Plan Update analysis developed analyzed various scenarios composed of different water supply components discussed below. The mix of component water supplies are summarized in Figure 7-1 below. All of the Scenarios use the demand with active conservation. Common to all scenarios are the Alluvium Water Supplies along with normal year pumping from the Saugus Formation. Alluvial Supplies used in the analysis are consistent with those found in Table 4-7B for normal and Table 4-7C for locally dry years. Existing Saugus supplies include pumping form existing wells along with Well 205. Saugus 3 and 4 along with Saugus 5-8 pumping is consistent with Table 4-8B for normal and Table 4-8C for a dry-year where SWP supplies are significantly reduced. SWP supplies throughout the 30-year study period are based on DWR's Delivery Capability Report (DCR) using the 2040 climate change study. Existing banking programs are consistent with Tables 7-3 and 7-4. Sites Reservoir supplies are based on CALSIM study provide by the Sites Reservoir Authority. The new or additional Rosedale Banking recovery capacity is 10,000 AFY. The AVEK High Desert Banking program is assumed to be 70,000 AF of storage with 20,000 AFY of extraction capacity. The McMullin Aquaterra Bank is assumed to be sized similarly to the AVEK Bank.

The Base represents those elements of the SCV Water's portfolio that currently exist. This includes existing and restored groundwater supplies. As the analysis moves through the study period restoration of well capacity temporarily taken out for water quality concerns takes place consistent with Table 4-6B, Table 4-6C, Table 4-8B and Table 4-8C. Imported supplies include SWP supplies based on 2040 climate conditions pursuant to DWR's CALSIM modeling for the 2019 Delivery Capability Report, the firm Buena Vista Rosedale Transfer, and if necessary, in dry years, SWP Flexible Storage, Nickel Water (after 2035), Yuba Accord water. The Base case also includes the existing banking programs, specifically existing Rosedale Banking supplies at the existing 10,000 AFY of recovery, SCV Water Semitropic and access to the Newhall Land and Farming withdrawal capacity (after 2035), that are drawn on during years when the other previously mentioned supplies are insufficient to meet demands.

Scenario 1 represents the supplies used in this UWMP's reliability analysis. It builds on the Base scenarios by adding additional Saugus Formation pumping capacity for use in dry periods, and developing an additional 10,000 AFY of extraction capacity under the existing water banking agreement with Rosedale Rio-Bravo Water Storage District.

Scenario 2 is similar to Scenario 1, but the dry year supply from Saugus Formation wells 5-8 is replace with participation in the AVEK's High Desert Water Bank.

Scenario 3 similarly replaces Saugus Formation wells 5-8 with participation in the Sites Reservoir.

Scenario 4 assume all of the new Saugus Formation wells 3-8 are not constructed and replaced with a combination of Sites Reservoir and the AVEK High Desert Water Bank.

Scenario 5 like Scenario 4 assume no new Saugus Formation Wells and also eliminates the new recovery capacity from the Rosedale banking program. It replaces these with the AVEK High Desert Bank and Sites Reservoir as well as the participation in the McMullin Aquaterra Water Bank.

**TABLE 7-6 RELIABILITY PLAN UPDATE SCENARIOS**

| | Base | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Alluvial Pumping | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Existing Saugus | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| SWP and BVRRB | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Existing Banking Programs | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Saugus Wells 3 and 4 | | ✓ | ✓ | ✓ | | |
| Saugus Wells 5 - 8 | | ✓ | | | | |
| New Rosedale Bank Capacity | | ✓ | ✓ | ✓ | ✓ | |
| Sites Reservoir | | | | ✓ | ✓ | ✓ |
| AVEK High Desert Bank | | | ✓ | | ✓ | ✓ |
| McMullin GSA Aquaterra Bank | | | | | | ✓ |

The results of the Draft Water Reliability Update are summarized on Figures 7-1 and 7-2.

**FIGURE 7-1 BASE SCENARIO RELIABILITY WITH ACTIVE CONSERVATION**

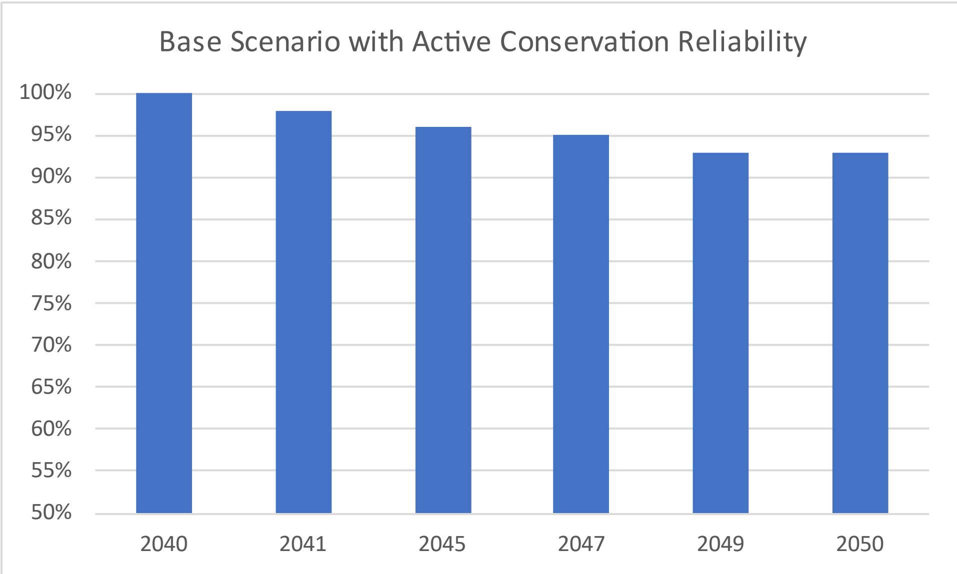
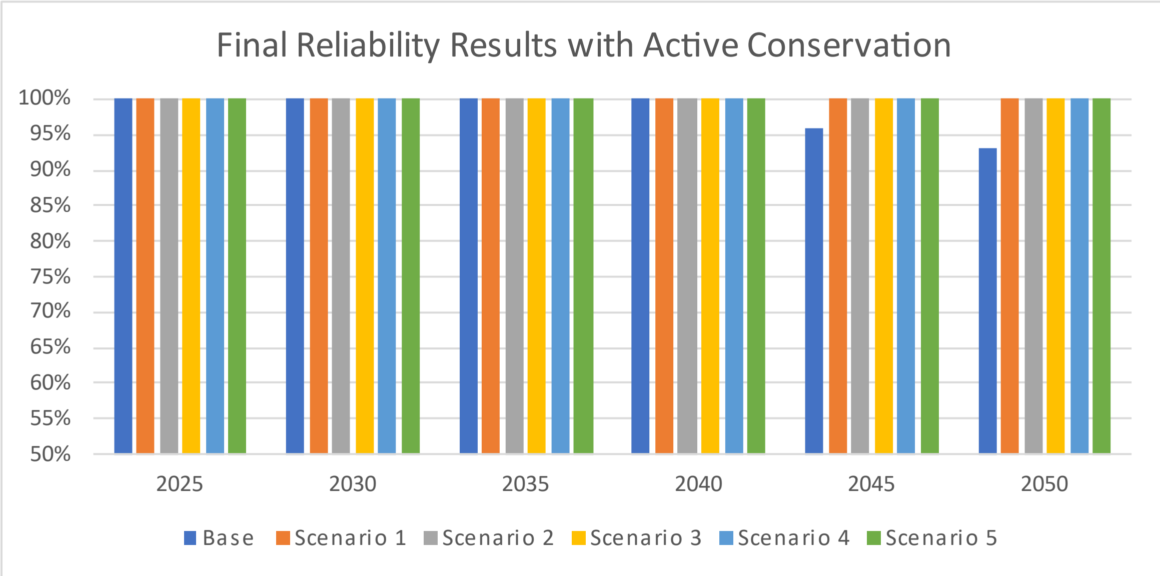



**FIGURE 7-2 FINAL RELIABILITY WITH ACTIVE CONSERVATION**




The results indicate that current supplies along with active conservation would be sufficient until 2035. But this assume not safety margin if a supply disruption were to occur such as supply impacts from PFAS contamination. To achieve reliability in subsequent years additional investments in those facilities identified in this UWMP would be required. When these facilities and programs are put in place on the schedule identified in this UWMP reliability is achieved.

One risk of the perceived risks to achieving reliability with Scenario 1 (this UWMP) is the extent to which new Saugus Formation wells can be permitted and installed. As noted in Section 4 permitting of Saugus 3 and 4 is currently delayed pending permitting by DDW as it relates to proximity to abandoned oil wells. If the current sites prove not to be viable the most likely course of action would be to relocate these proposed wells. If replacement well sites cannot be located, or if Saugus Pumping is limited because of potential subsidence there are alternative paths to reliability as demonstrated by Scenarios 2 through 5.

Scenario 2 replaces Saugus Wells 5-8 with the AVEK High Desert Bank and achieves reliability. Scenario 3 substitutes Sites Reservoir for the AVEK High Desert Bank in Scenario 2 and also achieves reliability.

Scenario 4 is more challenging as it assumes the further deletion of Saugus wells 3 and 4. This scenario requires additional investments in the Rosedale and AVEK banks along with Sites Reservoir to achieve reliability. The Scenario 5 is similar to Scenario 4 but substitutes the McMullin GSA Aquaterra Bank for Sites Reservoir and it also achieves reliability.

### 7.4.6 Summary of Comparisons

As shown in the analyses above, SCV Water has adequate existing and planned supplies to meet SCV Water service area demands during normal, single and multiple-dry year periods throughout the 30-year planning period. Further, SCV Water has alternative paths to reliability should planned supplies prove not to be viable.

# Section 8: Demand Management Measures

This section describes the Water Demand Management Measures (DMMs) that SCV Water is implementing, including activities completed by legacy entities (CLWA and the retail purveyors) prior to the formation of SCV Water in 2018, and planned activities in advance of new water conservation requirements identified in AB 1668 and SB 606 (Conservation Long-Term Framework).

For SCV Water, demand management programs provide critical support to SCV Water's mission of "Providing responsible water stewardship to ensure the Santa Clarita Valley has reliable supplies of high-quality water at a reasonable cost," and its vision of "Exemplary water management for a high quality of life in the Santa Clarita Valley." Additionally, prior to the sunset of SBx7-7 (20% Reduction in Gallons per Capita Day by 2020), SCV Water's water conservation and water use efficiency efforts connected water customers to the policies, programs, and practices necessary to meeting and exceeding the 2020 target (see Section 3.1.2 - 2020 Target Compliance).

## 8.1 Demand Management

The California Water Code (Water Code) section addressing DMMs was updated in 2014 to streamline reporting requirements for retail agencies and wholesale agencies. For the 2020 UWMP, the merging of wholesale and retail services provides SCV Water an opportunity to combine reporting elements considering both the 2014 legislative reporting requirements and DWR's 2020 UWMP guidance which itemized wholesale and retail frames.

In accordance with the UWMP Act, the following DMMs are described in this section:

a. Water waste prevention ordinances

b. Metering

c. Conservation pricing

d. Public education and outreach

e. Programs to assess and manage distribution system real loss

f. Water conservation program coordination and staffing support

g. Other DMMs

### 8.1.1 Water Use Efficiency Strategic Plan

SCV Water's legacy wholesale and retail purveyors worked together over many years to identify and implement water use efficiency programs to meet long-term reduction goals. Beginning in 2008, water providers in the valley collaborated to complete a Water Use Efficiency Strategic Plan (WUESP)[7]. An update to the WUESP was prepared in 2015 to provide comprehensive conservation planning as a mechanism to assist with the conservation targets specified in SBx7-7.

The 2015 WUESP provided a detailed study of historical and projected demands along with an analysis of historical and existing DMMs and resulted in water conservation recommendations designed to ensure that future demands could be met and in support of SBx7-7 20% reduction in GPCD targets. The programs were designed to provide Valley residents with the tools, education, and support essential to improve water use efficiency. Thirty-two water use efficiency measures were evaluated in the study, including, but not limited to, high-efficiency appliance and device rebates, outreach and education, and operational programs. While the WUESP identified new innovative programs based on Santa Clarita Valley demographics, many had been in operation since the mid-2000s.

By implementing a portfolio of water use efficiency programs, SCV Water and its customers benefit in many ways:

- **Cost Avoidance of 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 water through more efficient use. These programs are an effective efficiency mechanism.

- **Limited State Resources:** California's water resources are becoming increasingly constrained due to population increases, housing growth, climate change, and decreased water supply from major water projects. Extended or increased intensity of drought conditions compel water suppliers to seek cost-effective initiatives to stretch available water supplies.

- **Drought Preparedness:** It is inevitable that southern California, as well as the state, will experience another drought. Recent events have taught valuable lessons. The big question is when and how severe the next one will be. One way to lessen the severity of a drought's effect on the Santa Clarita Valley is to prepare in advance for this event by creating a community that uses water at a high level of efficiency.

- **Reduced Carbon Footprint:** The production, treatment 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.

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1. 2015 SCV Water Use Efficiency Strategic Plan (https://yourscvWater.com/wp-content/uploads/2018/12/SCV-Water-Use-Efficiency-Strategic-Plan_Adopted-June-2015.pdf).

- **Reduced Wastewater Flows:** Sanitation plants and systems must be sized to meet historic and planned wastewater flows. Increasing the efficient use of indoor 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 used appropriately for landscaping and less is lost to urban runoff.

- **Improved and More Accessible Water Use Efficiency Tracking for the SWRCB:** Water use efficiency metrics help determine and validate progress made in the Valley and will enable SCV Water to assess if they are on track and adapt as necessary.

- **Participation and Leadership in Market Transformation:** SCV Water will be able to influence, among other things, water use and savings metrics as they are developed, methods for calculating metrics, and regulations that may affect the retail purveyors and their customers.

## 8.2 DMMS Implemented

### 8.2.1 Water Waste Prevention

The SCV Water Board of Directors approved the agency's Customer Service Policies, Rules, and Regulations which includes general provisions promoting Water efficiency and conservation. As a condition of service, customers must use water delivered through the agency's system in a manner that promotes efficiency and avoids waste. Part 12 – Water Efficiency and Conservation identifies both wasteful practices and enforcement actions and penalty fees customers may be subject to should a water waste practice occur. SCV Water's Customer Policies, Rules, and Regulations can be accessed on the agency's website at YourSCVWater.com or via the following link (https://yourscvwater.com/wp-content/uploads/2020/02/SCV-Water-Customer-Service-Policy-Feb-2020-v2.pdf).

In addition, SCV Water is in the process of adopting a new Water Conservation and Water Supply Shortage Ordinance which, among other things, outlines general indoor and outdoor water use efficiency recommendations, watering restrictions, and water use reduction measures specific to declared water shortage conditions. A copy of the draft ordinance is provided in Appendix J.

Available at: https://yourscvwater.com/uwmp/

### 8.2.2 Metering

All SCV Water's customers are metered and billed volumetrically monthly. SCV Water has an ongoing meter testing and replacement program. Approximately 2,500 meters are replaced annually based on volume, age, and meter condition. In addition, meters are randomly flow tested for accuracy and the data is used to continuously revise and update the meter testing and replacement program.

In addition to its meter replacement program, SCV Water is expanding its use of Advanced Metering Infrastructure (AMI) systems. To date, SCV Water has approximately 8,600 AMI meters in operation and tentatively plans to install between 2,400 to 7,400 meters over the next two to three years which will help to reduce distribution system losses and educate the public on how much water they consume. Further, in support of this initiative, the agency has completed two propagation studies to determine optimal infrastructure improvement requirements. The propagation studies are ongoing and will ultimately be used to inform strategies and next steps essential to service areawide coverage.

### 8.2.3 Conservation Pricing

SCV Water implements a uniform volume rate structure for its retail services. Customers are billed monthly and water invoices including, but not limited to, itemized line items for service fees and volumetric costs per unit (hundred cubic feet). Water rates are premised on cost-of-service principles and are in process of being updated in 2021.

### 8.2.4 Public Education and Outreach

#### 8.2.4.1 Public Information

SCV Water supports an extensive conservation outreach campaign with numerous activities and information outlets. SCV Water has two water-efficient landscape demonstration gardens and a learning center open to the public which hosts about 60 school classes each year. SCV Water also maintains an active website (yourscvwater.com) and various social media presence including, but not limited to, Facebook, which provides water saving tips for residents and businesses, conservation checklists and program and incentive information. SCV Water uses a range of printed materials and other outreach activities to raise awareness of conservation measures available to customers. These efforts include announcements in newsletters (electronic), bill stuffers, brochures, local newspapers, billboards, and signage at its retail offices and on public buses. Additionally, SCV Water actively participates in community events to promote water use efficiency, including the Emergency Expo, Earth/Arbor Day, SCV Water Open House, and River Rally, and provides presentations to community groups as requested.

#### 8.2.4.2 School Education

Started in 1993, SCV Water's award-winning Education Program is dedicated to helping students learn about water treatment and conservation through age-appropriate programs. The program provides hands-on field trips and in-class presentations for every grade level at public and private schools in the Santa Clarita Valley. Over the past 5 years (2016-2020) attendance averaged close to 9,000 students. The transition to online classes as a result of COVID is shown by the drop in attendance for 2020.

**TABLE 8-1 SCHOOL EDUCATION (NUMBER OF STUDENTS)**

| Grade Level | 2016 | 2017 | 2018 | 2019 | 2020* |
|---|---|---|---|---|---|
| K-3 | 5,179 | 6,286 | 6,707 | 6,508 | 1,445 |
| 4-6 | 2,665 | 2,774 | 3,030 | 2,780 | 1,587 |
| 7-8 | 1,064 | 1,034 | 986 | 811 | - |
| EScience | 381 | 420 | 496 | 384 | - |
| **Totals** | **9,289** | **10,514** | **11,219** | **10,483** | **3,032** |

*****Schools transitioned to online classes due to COVID restrictions.

#### 8.2.4.3 Gardening Classes

Free workshops are provided in a classroom and garden setting through the Santa Clarita Valley-Friendly Gardening Program for residents who want to learn more about gardening and water conservation. In normal years, workshops are offered both on Saturday once a month and during the evening once a month. However, due to COVID "Safe-at-home" protocols, SCV Water currently hosts its classes virtually.

#### 8.2.4.4 "How to Conserve at Home" Online Video Series

In 2018, SCV Water launched the "How to Conserve at Home" video series to educate customers on simple solutions to common Water waste issues. The video series instructs customers how to find and fix toilet leaks, conduct a home leak check, and how to complete a 10-minute irrigation tune-up. Through 2020, the videos were viewed on more than 740 unique occasions.

### 8.2.5 Programs to Assess and Manage Distribution System Real Loss

SCV Water monitors its water loss on a monthly and annual basis. SCV Water also completes AWWA M36 Water Loss analysis for all retail units and its wholesale (Import) operations (See Section 2.7 for additional details). The AWWA M36 Water Loss analysis includes, but is not limited to, component analysis identifying real and apparent losses, revenue and non-revenue Water categories, and comparison with industry standards. Certified Water Loss Audit and Validation Reports are submitted to DWR on an annual basis.

SCV Water's maintenance and water main replacement programs also help minimize water loss and help keep the SCV Water production system in optimal working condition. The agency annually inspects the age of pipes and leak frequency as part of its main replacement program, and regularly schedules repair and replacement to mitigate potential water loss. The agency's maintenance program consists of daily inspections of water wells and pumping equipment, weekly inspections of water tanks and exercising system valves.

SCV Water's meter change-out program replaces water meters in accordance with AWWA standards, both by age and usage to ensure metering accuracy. The meters installed feature technology that during the meter reading process allows the agency to receive a report that indicates a potential private plumbing leak. This allows the agency to notify customers to make repairs to their plumbing system and lessen the amount of water wasted due to private plumbing leaks.

### 8.2.6 Water Conservation Program Coordination and Staffing Support

SCV Water has four full-time employees managing its sustainability, water conservation and water use efficiency programs, and recycled water conversion initiatives. Additionally, SCV Water employs consultants for program implementation, evaluation, and verification support.

### 8.2.7 Other DMMs Implemented Over the Last Five Years

#### 8.2.7.1 Conservation Program

Prior to the launch of SCV Water in 2018, the DMMs identified below were offered by either the wholesale or retail division, respectively. However, following its launch, SCV Water integrated program management and expression service territory-wide for customer ease of use and consistency.

- ***Lawn Replacement Incentives***

  SCV Water provides customers $2 per square foot of living grass removed, up to a maximum of 2,500 square feet per residential customer. Commercial and Landscape customers are eligible for the same per unit incentive value and may be eligible for larger areas based on the size of the conversion project.

- ***Irrigation Smart Controller & Soil Moisture Rebates***

  Prior to 2018, SCV Water implemented a Weather Based Irrigation Controller distribution program for customers that completed an online training class. In 2018, SCV Water modified the program to offer rebates up to $150 for the purchase and installation of an EPA WaterSense Certified Smart Controller or Soil Moisture Sensor. Commercial and Landscape customers receive $25 per station when upgrading standard irrigation controllers to smart, weather-based systems.

- ***Irrigation Efficiency Upgrade Rebates (HELP)***

  Through its Healthy and Efficient Landscape Program (HELP), SCV Water offers incentives for High-Efficiency Sprinkler Nozzles (100% Rebate), Pressure Regulating Spray Bodies ($10 per Body), or Master Pressure Regulating Devices (75%).

- ***Drip Irrigation Rebates***

  To encourage customers to improve irrigation efficiency for non-turf applications, SCV Water provides rebates for converting spray irrigation to drip. Currently, SCV Water offers $.50 per square foot for areas converted to drip. Customers participating in the Lawn Replacement Program can apply for the Drip Rebate in addition to the incentive for removing living grass.

- ***Pool Cover Rebates***

  SCV Water offers a pool cover rebate of up to $200 for the purchase and installation of a permanent pool cover to reduce water losses resulting from evaporation.

- ***Residential Water Use Efficiency Benchmarking***

  Currently, SCV Water provides its residential customers, and a significant portion of its dedicated irrigation metered customers, with monthly water use efficiency benchmarking data via the WaterSMART Allocation, Water Efficiency Targets, and Historical Use Comparison methods. The water use efficiency benchmarking data is presented on the customer's monthly water bill and enables customers to compare actual water use to a water use efficiency metric specific to each billing period. The WaterSMART Allocation and Water Efficiency Targets are based each customer's unique property characteristics (Indoor and Outdoor values) and weather data (CIMIS Station 204) for the billing period. For the Historical Use Comparison, the customer's current monthly use is compared to the same period from previous years to compare baseline values.

- ***Residential/Multi-family Residential/Commercial/Landscape Check-Ups & Retrofits***

  SCV Water provides efficiency check-ups for residential, multi-family residential, commercial, and landscape customers. Upon request, WaterWise, SCV Water's consultant, will schedule a site visit where a Water efficiency specialist meets with the resident, property manager, or landscape contractor to perform a comprehensive review. Services include property leak detection, plumbing faucet and fixture measurement and retrofit, an irrigation controller inspection, and a landscape irrigation audit. The service is voluntary and provided to customers at no cost.

  For work conducted in 2019 specific to its multi-family residential water use efficiency efforts, SCV Water received an Excellence Award from the EPA's WaterSense Program. Utilizing the EPA's Portfolio Manager Water Score Tool for Multi-family Apartments, staff developed prioritization engagement strategies to engage complexes with significant water conservation opportunities. In only its second year as a unified water agency, SCV Water was one of 13 entities nationwide to receive the Excellence award.

- ***Residential Home Water Efficiency Kit Distribution***

  Upon request, SCV Water provides customers with up to two home water efficiency kits. Kits include HE showerheads, HE kitchen and bathroom faucet aerators, automatic shut-off hose nozzles, a toilet flapper, toilet leak detection dye tablets, a drip gauge, and a flowrate bag to measure faucet and fixture flow.

- ***WaterSMART Workshop***

  Originally launched in 2016, the WaterSMART Workshop provides interactive online instruction on how to improve home water use efficiency. The program was temporarily out of service following SCV Water's launch in 2018 but was re-released in March 2020. The WaterSMART Workshop uses a blended instructional design approach to optimize retention and to obtain an immediate measurable impact. Materials covered in the workshop include current water issues, how to read the water bill, how to look for leaks, identify water efficiency opportunities, and information on the agency's water conservation program portfolio. The workshop takes approximately 46-70 minutes to complete and customers receive a one-time $20 incentive and customized report following completion, which customers can continue to access post completion.

- ***High Consumption Courtesy Notifications***

  To leverage the WaterSMART Allocation, Water Efficiency Target, and Historical Use comparison efforts, SCV Water notifies customers when water use is significantly greater than the efficiency goal or historical comparison for a given billing month. The High Consumption Courtesy Notifications provide instruction, information, and resources available to customers to assist with water use efficiency improvements, leak repair, or other water saving opportunities.

- ***Customized Water Efficiency Rebates***

  From 2015-2018, SCV Water's legacy retail division piloted the Customized Water Efficiency Rebate Program which allowed customers to apply for rebates offered by other Southern California Water Districts (Suppliers). Customers were required to provide documentation and details of the rebate and were provided the incentive following staff confirmation.

- ***School Retrofit Program***

  To support water use efficiency in public schools, SCV Water provides grants up to $15,000 to support cost-effective efficiency improvements. Efficiency improvements include plumbing fixture and faucet upgrades, adjusting irrigation head spacing, installing pressure regulating devices, flow sensor technologies, and smart controllers with, but not limited to, central control.

- ***Commercial Ultra High-Efficiency & High-Efficiency Toilet Rebates***

  SCV Water provides commercial customers rebates for Ultra High-Efficiency (UHET), High-Efficiency (HET), and Dual Flush Valve Toilets (DFVT). Current rebate offers are up to $200 per UHET, $100 per HET, and up to $400 per DFVT. While the toilet rebate program for residential customers concluded in 2013, commercial customers were ineligible for the rebates during the program. However, SCV Water has determined that significant cost-effective conservation savings opportunities persist for commercial customers including, but not limited to, multi-family residential properties.

- ***Commercial Low/No Water Urinal Rebates***

  SCV Water provides commercial customers rebates for Waterless and Ultra High-Efficiency Urinals. Current rebate offers are up to $400 per WaterSense Certified Ultra High-Efficiency Urinal or waterless unit.

- ***Customized Drought Reports***

  During the 2011-2017 Drought, SCV Water's legacy retail purveyors provided customers with customized drought reports identifying specific drought water use reduction requirements and included tips, techniques, and programs available for support. Following the Governor's Emergency Drought Declaration, the SWRCB issued specific reduction requirements ranging from 4-36% of 2013's water use to each urban water supplier based on its residential GPCD consumption. Drought reports and specific water use reduction targets were provided to all customers (Residential, Commercial, Landscape).

#### *8.2.7.1.1 Conservation Program Participation*

The following tables illustrate community participation in SCV Water's water conservation and water use efficiency programs over the last five years for Residential Customers (Table 8-2) and Commercial/Industrial/Institutional (CII) and Landscape Customers (Table 8-3).

**TABLE 8-2 SCV WATERS CONSERVATION PROGRAMS (RESIDENTIAL PARTICIPATION DATA)**

| Program | Class | Unit | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Lawn Replacement | Residential | Projects | 76 | 28 | 23 | 5 | 4 |
| Smart Controllers | Residential | Controllers | 159 | 78 | 205 | 276 | 202 |
| HELP(a) | Residential | Projects | 103 | 31 | 0 | 8 | 15 |
| DRIP | Residential | Projects | 21 | 12 | 0 | 7 | 8 |
| Check-Ups | Residential (SF and MF) | Dwelling Unit | 461 | 933 | 0 | 2,611 | 972 |
| Pool Covers | Residential | Covers | 10 | 124 | 28 | 20 | 24 |
| Kits | Residential | Kits | 817 | 1,091 | 53 | 136 | 36 |
| Workshops | Residential | Complete | 840 | 624 | - | - | 432 |
| Courtesy Notices | Residential | Notices | 12,193 | 1,337 | 3,882 | 11,228 | 3,057 |

Notes:
(a) HELP (Healthy and Efficient Landscape Programs) provides rebates for high-efficiency sprinkler nozzles, pressure regulating bodies, and master pressure regulating devices.

**TABLE 8-3 SCV WATERS CONSERVATION PROGRAMS (COMMERCIAL & LANDSCAPE PARTICIPATION DATA)**

| Program | Class | Unit | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Lawn Replacement | CII/LL | SF | 335,078 | 169,901 | 195,814 | 206,632 | 78,456 |
| Smart Controllers | CII/LL | Stations | 256 | 1,241 | 2,039 | 242 | 1,525 |
| HELP(a) | CII/LL | Projects | - | 2 | 3 | 7 | 3 |
| DRIP | CII/LL | SF | - | - | 3 | 7 | 0 |
| Check-Ups | CII/LL | Sites | 135 | 8 | - | 6 | 3 |
| Toilet/Urinal Rebates(b) | CII/LL | Units | 72 | 122 | - | 1,469 | 3,573 |

Notes:
(a) HELP (Healthy and Efficient Landscape Programs) provides rebates for high-efficiency sprinkler nozzles, pressure regulating bodies, and master pressure regulating devices.
(b) Toilet/Urinal Rebates participation data includes commercial and multi-family apartment toilet retrofits.

### 8.2.7.2 Asset Management Practices

SCV Water incorporates various asset management practices and procedures throughout its treatment and distribution system. Asset management practices in use or in the process of being implemented include:

1. Use and continued development and upgrade of GIS systems.

2. Implementation and ongoing maintenance of a Computerized Maintenance Management System (CMMS) for tracking and scheduling maintenance, repair, and replacement of system assets.

3. Implementation of a comprehensive pipeline inspection program.

4. Annual electro-potential pipeline-to-soil surveys and evaluation of pipeline system.

5. Ongoing update of system hydraulic model and system evaluation.

6. Installation and monitoring of purveyor telemetry equipment and programming.

7. Development and update of long term (20 years or longer) repair and rehabilitation schedule and costs.

## 8.3 Planned DMM Implementation

SCV Water's water conservation program portfolio is premised on the 2015 WUESP. The WUESP developed the agency's program portfolio to enable successful compliance with SBx7-7 20% GPCD Reduction by 2020 targets. As previously discussed, while SBx7-7 sunset on December 31, 2020, the California Legislature approved AB 1668 and SB 606 which provides annual Urban Water Use Objectives (UWUO) comprised of residential indoor, residential irrigation, dedicated irrigation, and Water loss targets. Additionally, AB 1668 and SB 606 requires the agency to support and implement CII management practices to improve CII water use efficiency. Beginning in 2023, urban water suppliers are required to report compliance with the annual UWUOs. However, the methodologies and standards are currently in development and specifics have not been finalized.

In support of the 2020 UWMP, SCV Water updated the Decision Support System (DSS) model to provide current water demand forecasts, water conservation opportunities, and modeled impacts of both passive and active[8] water conservation activities. For active conservation, SCV Water's strategy seeks to maintain program operation levels identified in the 2015 WUESP. However, SCV Water will update the WUESP and anticipates the following schedule:

- **2021/2022** – Assess available conservation opportunities and strategies pursuant to finalization of the methodologies and standards pertinent to the UWUOs as proscribed in AB 1668 and SB 606 and subsequent guidance from DWR.

- **2022** – Update the WUESP to include programs, policies, and practices essential to compliance with the annual UWUOs.

- **2022 and Beyond** – Implement WUESP and update/adapt as needed.

2. Passive conservation refers to conservation achieved through efficiency improvements resulting from, among others, plumbing code updates, landscape design standards, and market-driven end-use device technology upgrades. Active conservation refers to conservation achieved through agency-driven conservation program implementation.

In addition to the planned updates to the WUESP, SCV Water actively seeks opportunities to improve conservation program expression. Utilizing program Evaluation, Measurement, and Verification (EM&V) methodologies and smart practices, SCV Water conducts extensive internal and external environmental analysis to determine appropriate modification or adaption essential to improved effectiveness and efficiency.

One such example of EM&V driven improvements was previously discussed regarding SCV Water's use of EPA's Portfolio Manager Water Score Tool for Multi-family Apartments, for which the agency was awarded a WaterSense Excellence Award in 2020. By using the tool to inform data-driven conservation program prioritization efforts, SCV Water was able to identify optimal water conservation opportunities for apartments with low water scores, but high volumes of water use. Connecting these customers to specific Water use efficiency programs greatly improved conservation results.

In addition to the multi-family project, SCV Water is currently conducting analysis salient to its Lawn Replacement Program. The analysis has identified several action items critical to expansion of the program. A report on findings and recommendations is expected in 2021 and the agency intends to assess priorities for inclusion in future iterations of the program.

### 8.3.1 Economic Impacts of WUESP

Section 4.3.1 of the SCV WUESP contains an analysis of the economic impacts of implementation of the DMMs. A copy of the WUESP is available here: https://yourscvWater.com/wp-content/uploads/2018/12/SCV-Water-Use-Efficiency-Strategic-Plan_Adopted-June-2015.pdf.

# Section 9: Catastrophic Interruptions in Water Service

Water supplies may be interrupted or reduced in a number of ways, including multi-year drought conditions or catastrophic events. SCV Water has prepared a WSCP that outlines SCV Water's action plan for a drought-related water supply shortage or a catastrophic shortage and specifies opportunities to reduce demand and augment supplies under such conditions. The WSCP was adopted as a stand-alone document and is referenced in this Plan and is included as an attachment in Appendix J. This Section of the Plan provides additional detail as to how SCV Water has planned to respond to various potential catastrophic interruptions, including regional power outages.

## 9.1 Actions to Prepare for Catastrophic Interruption

The Valley is located approximately 20 miles southwest of the San Andreas Fault, which traverses the length of the southern San Joaquin Valley. A major earthquake along this portion of the San Andreas Fault could affect water supplies available to the Santa Clarita Valley. The California Division of Mines and Geology has stated that two of the aqueduct systems that import water to southern California (including the California Aqueduct) could be ruptured by displacement on the San Andreas Fault. The situation could be further complicated by physical damage to pumping equipment and local loss of electrical power.

DWR has an Aqueduct Outage Plan for restoring the California Aqueduct to service should a major break occur, which it estimates could take approximately four months to repair. Limitations on supplies of groundwater and/or imported water for an extended period, due to power outages and/or equipment damage, could result in severe water shortages until the supplies could be restored.

Water storage within the Agency's service area totals approximately 190 MG of water in storage tanks, which can be gravity fed to Valley businesses and residences, even if there is a power outage. The public would be asked to reduce consumption to minimum health and safety levels, extending the supply to a minimum of seven days. This would provide sufficient time to restore a significant amount of groundwater production. After the groundwater supply is restored, pumping capacity could meet the reduced demand until such time that imported water supply was reestablished.

The Valley's water sources are generally of good quality, and no insurmountable problems resulting from industrial or agricultural contamination are foreseen. If contamination did result from a toxic spill or similar accident, the contamination would be isolated and should not significantly impact the total water supply. In addition, such an event would be covered by the Agency's Emergency Response Plan.

For more information on SWP seismic improvements in addition to how SCV Water is addressing potential seismic risks to its infrastructure, see WSCP Section 4.6 and the Seismic Risk Evaluation and Mitigation report included in WSCP Appendix C.

## 9.2 SWP Emergency Outage Scenarios

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Banos) and various subsidence repairs needed along the East Branch of the Aqueduct since the 1980s. More recently, DWR has taken the California Aqueduct temporarily out of service to repair the aqueduct liner in the San Joaquin Valley at mile post 62 and intermittent sections between mile posts 244 and 248. These repairs took place in Spring of 2018 and winter of 2016 respectively and the Aqueduct was out of service for approximately six weeks. All these outages were short-term in nature (on the order of weeks), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation while repairs were made. Thus, the SWP contractors experienced no interruption in deliveries.

One of the SWP's important engineering design features is the ability to isolate parts of the system. The Aqueduct is divided into "pools." Thus, if one reservoir or portion of the California Aqueduct is damaged in some way, other portions of the system can still remain in operation. The principal SWP facilities are shown on Figure 9-1.

Other events could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood or earthquake event that severely damages the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR, SCV Water and other SWP contractors to such events would be highly dependent on the type and location of any such events. In typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During wet years the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands and the excess is stored in San Luis Reservoir. Storage in SWP aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, is also refilled during this period. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to make up the difference in deliveries to contractors. The SWP share of maximum storage capacity at San Luis Reservoir is 1,062,000 AF.

SCV Water receives its SWP deliveries through the West Branch of the California Aqueduct at Castaic Lake. The only other contractors receiving deliveries from the West Branch are Metropolitan Water District of Southern California (Metropolitan) and Ventura County Watershed Protection District (formerly known as the Ventura County Flood Control District). The West Branch has two terminal reservoirs, Pyramid Lake and Castaic Lake, which were designed to provide emergency storage and regulatory storage (i.e., storage to help meet peak summer deliveries) for SCV Water and the other two West Branch contractors. Maximum operating capacity at Pyramid and Castaic lakes is 171,200 and 323,700 AF, respectively.

In addition to SWP storage south of the Delta in San Luis and the terminal reservoirs, a number of contractors have stored water in groundwater banking programs in the San Joaquin Valley, and many also have surface and groundwater storage within their own service areas.

Three scenarios that could impact the delivery of SWP supply, previously banked supplies or other supplies delivered to SCV Water through the California Aqueduct are described below. SCV Water's ability to meet demands during the worst of these scenarios is presented following the scenario descriptions.

**FIGURE 9-1 PRIMARY SWP FACILITIES**

### 9.2.1 Scenario 1: Emergency Freshwater Pathway

It has been estimated by DWR that in the event of a major earthquake in or near the Delta, water supplies could be interrupted for up to three years, posing a significant and unacceptable risk to the California business economy. A post-event strategy would provide necessary water supply protections to avert this catastrophe. Such a plan has been coordinated through DWR, Corps of Engineers (Corps), Bureau of Reclamation (Reclamation), California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California and the State Water Contractors.

#### 9.2.1.1 DWR Delta Flood Emergency Management Plan

The Delta Flood Emergency Management Plan (DWR, 2018) provides strategies for response to Delta levee failures, up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and saltwater intrusion are large, resulting in curtailment of export operations. Under these severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the prepositioning of emergency construction materials at existing and new stockpile and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, conduct tabletop and field exercises to test and revise the plan under real time conditions.

The Delta Flood Emergency Management Plan has found that using pre-positioned stockpiles of rock, sheet pile and other materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired in less than six months. A supplemental report (Levee Repair, Channel Barrier and Transfer Facility Concept Analyses to Support Emergency Preparedness Planning, M&N, August 2007) evaluated among other options, the placement of sheet pile to close levee breaches, as a redundant method if availability of rock is limited by possible competing uses. The stockpiling of sheet pile is vital should more extreme emergencies warrant parallel and multiple repair techniques for deep levee breaches. Stockpiles of sheet pile and rock to repair deep breaches and an array of levee slumping restoration materials are stored at DWR and Corps stockpile sites and warehouses in the Delta.

Additional details are provided in the WSCP.

#### 9.2.1.2 Levee Improvements and Prioritization

The DWR Delta Levees Subventions and Special Projects Programs have prioritized, funded and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta. These efforts are complementary to the Delta Flood Emergency Management Plan, which along with pre-positioned emergency flood fight materials, ensures reasonable seismic performance of levees and timely pathway restoration after a severe earthquake. These programs have been successful in implementing a coordinated strategy of emergency preparedness to the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levees systems along Old and Middle Rivers began in 2010 and are continuing to the present time. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria and Union Islands. Levee improvements along the Middle River emergency freshwater pathway and Old River consist of crest raising, crest widening, landside slope fill and toe berms, which improve seismic stability, reduce levee slumping and create a more robust flood-fighting platform. Urban agencies, including Metropolitan, Contra Costa Water District, East Bay Municipal Utility District, and others have participated in levee improvement projects along or near the Old and Middle River corridors.

Assuming that the Banks Pumping Plant would be out of service for six months, DWR could continue making at least some SWP deliveries to all southern California contractors from water stored in San Luis Reservoir. The water available for such deliveries would be dependent on the storage in San Luis Reservoir at the time the outage occurred and could be minimal if it occurred in the late summer or early fall when San Luis Reservoir storage is typically low. In addition to supplies from San Luis Reservoir, water from the West Branch terminal reservoirs would also be available to the three West Branch contractors, including SCV Water. SCV Water's water stored in groundwater banking programs in the San Joaquin Valley may also be available for withdrawal and delivery to the Agency.

### 9.2.2 Scenario 2: Complete Disruption of the California Aqueduct in the San Joaquin Valley

The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the California Aqueduct (the event impacted the portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the aqueduct, deliveries from San Luis Reservoir could be interrupted for a period of time. DWR has informed the SWP contractors that a four-month outage could be expected in such an event.

Arroyo Pasajero is located downstream of San Luis Reservoir and upstream of the primary groundwater banking programs in the San Joaquin Valley. Assuming an outage at a location near Arroyo Pasajero that takes the California Aqueduct out of service for six months, supplies from San Luis Reservoir would not be available to those SWP contractors located downstream of that point. However, SCV Water's stored water in groundwater banking programs in the San Joaquin Valley could be withdrawn and delivered to the Agency, and water from the West Branch terminal reservoirs would also be available to the three West Branch contractors, including SCV Water. Assuming an outage at a location on the California Aqueduct south of the groundwater banking programs in the San Joaquin Valley, these supplies would not be available to the Agency, but water from the West Branch terminal reservoirs would be available to the three West Branch contractors, including SCV Water.

### 9.2.3 Scenario 3: Complete Disruption of the West Branch of the California Aqueduct

The West Branch of the California Aqueduct begins at a bifurcation of the Aqueduct south of Edmonston Pumping Plant, which pumps SWP Water through and across the Tehachapi Mountains. From the point of bifurcation, the West Branch is an open canal through Quail Lake, a small flow regulation reservoir, to the Peace Valley Pipeline, which conveys water into Pyramid Lake. From Pyramid Lake, water is released into the Angeles Tunnel, through Castaic Powerplant into Elderberry Forebay, and then into Castaic Lake.

If a major earthquake (an event similar to or greater than the 1994 Northridge earthquake) were to damage a portion of the West Branch, deliveries could be interrupted. The exact location of such damage along the West Branch would be key to determining emergency operations by DWR and the three West Branch SWP contractors. A report by a joint DWR, Metropolitan, and Los Angeles Department of Water and Power (LADWP) Seismic Resilience Water Supply Task Force estimated that it could take six to twelve months to restore partial deliveries from the West Branch after a major earthquake (DWR, Metropolitan, LADWP, 2017).

For this scenario, it was assumed that the West Branch would suffer a break and deliveries of water from north of the Tehachapi Mountains, including SWP Water and SCV Water's water that is stored in groundwater banking programs in the San Joaquin Valley, would not be available. While at least partial deliveries could be available sooner, it was assumed for purposes of this Plan that deliveries through the West Branch would be disrupted for twelve months. However, it was assumed that Pyramid and Castaic dams would not be damaged by the event and that water in Pyramid and Castaic Lakes would be available to the three West Branch SWP contractors, including SCV Water.

In any of these three SWP emergency outage scenarios, DWR and the SWP contractors would coordinate operations to minimize supply disruptions. Depending on the particular outage scenario or outage location, some or all of the SWP contractors south of the Delta might be affected. But even among those contractors, potential impacts would differ given each contractor's specific mix of other supplies and available storage. During past SWP outages, the SWP contractors have worked cooperatively to minimize supply impacts among all contractors. Past examples of such cooperation have included certain SWP contractors agreeing to rely more heavily on alternate supplies, allowing more of the outage-limited SWP supply to be delivered to other contractors, and exchanges among SWP contractors, allowing delivery of one contractor's SWP or other water to another contractor, with that water being returned after the outage was over.

## 9.3 Assessment of Worst-Case Scenario

Of these three SWP outage scenarios, the West Branch outage scenario presents the worst-case scenario for the SCV Water service area. In this scenario, SCV Water would rely on local supplies and water available to the Agency from Pyramid and Castaic Lakes. An assessment of the supplies available to meet demands in SCV Water's service area during a twelve-month West Branch outage and the additional levels of conservation and/or emergency storage projected to be needed are presented in Table 9-1 for 2025 through 2050.

During an outage, the local supplies available would consist of groundwater from the Alluvial Aquifer and the Saugus Formation, as well as recycled water to the extent available. It was assumed that local well production would be unimpaired by the outage and that the outage would occur during a year when average/normal supplies would be available from the Alluvial Aquifer. Pumping from the Saugus was assumed to be equivalent to the higher pumping planned for a single-dry year. Note that adequate well and aquifer capacity exists to pump at levels higher than those assumed in this assessment, particularly during a temporary period such as an outage. However, to be conservative, groundwater production was assumed to be available according to projected annual supplies. Furthermore, based on the assumption that additional voluntary and/or mandatory conservation could reduce the amount of waste discharge, and therefore reduce the amount of recycled water produced by the WRPs, the amount of recycled water potentially available for non-potable use is assumed to be at least 25 percent less than during normal conditions.

The water available to SCV Water from Pyramid and Castaic Lakes includes flexible storage available to the Agency at Castaic Lake and emergency and potentially regulatory storage available in both Pyramid and Castaic Lakes. Regulatory storage, which is used to help meet high peak summer deliveries, may or may not be available depending on what time of year an outage occurs. For this assessment, regulatory storage was assumed to be unavailable. The amount of emergency storage assumed to be available to the Agency was based on its proportionate share of usable storage in each reservoir, where usable storage is maximum operating storage, less regulatory and dead pool storage. At Castaic Lake, this usable storage determination also excludes the three West Branch contractors' total Flexible Storage Accounts. SCV Water's proportionate share of usable storage was assumed to be slightly less than three percent, based on its share of capital cost repayment at each reservoir. On this cost repayment basis, the proportionate shares of Metropolitan and Ventura County Watershed Protection District are about 96 percent and one percent, respectively.

As shown in Table 9-1, for a twelve-month emergency outage, supply projections would not meet the projected demands. Supply shortfalls in such an emergency would need to be met with additional conservation (beyond the levels of conservation already planned for). As evidenced during the recent drought, these levels of additional conservation may be readily achievable, particularly during an emergency such as this.

In an emergency outage such as this, there is the potential that cooperation among SWP contractors and/or temporarily increased local groundwater production could increase supplies and reduce any supply shortfalls.

Kennedy Jenks

**TABLE 9-1 PROJECTED SUPPLIES AND DEMANDS DURING TWELVE MONTH DISRUPTION OF IMPORTED SUPPLY (AF)[(a)]**

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|---|---|---|---|---|---|---|
| **Existing Supplies** | | | | | | |
| Existing Groundwater | | | | | | |
| Alluvial Aquifer[(b)] | 8,900 | 8,180 | 7,300 | 7,300 | 7,300 | 7,300 |
| Saugus Formation[(c)] | 17,880 | 17,880 | 17,880 | 17,880 | 17,880 | 17,880 |
| Recycled Water[(d)(e)] | **338** | **338** | **338** | **338** | **338** | **338** |
| **Planned Supplies** | | | | | | |
| Future and Recovered Groundwater | | | | | | |
| Alluvial Aquifer[(b)] | 12,530 | 19,870 | 23,490 | 23,490 | 23,490 | 23,490 |
| Saugus Formation[(c)] | 9,090 | 15,920 | 15,920 | 15,920 | 15,920 | 15,920 |
| Recycled Water[(d)(e)] | 1,387 | 2,772 | 3,818 | 4,874 | 5,624 | 6,383 |
| **Total Existing and Planned Supplies** | **50,125** | **64,960** | **68,746** | **69,802** | **70,552** | **71,311** |
| **SWP West Branch Storage Available** | | | | | | |
| Flexible Storage Accounts [(f)] | 6,060 | 4,680 | 4,680 | 4,680 | 4,680 | 4,680 |
| Emergency Storage | | | | | | |
| Pyramid Lake[(g)] | 4,370 | 4,370 | 4,370 | 4,370 | 4,370 | 4,370 |
| Castaic Lake[(h)] | 3,370 | 3,370 | 3,370 | 3,370 | 3,370 | 3,370 |
| **Total West Branch Storage** | **13,800** | **12,420** | **12,420** | **12,420** | **12,420** | **12,420** |
| **Total Supplies and West Branch Storage** | **63,925** | **77,380** | **81,166** | **82,222** | **82,972** | **83,731** |
| | | | | | | |
| **Demands[(i)]** | | | | | | |
| **Demand w/ Plumbing Code Savings and Active Conservation** | **76,400** | **81,700** | **88,700** | **93,600** | **97,500** | **101,000** |
| Additional Conservation Required | 12,475 | 4,320 | 7,534 | 11,378 | 14,528 | 17,269 |
| Additional Conservation as Percent of Demand | 16% | 5% | 8% | 12% | 15% | 17% |

Notes:

(a) Assumes complete disruption in SWP supplies and in deliveries through the California Aqueduct for 12 months.

(b) From Table 4-9.

(c) From Table 4-10.

(d) Based on Table 5-2.

(e) Assumes 25% reduction in waste discharge, and therefore in recycled water availability, due to additional voluntary conservation.

(f) Includes both SCV Water and Ventura County entities flexible storage accounts. Extended term of agreement with the Ventura County entities expires after 2025.
(g) SCV Water's share of usable storage at Pyramid Lake, based on its 2.817% proportionate share of capital cost repayment of the reservoir, and assumed usable storage of 155,100 AF.
(h) SCV Water's share of usable storage at Castaic Lake, based on its 2.927% proportionate share of capital cost repayment of the reservoir, and assumed usable storage of 115,100 AF.
(i) From Table 2-10.

## 9.4 Recommendations for Extended Outage Emergency Storage

The various outage scenarios highlight the benefit of SCV Water having water stored in multiple banking programs south of the Delta. Banking programs located in Kern County, which have access to the California Aqueduct, are ideally suited to meet at least part of SCV Water's emergency needs. The worst-case scenario described above (a complete disruption on the West Branch of the aqueduct during an extended outage) demonstrates the desirability that SCV Water also have water stored in at least one water banking program geographically located south of the Tehachapi Mountains.

Alternatives for storage located south of the Tehachapi Mountains could involve a direct connection or an exchange with another West Branch contractor so that the contractor could be served from SCV Water's banked water, and the Agency could be served by a portion of the contractor's water in Pyramid or Castaic Lake (in addition to SCV Water's existing Flexible Storage Account in Castaic Lake and West Branch emergency storage).

The most likely and utilizable exchange arrangement would be with Metropolitan, which pays for a significant portion of the storage capacity in Castaic Lake. SCV Water could store varying amounts of its water in groundwater storage or banking programs within or adjacent to Metropolitan's service area. In the event of an outage or other emergency, Metropolitan would serve its customers with the Agency's stored water and SCV Water would serve its customers with a like amount of Metropolitan's Water in Castaic Lake.

In addition to exchange arrangements with others, potential projects within the SCV Water service area have been explored. SCV Water in cooperation with the purveyors prepared the Water Resources Reconnaissance Study (Study) (Carollo, 2015). The Study evaluated a series of supply measures that could provide an additional 10,000 AFY of supply to the service area. The study identified two measures that might be able to go at least part way to that goal: (1) an imported water injection project during wet years to augment Saugus formation groundwater storage, and (2) a groundwater recharge project using recycled water. While not pursuing a recycled water storage option at this time, SCV Water is exploring creation of spreading projects in the Alluvial Aquifer at locations along Castaic Creek and the eastern portion of the Santa Clara River. An infiltration test along Castaic Creek was performed and ongoing monitoring is taking place. Both of the projects would be located south of the Tehachapi Mountains, and so would provide an added benefit of supply availability in an emergency. Significantly more investigation would need to be completed before either would be implemented.

Potential banking programs, in which SCV Water could be served by a portion of the contractor's water in Pyramid or Castaic Lake for a potential exchange of emergency outage storage, or which could be located within SCV Water's service area include the following:

- **Willow Springs Water Bank, Antelope Valley:** This project is located in eastern Kern County, in the northern portion of the Antelope Valley. It is adjacent to both the East Branch of the California Aqueduct and the Los Angeles Aqueduct. This program is active and is seeking participants.

- **Antelope Valley-East Kern Water Agency High Desert Water Bank:** This is a project proposed by AVEK, a SWP wholesaler located in the Antelope Valley area of southeastern Kern County and northern Los Angeles County. The proposed groundwater banking project would be developed and operated by AVEK and would be located adjacent to the East Branch of the California Aqueduct. AVEK is actively seeking banking partners for Phase 2 of their water banking program. The preliminary Phase 2 program gives SCV Water options for up to 80,000 AF of storage and up to 20,000 AF of recovery capacity. Phase 2 may include a direct connection to the West Branch of the California Aqueduct.
- **Saugus Formation Aquifer Storage and Recovery (ASR) Program:** The feasibility of implementing an ASR program in the Saugus Formation has been evaluated through field testing and groundwater modeling simulations. Reconnaissance-level analysis indicates that such a program is feasible. In addition to water reliability benefits, a Saugus ASR program could provide other operational benefits (e.g., higher groundwater levels) and local storage.

## 9.5 Recommendations for Short-Term Emergency and Operational Storage

SCV Water recently evaluated local short-term emergency and operational storage requirements to sustain deliveries for a seven-day period. In 2013, a hydraulic modeling and system evaluation study was completed to analyze the Agency's distribution system and determine capital improvement projects necessary to mitigate existing and future system deficiencies and improve system operations. The 2013 report recommended further studies be conducted to evaluate both emergency and operational storage requirements and assist with siting and preliminary design of required storage reservoirs.

In 2017, an emergency and operational storage study was completed based on the 2013 hydraulic system report, and others, with input from the purveyors and local land owners. The goals of the study were to identify emergency storage requirements, identify sites for storage facilities, and to develop conceptual facility layouts, and preliminary costs. The primary vulnerabilities that formed the basis of the evaluation included earthquakes (including liquefaction and landslides) and streambed scour (from Santa Clara River and tributaries and flooding events).

The study assessed how supply necessary to sustain a seven-day demand period was calculated; demands were based on the 2015 UWMP and assumed that irrigation and other non-essential water uses would be prohibited (i.e., non-interruptible demand). Demands that could not be met by local groundwater pumping would then be served by the identified emergency storage facilities located within each emergency zone. Overall the assessment showed that SCV Water must make investments in storage projects (reservoirs and pump stations) to increase existing storage within the service area.

## 9.6 Regional Power Outage Scenarios

For a major emergency such as an earthquake, Southern California Edison (Edison) has declared that in the event of an outage, power would be restored within a 24-hour period. Following the Northridge earthquake, Edison was able to restore power within 19 hours. Edison experienced extensive damage to several key power stations yet was still able to recover within a 24-hour timeframe.

To specifically address the concern of water outages due to loss of power, SCV Water has equipped its two treatment plants with generators to produce power for treating water to comply with the California Safe Drinking Water Act and the Health and Safety Code. The Rio Vista Water Treatment Plant and Intake Pump Station emergency generator system provides electrical power to treat 30 MGD for 72 hours without fuel replacement. The Earl Schmidt Filtration Plant emergency generator system provides electrical power to treat 33 MGD for 72 hours without fuel replacement.

In addition, SCV Water maintains multiple mobile generators with capacities to run any facility within SCV Water's service area. All primary pumping facilities are equipped with emergency transfer switches, and all employees are trained regularly to maximize the speed to install and operate the generators. The generator run time is only limited by the amount of available diesel fuel.

Additionally, SCV Water has multiple above ground diesel fuel storage tanks. Multiple crew trucks are equipped with diesel tanks and the necessary fueling equipment to refill the generators. The Agency would respond to power outages on a prioritized basis and would continue its response to the power emergency as long as necessary. In addition to the generators, SCV Water has gas and diesel driven pumps capable of delivering water when needed. All pumping facilities have been equipped with the necessary appurtenances to quickly connect the portable pumps to restore pumping operations.

The Agency conducts annual preparedness activities which include the mobilization and operations of certain emergency equipment. The Agency also has emergency contractors available to both transport and fuel equipment.

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