2025 San Bernardino Valley

Regional Urban Water Management Plan

Part I: Regional Context

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SAN BERNARDINO VALLEY

2025 RUWMP

Part 1: Regional Context

APRIL 2026

Prepared by Water Systems Consulting, Inc

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ACRONYMS & ABBREVIATIONS

ADU	Accessory Dwelling Unit
AF	Acre-Foot
AFY	Acre-Feet per Year
AMI	Advanced Metering Infrastructure
AMR	Automatic Meter Reader
AWWA	American Water Works Association
BTAC	Basin Technical Advisory Committee
BVMWC	Bear Valley Mutual Water Company
CII	Commercial, Industrial, and Institutional
CWC	California Water Code
CWOL	Making Conservation a California Way of Life
DCR	DWR SWP Delivery Capacity Report
DMM	Demand Management Measure
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
FUWC	Fontana Union Water Company
GC	General Council
GHG	Greenhouse Gas
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
GPMD	Gallons per Mile of Pipe per Day
GPSCD	Gallons per Service Connection per Day
IRUWMP	Integrated Regional Urban Water Management Plan
LOC	Level of Concern
LRIP	Local Resources Investment Program
MG	Million Gallons
MGD	Million Gallons per Day
MSL	Mean Sea Level
RHNA	Regional Housing Needs Assessment
RHWC	Riverside Highland Water Company
RIX	Rapid Infiltration and Extraction
RTP	Regional Transportation Plan
RUWMP	Regional Urban Water Management Plan
SAR	Santa Ana River
SARCCUP	Santa Ana River Conservation and Conjunctive Use Program
SBB	San Bernardino Basin/Bunker Hill Subbasin
SBMWD	City of San Bernardino Municipal Water Department
SBVMWD	San Bernardino Valley Municipal Water District
SBX7-7	Senate Bill 7 of Special Extended Session 7
SCAG	Southern California Association of Governments
SGPWA	San Gorgonio Pass Water Agency
SGVWC	San Gabriel Valley Water Company
SWP	California State Water Project
SWRCB	State Water Resources Control Board
SWTP	Surface Water Treatment Plant

TTS	Tertiary Treatment System
UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
UWUO	Urban Water Use Objective
VOC	Volatile Organic Compound
WFF	Water Filtration Facility
WSCP	Water Shortage Contingency Plan
WVWD	West Valley Water District
WWTP	Wastewater Treatment Plant
SGPWA	San Gorgonio Pass Water Agency

1.0 Introduction

This Regional Urban Water Management Plan was prepared by San Bernardino Valley Municipal Water District, a wholesale water agency and State Water Contractor, and eight retail water agencies including City of Colton, City of Loma Linda, City of Redlands, City of Rialto, Riverside Highland Water Company, San Bernardino Municipal Water Department, South Mesa Water Company, and West Valley Water District to satisfy the requirements of the Urban Water Management Plan Act. This chapter describes the purpose of the 2025 San Bernardino Valley Regional Urban Water Management Plan, how it is organized, and its relationship to other regional planning efforts in the San Bernardino Valley. This chapter also describes the collaborative process to develop the plan and coordination with stakeholders and the public prior to adoption.

IN THIS SECTION

This document presents the 2025 San Bernardino Valley Regional Urban Water Management Plan (Plan or RUWMP).

1.1 Background and Purpose

1.1.1 Regional UWMP

The California Water Code requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, which are required to be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMP Act) of 1983, including amendments that have been made to the UWMP Act and other applicable regulations. The UWMP Act requires urban water suppliers serving 3,000 or more connections or supplying more than 3,000 acre-feet (AF) of water annually, to prepare an UWMP. For wholesale water agencies without retail connections, the requirement is triggered by the annual delivery of 3,000 AF or more. Since the original UWMP Act was passed, it has undergone significant expansion in response to droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions that affect the reliability of each water supplier. Implementation of the UWMP Act is overseen by DWR.

An UWMP is intended to function as a planning tool to guide broad-perspective decision making by water supply managers. A UWMP is a long-term, general planning document, rather than 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. From this perspective, it is appropriate to look at an UWMP as a general planning framework, not a specific action plan.

It is an effort to generally answer a series of planning questions including:

1. What are the potential sources of supply and what is the reasonable amount of supply available from each of them?
2. What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
3. How well do supply and demand figures match up now and, in the future, based on the supplies that are anticipated to be pursued?

Using these “framework” questions and resulting answers, the implementing agency may pursue a range of feasible and cost-effective options and opportunities to meet projected demands.

Water purveyors within a region are permitted by DWR to work together to develop a cooperative Regional UWMP or RUWMP. In 2010, 2015, 2020 and 2025, a regional approach was used by the San Bernardino Valley Municipal Water District (San Bernardino Valley or SBVMWD), a wholesale water supplier, and several retail water agencies who coordinated to prepare the San Bernardino Valley RUWMP. The purpose of jointly preparing the RUWMP is to facilitate a consistent evaluation of water sources common to the various agencies, to take advantage of group knowledge and experience, and to reduce collective preparation costs. The RUWMP is focused on meeting reporting requirements established by DWR to implement the California Water Code. The unique document structure of the RUWMP preserves each agency's ability to independently convey unique water management considerations for their service area while leveraging the regional information and activities that are applicable to all.

Some of the retail water agencies in the San Bernardino Valley prepare separate UWMPs that are not directly included in this Plan. Table 1-1 provides a summary of RUWMP participation for each urban water supplier in the region for prior RUWMPs and this 2025 UWMP. Participating Agencies and other water agencies in the region are described further in Section 2.2.

Table 1-1: RUWMP Participating Agencies

PARTICIPATING AGENCY	2010 RUWMP	2015 RUWMP	2020 IRUWMP	2025 RUMWP
Bear Valley Mutual Water Company				
City of Colton	✓	✓	✓	✓
City of Loma Linda	✓	✓	✓	✓
City of Redlands	✓	✓	✓	✓
City of Rialto		✓	✓	✓
City of San Bernardino Municipal Water Department	✓	✓	✓	✓
East Valley Water District	✓	✓	✓	
Fontana Water Company				
Riverside Highland Water Company		✓	✓	✓
San Bernardino Valley Municipal Water District	✓	✓	✓	✓
South Mesa Water Company			✓	✓
West Valley Water District	✓	✓	✓	✓
Western Heights Water Company				
Yucaipa Valley Water District	✓	✓	✓	

In addition to the Participating Agencies, this RUWMP incorporates data from other agencies within the San Bernardino Valley that rely wholly or partially on the shared water resources analyzed in this Plan. While these agencies are not participants in this RUWMP, their water demands and associated supply needs are included to accurately evaluate regional water supply reliability through 2050. For the agencies preparing separate 2025 UWMPs (East Valley Water District, Fontana Water Company and Yucaipa Valley Water District), updated projections from their respective 2025 UWMPs were incorporated into this Plan. For the agencies who are not urban water suppliers and do not prepare UWMPs, their demands and associated supply needs were estimated and incorporated into this Plan based on direct input from the agency, records of prior water use, or assumed to be the same as projections from the 2020 IRUWMP.

1.1.2 Integrated Regional Water Management and Other Regional Planning

Integrated Regional Water Management

State lawmakers created the Integrated Regional Water Management (IRWM) Planning Act in 2002 to encourage local entities to improve water quality and water supply reliability to meet the state's overall agricultural, domestic, industrial, and environmental water needs. IRWM is an efficient model for inclusive and equitable water management planning and delivers higher value for investments by utilizing early and collaborative stakeholder processes to develop multi-benefit projects that help diversify a region's water management portfolio to achieve multiple social, economic, and environmental benefits and to prioritize funding that may become available from the State. The primary purpose of an IRWM Plan is to encourage integrated planning among the agencies in a region. The IRWM Plan provides a comprehensive look at the area's water resources and includes integrated management strategies to help meet the long-term water needs of the area.

The Santa Ana Watershed Project Authority (SAWPA) is the DWR recognized IRWM Regional Agency for the entire Santa Ana watershed and has led a collaborative process to prepare and regularly update the watershed wide IRWM Plan known as One Water One Watershed (OWOW). The OWOW plan was last updated in 2018 and the OWOW Plan Update 2018 still serves as the official IRWM Plan for the Santa Ana Watershed.

In 2005, the San Bernardino Valley and 15 other agencies in the Upper Santa Ana River (SAR) watershed (Region or Upper SAR Region) decided to voluntarily develop the first IRWM Plan for its subarea of the watershed to collaboratively develop water management strategies for the communities of the Upper SAR watershed; the plan was completed in 2007. The agencies that developed the 2007 Upper SAR IRWM Plan formed a Technical Advisory Group (TAG) to implement the plan, which later became the Basin Technical Advisory Committee (BTAC). The BTAC is still actively collaborating to manage regional water resources, and the region has since formed several additional collaborative forums that focus on specific regional topics.

Agencies that participate in the BTAC at the time of this Plan include:

- **Bear Valley Mutual Water Company**
- **City of Colton**
- **City of Loma Linda**
- **City of Redlands Municipal Utilities and Engineering Department**
- **City of Rialto**
- **City of Riverside Public Utilities Department (Riverside Public Utilities)**
- **East Valley Water District**
- **Elsinore Valley Municipal Water District (Meeks and Daly Water Company)**
- **Fontana Water Company**
- **San Bernardino County Flood Control District**
- **San Bernardino Municipal Water Department**
- **San Bernardino Valley**
- **San Bernardino Valley Water Conservation District**
- **West Valley Water District**
- **Western Municipal Water District**
- **Yucaipa Valley Water District**

The Upper SAR IRWM Plan is a critical document for prioritizing regional investments in water management and facilitating the use of state and federal grant funds for those projects. In 2020, both the Upper SAR IRWM Plan and the San Bernardino Valley Regional UWMP were due to be updated and there is significant overlap in the content of the two plans. Rather than updating these overlapping documents independently, San Bernardino Valley and its regional partners decided to combine them into a single new, single cohesive document. This combined document, the 2020 Upper Santa Ana Watershed Integrated Regional Urban Water Management Plan (IRUWMP) was the first of its kind in California and met all of the requirements of both the UWMP Act and the IRWM Planning Act.

The IRWM Roundtable of Regions, a group comprised of all IRWM regions in the State, has been working for over 20 years to advocate to the State for continued funding and commitment to sustaining and strengthening the IRWM program. However, with the 2023 California Water Plan, the state demonstrated a move toward a watershed approach, leaving the future of IRWMs unclear. Prop 4, the $10 billion climate bond that was approved by voters in 2024, allocated just $100 million specifically for IRWM for the entire State. However, IRWMs may still compete for other Prop 4 funds in groundwater, watershed resilience, nature-based solutions, flood, drought and other multi-benefit projects. In 2025 the Roundtable of Regions completed the IRWM Transition Plan, proposing a framework by which the IRWMs may transition into, and collaborate within, the State's proposed Watershed Resilience Program, which is discussed in the following section. DWR continues to attend Roundtable of Regions meetings and has accepted and discussed the Transition Plan with the Roundtable Steering Committee.

For the 2025 UMWP update cycle, due to uncertainty about the evolution of the IRWM program, the stakeholders in the region decided not to update the combined IRUWMP. Instead, this 2025 RUWMP was prepared, similar the 2010 and 2015 RUWMPs. Integrated regional water management remains a critical priority for the region and is being addressed through multiple ongoing collaborative efforts and anticipated future watershed scale planning.

Watershed Resilience

DWR recently developed the 2024 Watershed Resilience Program Guidelines to advance the vision and framework laid out in the State's California Water Plan Update 2023 to better prepare and plan for a future with climate extremes. The Watershed Resilience Program re-orients the State's priorities around more equitable and climate-resilient water systems by defining three updated themes: Addressing Climate Urgency, Strengthening Watershed Resilience and Achieving Equity.

While the Watershed Resilience Program is fundamentally similar to IRWM, it appears that the State is moving toward Watershed Resilience Plans as the vehicle to provide State support and funding to increase regional climate resilience.

Prop 4 allocates over $1.8 billion to support planning and holistically integrated projects in the categories of climate change resiliency including groundwater sustainability, water supply and storage, flood management, wildfire prevention, habitat enhancement and watershed restoration. Five two-year pilot projects on how watersheds may work collaboratively to identify and develop strategies to address climate risks in specific watersheds are reaching completion as of spring 2026.

Through continued regional and watershed wide collaboration with SAWPA, San Bernardino Valley and the retail water agencies in the region will continue to conduct integrated regional water management and adapt to evolving State frameworks and position the region for future State funding of critical water needs. In 2024, San Bernardino Valley adopted a Climate Adaptation and Resilience Plan that will serve as a bridge document for the region in transitioning to the new State framework.

San Bernardino Basin Optimization and Stewardship Program

In 2024, the BTAC agencies completed Phase 1 of the San Bernardino Basin Optimization and Stewardship Program (SBBOSP) and are currently in the beginning stages of Phase 2, which is envisioned to define a new framework for basin management and ultimately identify the projects, actions, and funding mechanisms needed to achieve sustainability, equity, and optimization of local water resources.

While focused initially on the San Bernadino Basin, the SBBOSP is ultimately expected to more broadly address regional water needs and define an integrated strategy to achieve basin sustainability through optimized management of existing and new water resources and infrastructure. SBBOSP Phase 2 will address many of the aspects of the current IRUWMP and will also help position the Upper SAR Watershed for a potential future transition to the State's new Watershed Resilience Program.

1.2 Plan Organization

This Plan is organized to meet the requirements of the UWMP Act. Each participating agency has reviewed, adopted, and will implement portions of this Plan relevant to their agency. To streamline reporting and avoid redundant information, this Plan is organized into four parts:

Part 1: Regional Context

Part 1 contains the information needed to meet a portion of the UWMP Act requirements and provides regional context. Many of the participating agencies utilize the same water resources and have similar water uses. Part 1 is organized into the following chapters:

- **Chapter 1:** Introduction
- **Chapter 2:** Region Description
- **Chapter 3:** Regional Water Sources and Management
- **Chapter 4:** Regional Water Use
- **Chapter 5:** Comparison of Regional Supplies and Demands

Part 2: Individual Agency UWMPs

Part 2 includes a chapter for each of the nine participating retail agencies. Each chapter is supplemental to the regional information presented in Part 1 and contains the additional information and analysis for each agency needed to meet the UWMP Act requirements. Each agency chapter provides service area information, past water use, projections of population, demand, and supply for a 25-year planning period, an evaluation of water supply reliability and drought risk assessment, a description of demand management measures and a summary of the agency's Water Shortage Contingency Plan. Part 2 is organized into the following chapters:

- **Chapter 1:** San Bernadino Valley
- **Chapter 2:** City of Colton
- **Chapter 3:** City of Loma Linda
- **Chapter 4:** City of Redlands
- **Chapter 5:** City of Rialto
- **Chapter 6** Riverside Highland Water Company
- **Chapter 7** San Bernardino Municipal Water Department
- **Chapter 8** South Mesa Water Company
- **Chapter 9** West Valley Water District

Part 3: Regional Supporting Information

Part 3 includes all the supporting documentation referenced in Part 1 that is applicable to the region.

Part 4: Local Agency Supporting Information

Part 4 includes a set of supporting documentation for each UWMP Agency corresponding to their respective chapters in Part 2. Documents for each agency will include the regulatory compliance guide that DWR will use to verify the agency has met the UWMP Act requirements, proof of public hearing notices, water supply agreements specific to that agency, the Water Shortage Contingency Plan and the completed tables that are required to be submitted to DWR.

1.3 Plan Preparation and Coordination

Management of water resources in the Region takes place within a complex legal and institutional framework. Development of this RUWMP involved the cooperation of many parties engaged in regional water management as well as the public.

In accordance with the UWMP Act, the Participating Agencies issued a Notice of Plan Preparation to cities and counties, as well as additional stakeholders within the region at least 60 days prior to the public hearing (notice was distributed on 3/4/2026). This notice informed stakeholders that the 2025 RUWMP was being prepared and invited input. A copy of the 60-day Notice letter is included in Part 3.

The Participating Agencies encouraged public participation in the preparation of this Plan to incorporate public feedback on water management and reliability in the Region. The Participating Agencies solicited public involvement in the planning process by presenting updates at regularly scheduled BTAC meetings and at some of their regularly scheduled Board and Council meetings, as well as soliciting public comments on the draft RUWMP via email announcements, website postings and newspaper notices. Copies of each agency's newspaper notice is included in their respective appendix in Part 4.

In addition, two (2) workshops with the Participating Agencies were conducted to align the approach for RUWMP preparation and to review the results of the regional water supply and demand analysis.

The following Regional Land Use Planning and stakeholder agencies received the 60-Day Notice of Plan Preparation:

- Bear Valley Mutual Water Company
- Beaumont-Cherry Valley Water District
- Cal. State San Bernardino/Institute for Watershed Resiliency
- City of Calimesa
- City of Colton
- City of Fontana
- City of Grand Terrace
- City of Highland
- City of Loma Linda
- City of Redlands
- City of Rialto
- City of San Bernardino
- City of Yucaipa
- County of Riverside
- County of San Bernardino
- Crafton Hills College
- East Valley Water District

- Elsinore Valley Municipal Water District
- Fontana Water Company
- Inland Empire Resources Conservation District
- Muscoy Mutual Water Company
- Rialto Water Services, LLC-Veolia
- Riverside Highland Water Company
- Riverside Local Agency Formation Commission (LAFCO)
- Riverside Public Utilities
- Rubidoux Community Services District
- San Bernardino County Flood Control District
- San Bernardino County Local Agency Formation Commission (LAFCO)
- San Bernardino Municipal Water Department
- San Bernardino Valley Municipal Water District
- San Bernardino Valley Water Conservation District
- San Gorgonio Pass Water Agency
- San Manuel Band of Mission Indians
- Santa Ana Watershed Project Authority
- South Mesa Water Company
- Terrace Water Company
- United States Forest Service
- West Valley Water District
- Western Heights Mutual Water Company
- Yucaipa Valley Water District
- Yucaipa-Calimesa Joint Unified School District

1.4 Plan Adoption

Each participating agency has reviewed, adopted, and will implement the portions of this Plan relevant to their agency. Not all parts of the plan are applicable to every participating agency and any subsequent changes made to individual agency UWMP Chapters, if any, should not affect the other agencies who participated in Plan preparation. In recognition of this, the Plan was organized so that agencies could adopt only the parts of the plan that are applicable.

All participating agencies adopted Part 1 and Part 3, which comprise the information needed to provide the regional context. In addition to Part 1 and Part 3, participating agencies adopted their respective chapters of Part 2 and their respective Appendices in Part 4. Additional information on each UWMP Agency's adoption process in accordance with the UWMP Act is provided in each agency chapter in Part 2.

The Plan participants adopted the relevant parts of the Plan beginning in May and June 2026. Following adoption, the Plan was submitted to DWR, the California State Library, and a copy was provided to all stakeholders identified in Section 1.3. Resolutions adopting the RUWMP are provided in each agency's appendix in Part 4.

2.0 Region Description

This section describes the characteristics of the Region and the San Bernardino Valley service area, including population, land use, and climate. This section also describes the many local agencies and water companies that have a role in managing water resources within the Region. Water resources within the Region are described in Section 3.

IN THIS SECTION

- Location
- Water Agencies in the Region
- Population and Demographics
- Land Uses
- Regional Climate

2.1 Location

The SAR watershed is the largest stream system in Southern California. The headwaters originate in the San Bernardino Mountains and are discharged to the Pacific Ocean approximately 100 miles to the southwest between Newport Beach and Huntington Beach. The SAR watershed covers over 2,650 square miles of widely varying forested, rural, and urban terrain and covers the more populated urban areas of San Bernardino, Riverside, and Orange Counties, as well as a lesser portion of Los Angeles County. Disputes over the use of water in the SAR led to the subdivision of the watershed into the Upper SAR watershed and Lower SAR watershed just upstream of Prado Dam.

The Upper SAR watershed covers 852 square miles, approximately 32% of the total SAR watershed, and is primarily located in San Bernardino and Riverside Counties. The Region includes the Big Bear Valley as well as the cities and communities of San Bernardino, Yucaipa, Redlands, Highland, Rialto, Mentone, Colton, Grand Terrace, Loma Linda, Beaumont, and Riverside.

The Upper SAR watershed is defined by the area that contributes surface runoff to the Riverside Narrows at U.S. Geological Survey (USGS) Gage 11066460. There are numerous tributaries that contribute flow to the main stem of the SAR in the Region, including Mill Creek, City Creek, Plunge Creek (a tributary of City Creek), Mission Zanja Creek (located just upstream of the San Timoteo Creek), San Timoteo Creek, East Twin Creek, Warm Creek, and Lytle Creek.

For the purpose of this RUWMP, the Region is defined as the wholesale service area of the San Bernardino Valley Municipal Water District, which comprises a large portion of the Upper SAR Watershed in San Bernardino County, as shown in Figure 2-1.

2.2 Water Agencies in the Region

The Region is home to dozens of cities, water districts, mutual water companies, flood control districts, and other local water management agencies with an interest in the responsible management of water supply resources (e.g., storage, conveyance, treatment, flood protection, and recreation) and sustainable stewardship (e.g., water quality and biological resource protection) of the watershed. The challenges facing water agencies in the Upper SAR include the effects of population growth that increase water demand and decrease natural hydrological processes and groundwater recharge, the reduction of imported water availability, the effects of climate change, water quality, a changing regulatory environment, and affordability of water infrastructure projects. Water agencies in the Region are shown in Figure 2-2 and described in Section 2.2.1.

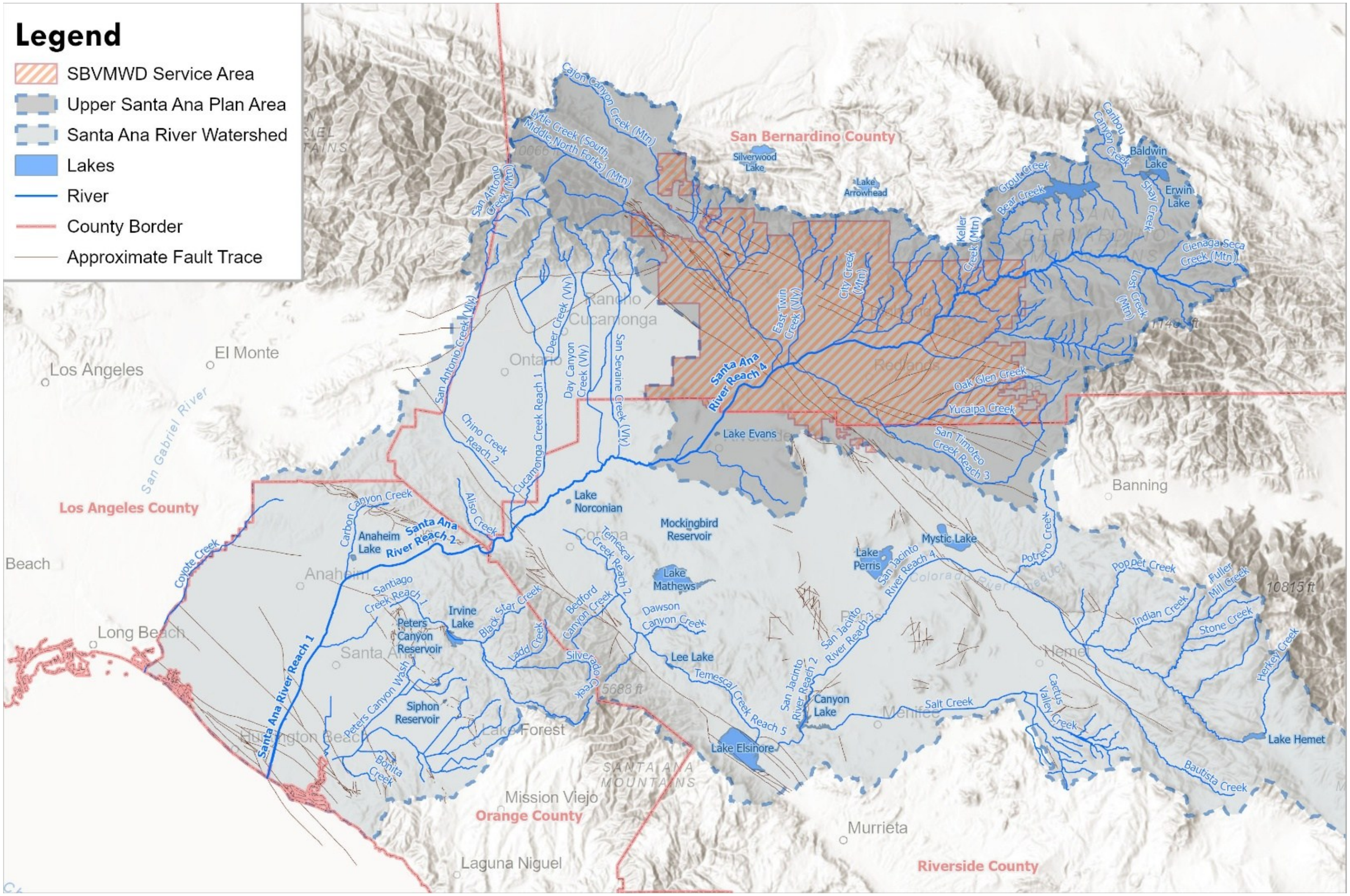

Figure 2-1: Upper Santa Ana River Watershed and RUWMP Boundary

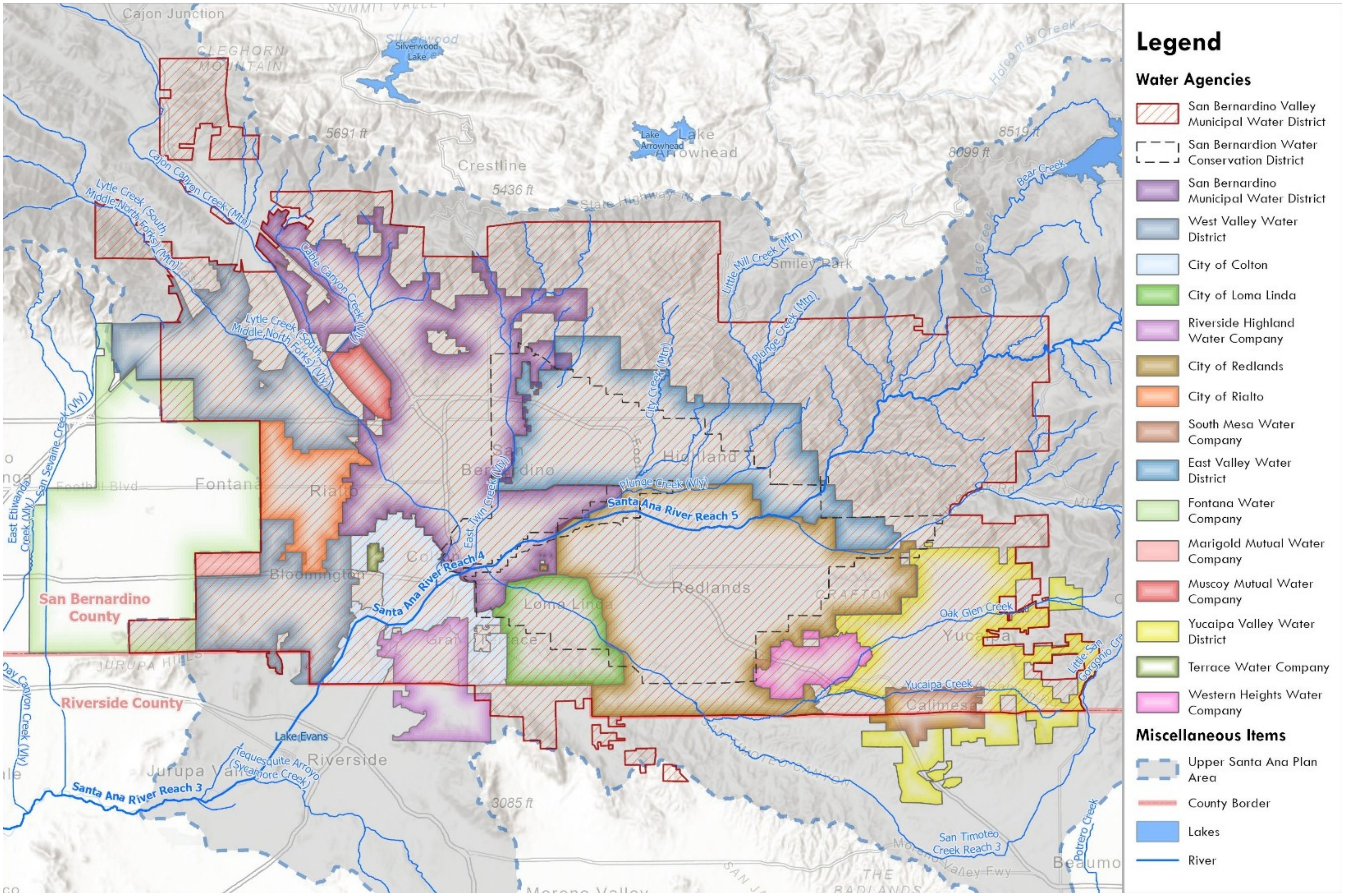

Figure 2-2: Water Management Agencies in the Region

2.2.1 2025 RUWMP Participating Agencies

This section describes the water supply agencies participating in this 2025 RUWMP.

2.2.1.1 San Bernardino Valley Municipal Water District (San Bernardino Valley)

San Bernardino Valley was formed in 1954, under the Municipal Water District Act of 1911 (California Water Code Section 71000 et seq.) as a regional agency to plan a long-range water supply for the San Bernardino Valley. San Bernardino Valley imports water into its service area through participation in the State Water Project (SWP) and manages groundwater storage within its boundaries. Its enabling act includes a broad range of powers to provide water, wastewater and stormwater disposal, recreation, and fire protection services. San Bernardino Valley does not deliver water directly to retail water customers.

San Bernardino Valley covers about 353 square miles mainly in southwestern San Bernardino County, about 60 miles east of Los Angeles. It spans the eastern two-thirds of the San Bernardino Valley, the Crafton Hills, and a portion of the Yucaipa Valley and includes the cities and communities of San Bernardino, Colton, Loma Linda, Redlands, Rialto, Fontana, Bloomington, Highland, East Highland, Grand Terrace, Mentone, and Yucaipa.

San Bernardino Valley is responsible for long-range water supply management, including importing supplemental SWP water to meet orders from retail agencies, and facilitating the management of groundwater basins within its boundaries. San Bernardino Valley also represents the San Bernardino Entities in mitigating extractions over the production amounts specified in the Orange County and Western Judgments explained below. San Bernardino Valley has specific responsibilities for monitoring groundwater supplies in the SBB and Rialto-Colton Subbasin, and for a portion of the minimum SAR flow required at the Riverside Narrows under the Orange County and Western Judgments.

San Bernardino Valley takes delivery of SWP water at the Devil Canyon Power Plant Afterbay, which is located just within its northern boundary. The SWP water is conveyed 17 miles eastward to various spreading grounds and agricultural and wholesale delivery points. Water is also conveyed westward for direct delivery in the SBB and Rialto-Colton Subbasin.

In the 1960s, dry conditions resulted in the over-commitment of water resources in the SAR watershed which led to lawsuits between water users in the upper and lower watersheds regarding both surface flows and groundwater. The lawsuits culminated in 1969 in the Orange County and Western Judgments. Under the terms of the judgments, San Bernardino Valley became responsible for providing a portion of the specified SAR base flow to Orange County and for providing replenishment in the Rialto-Colton Basin and SBB under certain conditions. If the conditions of either judgment are not met by the natural water supply, including new conservation, San Bernardino Valley, on behalf of the San Bernardino Entities, is required to deliver supplemental water to offset the deficiency. The judgments resolved the major water rights issues that had prevented the development of long-term, region-wide water supply plans and established specific objectives for the management of the groundwater basins.

Court-appointed Watermaster committees administer both Judgments; as a member of the Watermaster committees, San Bernardino Valley is directly responsible for ensuring that groundwater and surface water resources are effectively managed per the terms of the Judgments for the benefit of the region.

This Plan includes the San Bernardino Valley UWMP; see Part 2, Chapter 1 for more information.

2.2.1.2 City of Colton

The City of Colton (Colton) is a community founded in 1875 and incorporated in 1887. Colton, through the Water and Wastewater Division of its Public Utilities Department, provides water service to a majority of the residents and businesses located within Colton's corporate boundary, as well as to those in certain adjacent unincorporated areas of San Bernardino County. All of Colton's water supply is local groundwater pumped from the SBB, the Rialto-Colton subbasin, and the Riverside North subbasin.

This Plan includes the Colton UWMP; see Part 2, Chapter 2 for more information.

2.2.1.3 City of Loma Linda

The City of Loma Linda (hereafter Loma Linda) was incorporated in 1970. The Public Works Department provides potable water service to an area of approximately 7.8 square miles that includes the Veterans Administration Hospital and the Loma Linda Community Hospital. Loma Linda does not provide water service to the Loma Linda University Campus or Medical Center facilities, which operate on a separate self-contained system. Loma Linda's primary water supply is groundwater from the SBB. Loma Linda also has two emergency connections to the City of San Bernardino and one to the City of Redlands to meet its supplemental needs. Loma Linda also provides wastewater collection service.

This Plan includes the Loma Linda UWMP; see Part 2, Chapter 3 for more information.

2.2.1.4 City of Redlands

For more than 90 years, the City of Redlands (hereafter Redlands) has been providing high-quality drinking water to the Redlands, Mentone area, Crafton Hills College, and a portion of unincorporated San Bernardino County known as the donut hole. The water utility service area generally coincides with the area designated by the Local Area Formation Commission (LAFCO) as the City and its sphere of influence. The service area encompasses 36 square miles inside the Redlands city boundaries and a relatively small area outside the city boundaries, but within the sphere of influence. Redlands supplies a blend of local groundwater, local surface water, and imported water purchased from San Bernardino Valley. Redlands owns and operates two water treatment plants, Tate and Hinckley, which receive either surface water or imported water and treat it to potable standards. Redlands also owns and operates a sewer collection system and the Redlands Wastewater Treatment Facility, which produces recycled water for industrial and irrigation purposes, including supplying water to the Southern California Edison Mountainview Power Plant.

This Plan includes the Redlands UWMP; see Part 2, Chapter 4 for more information.

2.2.1.5 City of Rialto

The City of Rialto (hereafter Rialto) is provided water service by three different water agencies: The City of Rialto municipal water system through its water system operator (Veolia, through Rialto Water Services), the West Valley Water District (WVWD), and the Fontana Union Water Company (FUWC). Each agency has its own water supply and resources and must meet its demands through those resources. The City of Rialto municipal water system provides potable, non-potable, and recycled water at retail to customers primarily within the City of Rialto and serves approximately one-half of the population of the City. The service area is essentially the incorporated area of the City of Rialto located between Interstate 10 and State Route 210.

Rialto's water supply sources include local surface water from Lytle Creek, groundwater from four local groundwater basins, and water purchased from San Bernardino Valley and delivered through the Baseline Feeder. Surface water treatment of Lytle Creek water is provided by the Oliver P. Roemer Water Filtration Facility owned and operated by WVWD. Rialto owns a portion of the capacity of that plant. Rialto also has an agreement to purchase excess SBB water from SBMWD, when available. Rialto provides wastewater collection and treatment services for its residents and some residents of the City of Fontana through an Extra-Territorial Agreement.

This Plan includes the Rialto UWMP; see Part 2, Chapter 5 for more information.

2.2.1.6 Riverside Highland Water Company

The Riverside Highland Water Company (RHWC) provides domestic and irrigation water services to the City of Grand Terrace, portions of the City of Colton, and portions of the unincorporated areas of the Counties of San Bernardino and Riverside. 51% of RHWC's service area lies within the San Bernardino Valley service area and the remainder is within the service area of Western Municipal Water District (Western). RHWC obtains water from the Lytle Creek Subbasin, the SBB, the Rialto-Colton Subbasin, Riverside North, and Riverside South Basins.

This Plan includes the RHWC UWMP; see Part 2, Chapter 6 for more information.

2.2.1.7 San Bernardino Municipal Water Department

The City of San Bernardino is served by a municipal utility, the San Bernardino Municipal Water Department (SBMWD). SBMWD was created as a municipal utility by the City of San Bernardino Charter. The SBMWD water service area is approximately 45 square miles, providing water to approximately 210,000 persons in the City of San Bernardino and unincorporated areas of San Bernardino County. SBMWD produces all of its water supply from wells in the SBB. In addition to potable water, SBMWD provides wastewater collection and treatment services and is developing a recycled water system for groundwater recharge and non-potable reuse.

This Plan includes the SBMWD UWMP; see Part 2, Chapter 7 for more information.

2.2.1.8 South Mesa Water Company

South Mesa Water Company (SMWC) is a mutual water company, which was established in 1912 as a successor to the earliest land and water companies in the area dating back to the 19th Century. SMWC provides domestic and irrigation water service to its shareholders within its service territory, which comprises a portion of the City of Yucaipa in San Bernardino County and a portion of the City of Calimesa in Riverside County. 55% of SMWC is within SBVMWD's service area in San Bernardino County, and 45% is within San Gorgonio Pass Water Agency's service area in Riverside County. SMWC's water supply includes locally produced groundwater from the Yucaipa Sub-basin, and also groundwater produced from the adjacent adjudicated Beaumont Basin in accordance with SMWC's adjudicated water rights.

This Plan includes the SMWC UWMP; see Part 2, Chapter 8 for more information.

2.2.1.9 West Valley Water District

West Valley Water District (WVWD) is a County Water District, a public agency of the State of California, organized and existing under the County Water District Law (Division 12, Section 30,000 of the Water Code) of the State of California. WVWD provides domestic water service to customers throughout southwestern San Bernardino County and a small portion within northern Riverside County. 92% of WVWD's service area lies within San Bernardino Valley's boundaries (the remainder is in Inland Empire Utilities (IEUA)'s boundaries). WVWD's service area is approximately 31 square miles, serving portions of the Cities of Rialto, Fontana, Colton, and Jurupa Valley, and unincorporated areas of San Bernardino County. WVWD utilizes water from five groundwater basins and treats surface water from Lytle Creek and SWP water at its Oliver P. Roemer Water Filtration Facility.

This Plan includes the WVWD UWMP; see Part 2, Chapter 9 for more information.

2.2.2 Other Regional Water Suppliers

In addition to the Participating Agencies, this RUWMP incorporates data from other agencies within the San Bernardino Valley that rely wholly or partially on the shared water resources analyzed in this Plan. While these agencies are not participants in this RUWMP, their water demands and associated supply needs are included to accurately evaluate regional water supply reliability through 2050.

For the agencies preparing separate 2025 UWMPs, updated projections from their respective 2025 UWMPs were incorporated into this Plan. These agencies are:

- East Valley Water District (EVWD) (wholly within SBVMWD service area)
- Fontana Water Company (FWC) (partially within SBVMWD service area)

- Yucaipa Valley Water District (YVWD) (partially within SBVMWD service area)

Some of the supply projections shown in this RUWMP for YVWD differ from those shown in YVWD's 2025 UWMP. YVWD's 2025 UWMP shows all potentially available supplies and a supply surplus at the retailer level, whereas this RUWMP uses a different approach to the regional supply analysis that focuses on specific supplies that agencies intend to use to meet future demands and evaluates total supply surplus on a regional level. This RUWMP includes assumptions about future supply use for YVWD to align with this regional methodology, but all retailers have the flexibility to modify their supply strategies to meet their demands.

FWC and YVWD also use other supplies from outside the region to meet their demands that are not evaluated in this RUWMP so the analysis in this Plan include only the portion of their demands that are expected to be met by supplies evaluated in this Plan.

For the agencies who are not urban water suppliers and do not prepare UWMPs, their demands and associated supply needs were estimated and incorporated into this Plan based on direct input from the agency, water supply agreements, records of prior water use, or assumed to be the same as projections from the 2020 IRUWMP. These agencies are:

- Bear Valley Mutal Water Company
- Marygold Mutual Water Company
- Muscoy Mutual Water Company
- Western Heights Water Company
- Other Private Pumpers/Users within the Region

2.3 Population and Demographics

2.3.1 Historic Population and Projected Growth in the Region

The population of the Region (San Bernardino Valley service area) has experienced rapid growth in the past. Figure 2-3 shows the Census populations for the Region from 1990 to 2020. The Region grew by approximately 8,000 people each year between 1990 and 2010, which is about 1.4% growth annually for 20 years. Growth from 2010 to 2020 slowed to 0.7% annually. As of the 2020 Census, the total population within the San Bernardino Valley service area was 709,585 people.

As noted above, this RUWMP comprises nine water suppliers, eight of which directly supply water to customers. The 2025 population estimates for each participating agency are provided in Table 2-1. For details on how the population estimate was developed, refer to the agency's corresponding UWMP chapter in Part 2. The total 2025 population for the Region was estimated by summing the estimated 2025 population for each Participating Agency that lies within the SBVMWD boundary (plus YVWD and EVWD who provided 2025 population estimates) and assuming the portion of the population outside these collective boundaries grew at the same rate between 2020 and 2025 (0.68% annually from 2020 to 2025).

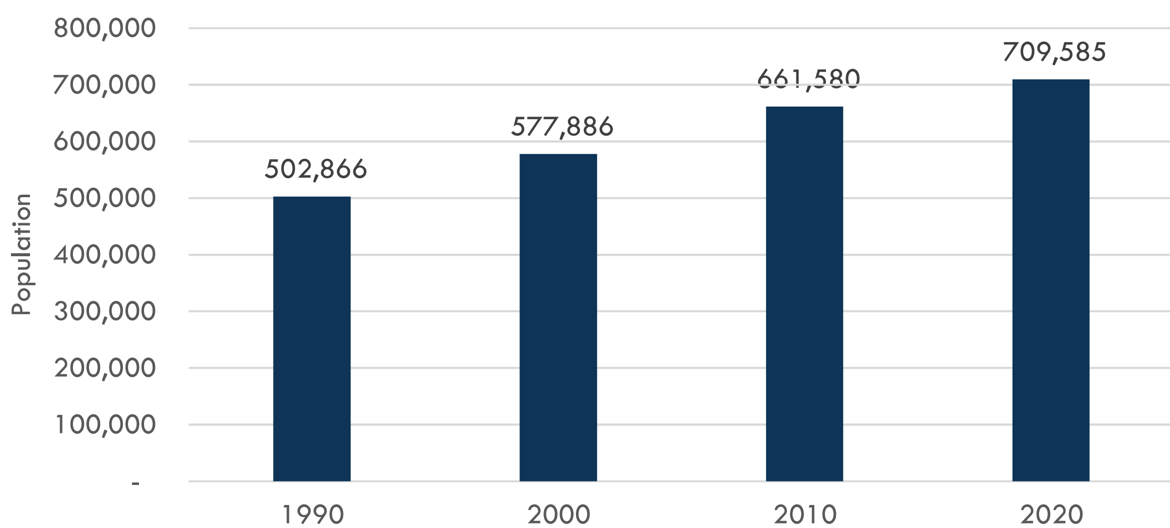

Figure 2-3: San Bernardino Valley Service Area Historic Census Population, 1990-2020

Table 2-1: 2025 RUWMP Population

AGENCY	2025 AGENCY POPULATION ESTIMATE	2025 POPULATION ESTIMATE WITHIN SBVMWD
City of Colton	49,038	49,038
City of Loma Linda	26,273	26,273
City of Redlands	84,183	84,183
City of Rialto	59,264	59,264
Riverside Highland Water Company (51% in SBVMWD)	24,467	12,566
San Bernardino Municipal Water Department	207,872	207,872
South Mesa Water Company (55% in SBVMWD)	12,761	7,007
West Valley Water District (92% in SBVMWD)	96,123	87,972
Non-Participating Areas within SBVMWD		199,712
Total RUWMP 2025 Population for SBVMWD		**733,887**

2.3.2 Future Population Projections in the Plan Area

The Southern California Association of Governments (SCAG) has developed a growth forecast for the 2024 Connect SoCal Regional Transportation Plan (2024 RTP). The 2024 RTP includes population, households, and employment projections for the SCAG region for years 2019, 2035, and 2050 across approximately 13,062 transportation analysis zones (TAZs) within the SCAG region. These forecasts are based on land use data, the 2020 Census, and the Cycle 6 Regional Housing Needs Assessment (RHNA).

In 2022, SCAG launched the Local Data Exchange (LDX), a tool where jurisdictions can directly input their data. This change has increased data input, participation, and validation for the 2019, 2035, and 2050 projections. SCAG's projections undergo extensive local review, incorporating zoning information from city and county general plans, input from local planners and jurisdictions, and coordination with local or regional land use authorities.

SCAG publishes jurisdiction- and TAZ-level data as GIS shapefiles of their projections on a granular local level. These values were used to derive a SCAG population growth rate for the Region by intersecting the SCAG GIS data with the San Bernardino Valley service area.

SCAG's 2024 population growth projections have declined from the last Connect SoCal RTP in 2020, due to ongoing economic impacts of COVID-19, pandemic-related death increases, increasingly negative net domestic migration, decline in births, and near-zero level of foreign immigration. SCAG's 2024 update uses a 2019 base year and incorporates a broader data range from 2016 to 2022, capturing key post-COVID shifts in population, employment, and household trends.

While 2024 SCAG projects slower growth, the result still shows an increase in population within the San Bernardino Valley service area, which is estimated to grow by about 100,000 people by 2050 from a 2020 Census value of 709,585. By 2050, the San Bernardino Valley service area is expected to have a population of approximately 810,000 people, per SCAG. This population projection trend is shown in Table 2-2. Table 2-3 shows SCAG projections of households and employment for the San Bernardino Valley service area.

Table 2-2: SCAG Population Projection for the San Bernardino Valley Service Area (Not Used)

	2025	2030	2035	2040	2045	2050
Population	**723,975**	**737,697**	**751,420**	**771,510**	**791,600**	**811,689**
Average Annual % Increase		0.4%	0.4%	0.5%	0.5%	0.5%
Annual Average Change, per year		2,745	2,745	4,018	4,018	4,018

Table 2-3: Households and Employment Projection for the San Bernardino Valley Service Area

	2025	2030	2035	2040	2045	2050
Households	**222,821**	**235,338**	**247,856**	**256,576**	**265,297**	**274,018**
Average Annual % Increase		1.1%	1.0%	0.7%	0.7%	0.6%
Annual Average Change, per year		2,503	2,503	1,744	1,744	1,744
Employment	**314,459**	**329,949**	**345,439**	**356,329**	**367,219**	**378,109**
Average Annual % Increase		1.0%	0.9%	0.6%	0.6%	0.6%
Annual Average Change, per year		3,098	3,098	2,178	2,178	2,178

A separate set of population projections was also made for San Bernardino Valley that based on the total of the population projection forecasts of the agencies within it. In general, participating agencies in this Plan forecasted population based on known upcoming developments and SCAG's household growth rate, assuming a consistent rate of persons per household in the future. This led to higher population projections than SCAG projected, as shown by comparing Table 2-4 to Table 2-2. The population projections in Table 2-4 are used for this RUWMP.

Table 2-4: Population Projection for the San Bernardino Valley Service Area with Local Agency Input (Official)

	2025	2030	2035	2040	2045	2050
Population	**733,887**	**762,280**	**782,611**	**805,910**	**829,974**	**847,127**
Average Annual % Increase		0.76%	0.53%	0.59%	0.59%	0.41%
Annual Average Change, per year		5,679	4,066	4,660	4,813	3,430

As shown in Figure 2-4, future population is expected to increase at a similar but slower rate, compared to previous estimates from the 2020 IRUWMP, which were based on SCAG's 2020 RTP.

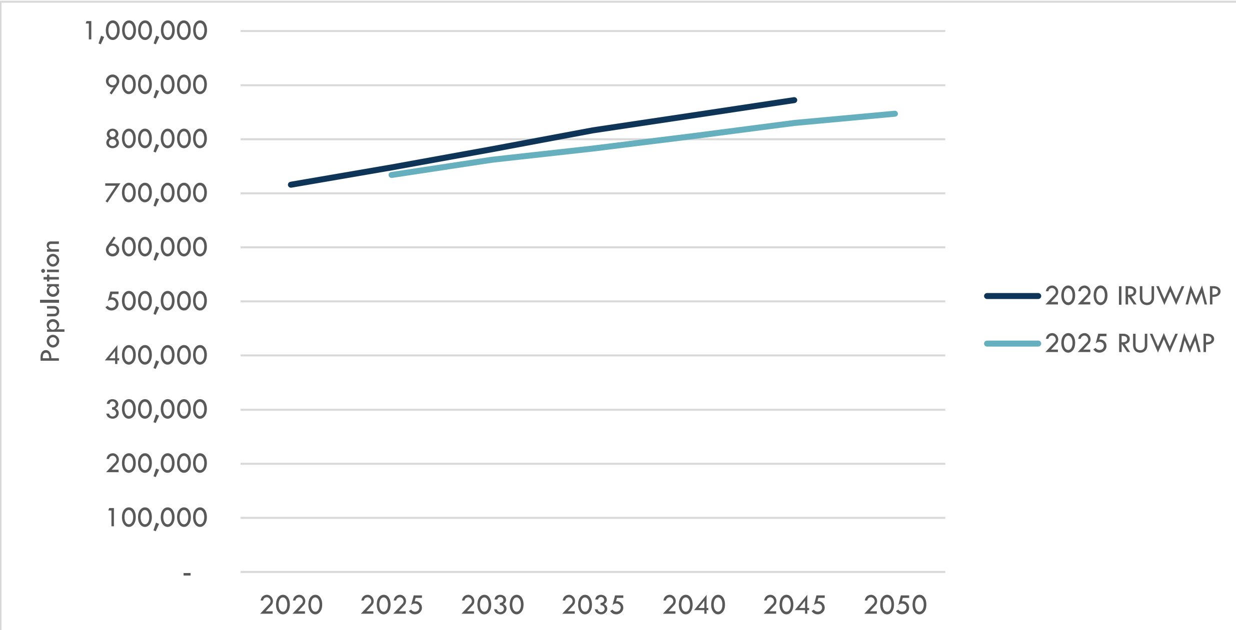

Figure 2-4: Population Projection for the San Bernardino Valley Service Area with Local Agency Input (Official)

2.3.3 Economic Condition and Social and Cultural Composition of the Region

Like most communities in Southern California, the Region has seen a continued increase in population and change in the economic base as agricultural and vacant land is replaced with residential housing, leading to urban and service sector jobs.

Much of the population growth of the Region since the 1970s is linked with the economies of Los Angeles and Orange Counties because they are within commuter range, and the housing prices in the Region are more affordable. Also, population growth over the past three decades is attributed to a marked increase in immigration from Mexico, Latin America, and the Pacific Rim.

Before the COVID-19 pandemic, employment in the Inland Empire was increasing at a steady pace, according to California's Employment Development Department and U.C. Riverside School of Business Center for Economic Forecasting. The latest economic briefing from SCAG for San Bernardino County notes that in 2025, the economy advanced more slowly. The unemployment rate increased slightly to 5.9%, similar to the entire SCAG region. The Inland Empire added 6,400 nonfarm jobs and 14,600 jobs. SCAG projections indicate that unemployment may continue to rise and job growth may slow down due to political and social impacts (Southern California Association of Governments, December 2025).

According to the State of Workers in the Inland Empire 2025 (Inland Empire Labor and Community Center, 2025) report prepared by the Inland Empire Labor and Community Center at UC Riverside, the Inland Empire workforce is younger, more racially diverse, and more heavily concentrated in low-wage sectors compared to the rest of California. A significant portion of the workforce lacks access to colleges, universities, and other skills-training opportunities, which contributes to continued employment in low-wage industries and limits opportunities for upward mobility.

The Inland Empire also exhibits a strong commuter dynamic, with many residents traveling to neighboring regions such as Orange, Los Angeles, and San Diego counties for employment. Nearly 25 percent of Inland Empire residents commute to other parts of California for work. In addition, shifts following the COVID-19 pandemic have resulted in 12 percent of workers engaging in remote work arrangements.

While the Inland Empire shares several major industries with the broader Southern California region, warehousing and truck transportation are especially prominent. Construction and educational services also rank among the region’s leading industries. Overall, the Inland Empire economy remains highly reliant on logistics-related employment.

2.4 Land Uses

The Region recognizes the importance of collaboration between land use planning and water resources management. Within the Region, local planning is conducted by counties, cities, local agencies, and special districts. San Bernardino County, cities, and water agencies within the Region coordinate as part of the San Bernardino Countywide Vision Process. Part of this process involves collaboration between water resource managers and land use planners on the water element to create mutually beneficial opportunities that ensure adequate water supplies and quality to support future population and economic growth within the County.

Additionally, SCAG prepares demographic forecasts based on land use data through an extensive process that emphasizes input from local planners in coordination with local or regional land use authorities, incorporating essential information to reflect anticipated future populations and land uses. SCAG's projections undergo extensive local review, incorporate zoning information from city and county general plans, and are supported by Environmental Impact Reports. The future water needs for the Region evaluated in this Plan are informed by SCAG's population, housing and employment growth projections are therefore rooted in regional land use planning.

Figure 2-5 presents the current land use within the Region based on SCAG's regional land use dataset. The total area of the Region is approximately 225,675 acres, of which 69,500 acres, or about 31%, are covered by the national forest located in the easterly and northerly areas of the Region. Single family residential makes up the next largest land use of approximately 21%, followed by specific plan designations of 11%.

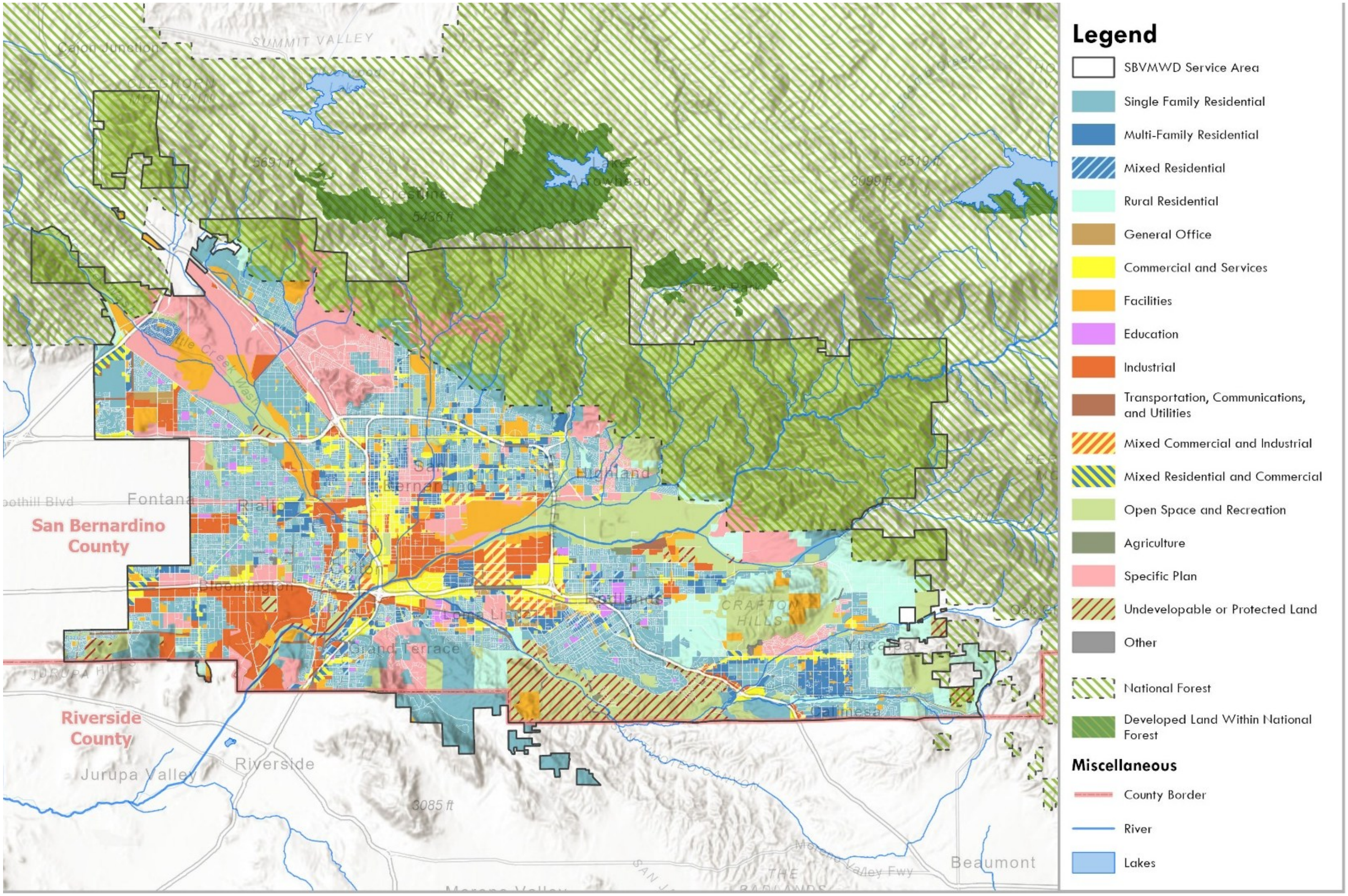

Figure 2-5: Land Use within the Region

2.5 Regional Climate

2.5.1 Current Regional Climate

Climate in the Region is characterized by relatively hot, dry summers and cool winters with intermittent precipitation. The largest portion (73%) of average annual precipitation occurs during December through March and rainless periods of several months are common in the summer. Precipitation is nearly always in the form of rain in the lower elevations and mostly in the form of snow above about 6,000 feet mean sea level (msl) in the San Bernardino Mountains. Mean annual precipitation ranges from about 12 inches in the vicinity of Riverside, to about 20 inches at the base of the San Bernardino Mountains, to more than 35 inches along the crest of the mountains.

The historical record indicates that period of below-average precipitation can last more than 30 years, such as the dry period that extended from 1938 to 1968. As shown by precipitation data in Figure 2-6, the Region has been experiencing an ongoing drought since 1999, indicated by a long-term downward trend in the Precipitation Index, except for a few wet years.

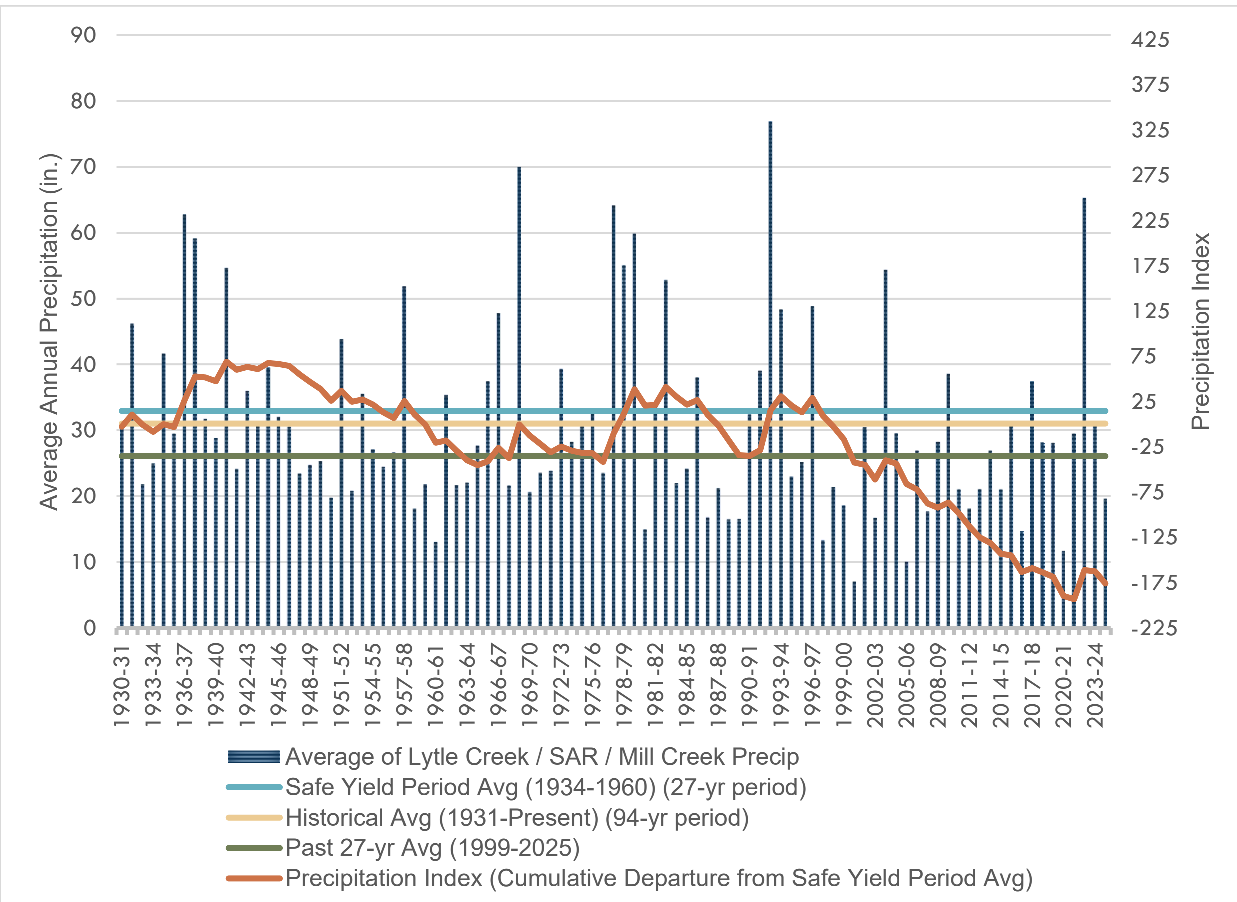

Figure 2-6: San Bernardino Basin Precipitation Index

2.5.2 Potential Effects of Climate Change

Climate change modeling for the SAR watershed suggests that a changing climate will have multiple effects on the Region. Adaptation and mitigation measures will be necessary to account for these effects to maintain long term water supply reliability.

San Bernardino Valley completed a Climate Adaptation and Resilience Plan (2024 CARP) in 2024 to strengthen water reliability and address existing and future climate change impacts. The 2024 CARP identified the following key climate risks for the San Bernardino Valley service area (San Bernardino Valley, 2024):

- **Drought:** Drought duration and intensity is expected to increase in the future, limiting water supply, increasing water demand and straining local groundwater resources and ecosystems.
- **Extreme Heat:** Extreme heat events are projected to become more common, which will lead to more frequent regional power disruptions, increased wildfire risk, increased evapotranspiration, higher water demand, and degraded ecosystems.
- **Wildfire:** Wildfire events are expected to become more likely in the future, which will increase the risk of damaged infrastructure, operational disruptions, power outages, and damaged ecosystems, particularly in the Upper SAR Watershed.
- **Extreme Precipitation and Flooding:** Extreme precipitation and flooding events are projected to become more likely, increasing landslide, soil erosion and mudflow, and liquefaction risk in certain locations.
- **Sea Level Rise:** Climate impacts to the SWP, including wildfire, reduced snowpack, sea-level rise, and increased temperatures, may disrupt SWP operations and infrastructure and will increase the variability and risk of imported water deliveries.
- **Landslides:** Landslides can be triggered by an increase in the frequency and severity of wildfire and heavy precipitation events that threaten assets and infrastructure situated on or near slopes, particularly at the hills and valley interface.

Additionally, the State's Cal-Adapt website provides a number of tools to use to estimate the effects of climate change at a local level. The Cal-Adapt Extreme Heat tool shows that in the future the number of days over 95°F will increase in multiple locations. The Region chose three cities with different temperature ranges to compare the increase across the upper watershed. The cities of Riverside, San Bernardino and Big Bear were used to see the projections of the number of days that would be above 95°F and the results are shown in Table 2-5. The numbers of high temperature days in Riverside and San Bernardino are believed to double between the present and 2070. Similar increases in temperature can be anticipated throughout the inland valleys. These increased temperature levels will increase water demands across the watershed mainly for agricultural and irrigation purposes. Although not projected to be above 95°F, higher temperature days in Big Bear have the potential to affect the forest ecosystem and the snow related recreational activities in the area.

Table 2-5: Average Number of Days per Year Exceeding 95°F

CITY	OBSERVED HISTORICAL (1961-1990)	2050	2070
Riverside	39	81	96
San Bernardino	30	68	82
Big Bear	0	0	0

Source: Cal-Adapt, Extreme Heat Days & Warm Nights tool: https://cmip5.cal-adapt.org/tools/extreme-weather/. Accessed June 2025; the link has been updated since it was accessed. Scenario: RCP 4.5. Threshold temperature: 95°F. Models: Default GCMs.

The forest ecosystems in the San Bernardino National Forest are currently on the decline. Alpine and subalpine forests are anticipated to decrease in area by fifty to seventy percent by 2100. It is believed that increased greenhouse gas emissions are a primary factor contributing to the decline of these fragile ecosystems. Wildfire risk is anticipated to increase particularly in the urban-wildland interface communities. Wildfires can pose serious threats not only to forest ecosystems, but also to critical water infrastructure. More frequent wildfires may also increase sediment and contaminant flows within the watershed, consequently degrading the quality of surface water bodies that are an important part of the ecosystem and Region's water supply.

While high elevation ecosystems decrease, the severity of future floods is likely to increase. The likelihood of a 200-year storm event or longer is anticipated to be significantly higher in 2070. This increases the potential for negative impacts on nearby infrastructure. Furthermore, storms are expected to be more severe but less frequent. Despite these assumptions, the aftermath of a severe storm is highly variable. It is known that there are significant variabilities in the results of storm severity.

In addition to changes in ecosystems and storm severity, warmer temperatures may also decrease the annual amount of snow fall and increase the instance of rain in higher elevations. This alteration of precipitation type is likely to cause negative impacts for snow related recreational activities characteristic of the area's ski resorts. From a local standpoint, Big Bear and Snow Valley both lie below 3000 m and are anticipated to experience a decline in snowpack by 2070. Furthermore, it is projected that there will be a decrease in overall winter precipitation of the area by 2070, which will impact mountain runoff and surface water availability, which is an important part of the Region's water supply.

On a larger scale, the increased temperatures could affect the Sierras in a similar way, threatening the reliability of the SWP. Water quality could also suffer due to changes in precipitation and rising temperatures. Potential impacts such as increased contaminant concentrations and algal growth could increase water treatment needs.

Regional efforts to mitigate the effects of climate change on water supply reliability are discussed in Chapter 5.0.

3.0 Regional Water Sources and Management

This Section describes the current and planned water resources available within the region for the 25-year period covered by the Plan. Management of the various water sources is also described, including legal judgements and regional management groups.

IN THIS SECTION

- Imported Water
- Groundwater
- Surface Water
- Recycled Water
- Other Supplies
- Water Quality
- Planned Projects

Securing a reliable water supply is the primary mission of San Bernardino Valley and the Participating Agencies. The Region relies on a diversified portfolio of water supplies to meet the needs of its residential, commercial, and institutional customers. The Region's water supply portfolio consists of imported water, local groundwater, local surface water and recycled water. This chapter describes the current and planned water resources available to the Region through 2050. It also details the management frameworks – including legal judgments, Watermasters, and regional agreements – that govern how these resources are extracted, stored, and shared among the agencies. Table 3-1 provides a high-level overview of the water sources currently utilized by each agency and producer within the San Bernardino Valley service area.

Table 3-1: Overview of Water Sources Used by Retail Agencies in the Region

AGENCY	GROUNDWATER	IMPORTED WATER DIRECT DELIVERIES	LOCAL SURFACE WATER	RECYCLED WATER
Participating Agencies				
City of Colton	✓			
City of Loma Linda	✓			
City of Redlands	✓	✓	✓	✓
City of Rialto	✓		✓	✓
Riverside Highland Water Company	✓			
San Bernardino Municipal Water Department	✓			✓
South Mesa Water Company	✓			
West Valley Water District	✓	✓	✓	
Other Retail Agencies				
East Valley Water District	✓	✓	✓	
Fontana Water Company	✓	✓	✓	✓
Yucaipa Valley Water District	✓	✓	✓	✓
Other Water Agencies				
Bear Valley Mutual Water Company	✓	✓	✓	
Private Parties	✓		✓	

3.1 Imported Water

Imported water from the California State Water Project (SWP), is available to the Region from the East Branch through San Bernardino Valley, the Region's State Water Contractor.

San Bernardino Valley is the fifth largest State Water Contractor, with an annual entitlement of 102,600 AF. SBVMWD takes delivery of SWP water at the Devil Canyon Afterbay. From this location, SBVMWD can deliver water to the west via the Devil Canyon – Azusa Pipeline (owned by San Gabriel Valley Municipal Water District and that SBVMWD owns conveyance capacity within) or to the east via the Foothill Pipeline (owned by SBVMWD). SBVMWD can also deliver to YVWD and San Gorgonio Pass Water Agency through the East Branch Extension of the SWP downstream of the Foothill Pipeline.

San Gorgonio Pass Water Agency is downstream of SBVMWD on the East Branch of the California Aqueduct. See the San Gorgonio Pass Water Agency 2025 UWMP for more information. SBVMWD and the SGPWA coordinate work as they both share capacity along the East Branch Extension. Two retail water districts included in this plan (YVWD and SMWC) are co-located within the SBVMWD and SGPWA service areas. In addition to operating some mutually used facilities, the SBVMWD and SGPWA have an agreement in place to share excess imported supplies when available, which is included in Part 3 Appendix B.

Metropolitan provides SWP water to portions of the Region through their member agencies, Western and Inland Empire Utilities Agency (IEUA). Western does not currently deliver imported water to its retail agencies within the Region but may in the future. FWC and WVWD are co-located within both the SBVMWD and IEUA service areas and FWC uses imported water from both IEUA and SBVMWD.

In 2021, SBVMWD entered into a new Coordinated Operating Agreement (COA) with Metropolitan that would sell them most of SBVMWD's surplus imported water; this COA replaced the previous version that expired in 2016. One of the terms of the COA requires Metropolitan to offer 50% of any surplus water purchased under this agreement to their member agencies in the SARCCUP Program. The COA is included in Part 3 Appendix B. Metropolitan and its member agencies that are part of the SARCCUP have also developed a companion agreement that describes how SARCCUP will function within Metropolitan's existing policies.

3.1.1 SWP Overview

Imported water is available to the Region from the California State Water Project (SWP), which is the largest state-built, multi-purpose water project in the country; it is paid for by the 29 State Water Contractors, including SBVMWD, SGPWA and MWDSC and operated and maintained by DWR. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. Its main purpose is to capture and store water at Lake Oroville and distribute it to the 29 State Water Contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and

Southern California. Of the contracted water supply, approximately 70 percent goes to urban users and 30 percent goes to agricultural users. The SWP makes deliveries to two-thirds of California's population. The SWP is also operated to improve water quality in the Sacramento-San Joaquin Delta, control Feather River flood waters, provide recreation, and enhance fish and wildlife.

The SWP includes 34 storage facilities, reservoirs, and lakes, 20 pumping plants, four pumping-generating plants, five hydro-electric plants, and approximately 701 miles of aqueducts and pipelines. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Water 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. The aqueduct then divides into the East and West Branches.

Each SWP contractor's SWP Water Supply Contract includes a "Table A," which lists the maximum amount of water an agency is entitled to throughout the life of the contract. The Table A amount is each contractor's proportionate share, or "allocation," of the SWP water supply. However, actual deliveries of SWP water each year vary, based mainly on the amount of precipitation (for other factors, see Section 3.1.2 below).

While the primary supply of water available from the SWP is allocated Table A supply, SWP supplies in addition to Table A water are periodically available, including "Article 56C" carryover water, "Article 21" water, "Article 57" water from other State Water Contractors via the Water Management Tool, and DWR "Dry Year Purchase Programs". Pursuant to the long-term water supply contracts, SWP contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year (Article 56C) with advance notice when they submit their initial request for Table A water, or within the last three months of the delivery year. The carryover program was designed to encourage the most efficient and beneficial use of water and to avoid obligating the contractors to "use or lose" the water by December 31 of each year. The water supply contracts outline the criteria for carrying over Table A water from one year to the next. Normally, carryover water is water that has been exported during the year, has not been delivered to the contractor during that year, and has remained stored in the SWP share of San Luis Reservoir to be delivered during the following year. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs.

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.

In wet periods, the amount of water available may exceed the amount of storage in the SWP system. During these times, State Water Contractors may have excess SWP water. San Bernardino Valley has agreements, in place, to sell surplus water to SGPWA and Metropolitan Water District of Southern California.

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 SWP. In 2019 DWR initiated planning and environmental review for a single tunnel Delta Conveyance Project (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 2027 and additional steps are needed before construction can start by 2030. DCP will potentially be operational in 2050 following extensive planning, permitting and construction.

3.1.2 Imported Water Supply Reliability

This section presents the imported water supply reliability assumptions used in San Bernardino Valley's water supply reliability analysis to meet the requirements of the UWMP Act.

The amount of SWP water delivered to State Water Contractors in a given year depends on a number of factors, including the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time. Regulatory constraints have changed over time, becoming more restrictive. The last 15 years of SWP deliveries to San Bernardino Valley are presented in Table 3-2.

Table 3-2: Historical State Water Project Deliveries to San Bernardino Valley and Final SWP Table A Allocations

CALENDAR YEAR	TOTAL DELIVERIES (AF)	FINAL TABLE A ALLOCATION
2010	30,310	50%
2011	29,129	80%
2012	40,216	65%
2013	31,020	35%

CALENDAR YEAR	TOTAL DELIVERIES (AF)	FINAL TABLE A ALLOCATION
2014	19,223	5%
2015	35,430	20%
2016	62,600	60%
2017	78,396	85%
2018	44,307	35%
2019	78,478	75%
2020	23,504	20%
2021	16,822	5%
2022	12,781	5%
2023	61,756	100%
2024	76,914	40%
2025	70,190	50%

Note: As of 1/29/26, the 2026 Table A allocation is at 30%, but has not yet been finalized for 2026.

3.1.2.1 Normal Year and Long-Term State Water Project Availability

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 2025 Draft DWR State Water Project Delivery Capability Report (DCR), in December 2025. In this update, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2025 UWMPs.

The 2025 DCR includes DWR's estimates of SWP water supply availability under both existing (2025) and future conditions (2043). The 2025 DCR also included three climate change scenarios that impact future conditions based on the percent level of concern (LOC) projected by 2043, which vary change in temperature, change in average precipitation, change in precipitation intensification, and sea level rise. Of the three scenarios (50%, 75%, and 95% LOC), the 75% LOC was chosen for this report to represent future SWP water supply availability.

The following is a plain-language description excerpt from the Draft 2025 DCR:

The 75th percentile LOC scenario represents a 2043 worse-than-average future for the SWP. It includes the following changes relative to current conditions:

- *1.7°C (~3°F) temperature increase.*
- *Similar average precipitation.*
- *12% increase in the 99th percentile daily precipitation event (more intensity).*
- *30 cm (~12 in) of sea level rise at the Golden Gate Bridge.*

Land use is representative of existing levels of development and regulations are represented by current regulations, including the 2019 US Fish and Wildlife Service and National Marine Fisheries Service biological opinions, its associated Incidental Take Permit, and the 2018 addendum to the Coordinated Operations Agreement between the SWP and Central Valley Project. Ongoing processes, such as the Agreements to Support Healthy Rivers and Landscapes and the 2021 Reinitiation of Consultation for Long-Term Operations of the Central Valley Project and State Water Project, are not included in the modeling.

Users of this scenario should assume that current climate model simulations indicate that actual 2043 climate conditions would have about a 25% change of being worse than the conditions represented in this scenario. Put another way, there is an approximate 25% chance that planning to only *this scenario would leave an agency under-planned and potentially under prepared for the actual climate change conditions to which they need to operate. This scenario may be considered a moderate risk aversion scenario, as it provides significantly more challenging future conditions than the 50th percentile LOC but does not provide the most extreme planning conditions.*

Based on the 75th percentile LOC, long-term average SWP deliveries are 54% under current conditions and 46% under 2043 conditions. In-between and out years were calculated using linear interpolation. Long-term average SWP deliveries represent both the long-term average and normal year supply conditions and are presented in Table 3-3.

Table 3-3: SWP Long-term Average (1922-2021) Modeled Anticipated Table A Allocations to San Bernardino Valley

STATE WATER PROJECT SUPPLIES	2025	2030	2035	2040	2045	2050
% of Table A Amount Available	54%	51%	49%	46%	43%	41%
Anticipated Deliveries (AFY)	55,404	52,668	49,932	47,196	44,460	41,724

Source: 2025 Draft DWR Delivery Capability Report

3.1.2.2 Dry Year, Multiple Dry Year, and Wet Year State Water Project Availability

DWR's 2025 Delivery Capability Report indicates that the modeled single dry year SWP water supply allocations for 1977, 2014, and 2021 are 6%, 8%, and 10% under existing conditions. Under 75th percentile LOC 2043 conditions, the allocations are 1%, 6%, and 7%, respectively. Historically, the lowest final SWP allocations were 5% in 2014, 2021, and 2022.

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 SWP water supply allocation were unusual, however extremely low precipitation in 2021 and 2022 led to additional years of 5% allocations. San Bernardino Valley's UWMP assumes 5% for all future single dry years.

For consecutive dry years, this Plan assumes conditions from the 6-year drought period 1929-1934. For wet years, this Plan assumes conditions from 2017. Single dry, multiple dry, and wet year SWP allocations are presented in Table 3-4 and the modeled range of water supply availability by year used in each scenario is shown in Figure 3-1. Note that the values in Figure 3-1 are based on "existing conditions" and not the 75% level of concern climate change scenario, so these values will be higher than the values chosen for the UWMP analysis in Table 3-4.

Table 3-4: Estimated SWP Table A Supply Reliability in Dry, Multiple Dry, and Wet Years

State Water Project Supplies	2025	2030	2035	2040	2045
Single Dry Year (2014, 2021, 2022)					
% of Table A Amount Available	5%	5%	5%	5%	5%
Anticipated Deliveries (AFY)	5,130	5,130	5,130	5,130	5,130
Multiple Dry Year (1929-1934)					
% of Table A Amount Available	15%	14%	14%	14%	14%
Anticipated Deliveries (AFY)	15,105	14,820	14,535	14,250	13,965
Wet Year (1983)					
% of Table A Amount Available	84%	83%	83%	82%	82%
Anticipated Deliveries (AFY)	86,184	85,158	85,158	84,132	84,132

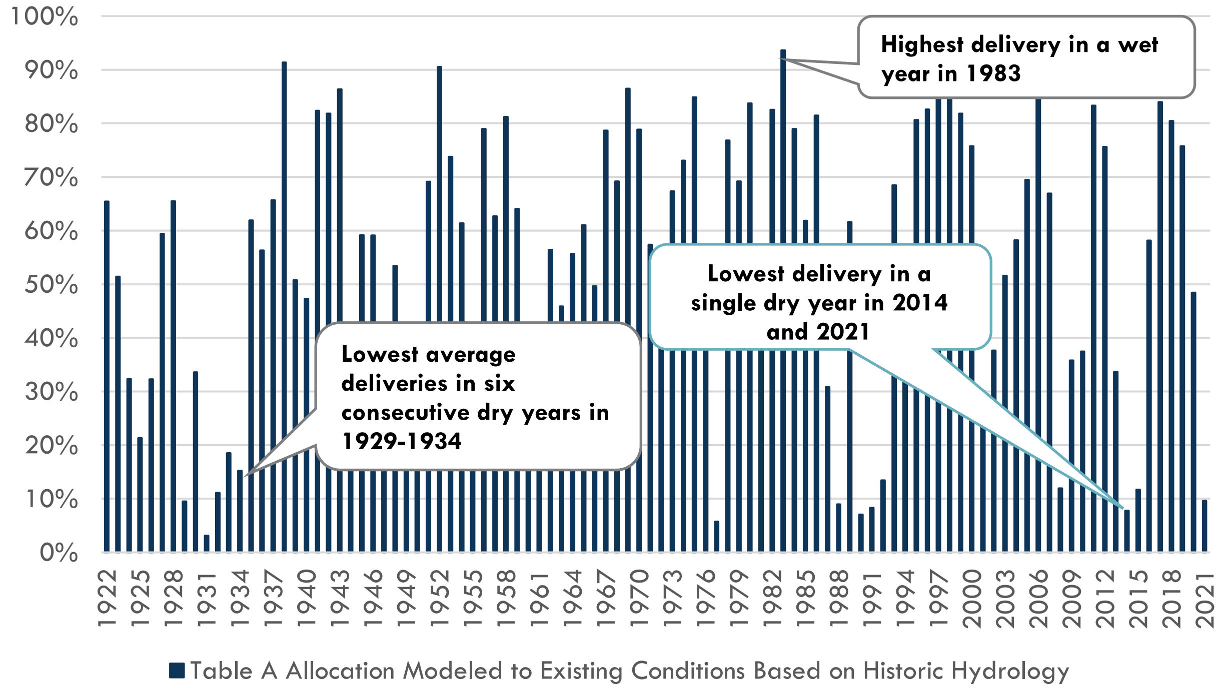

Figure 3-1: Modeled SWP Table A Availability for Dry Year, Six Consecutive Dry Years, Wet Year, Based on Historical Hydrologic Data and Existing Conditions

3.1.3 Sites Reservoir and Delta Conveyance Project

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 in wet, normal, dry, and critically dry years when Shasta Dam releases and/or unregulated flow from tributaries between Keswick Dam and Sites Reservoir diversion points exceed minimum flow requirements. Typically, releases will be made during dry periods, but some releases will be made in all years types (Sites Project Authority, 2023). Sites Reservoir also will accommodate exchanges between Lake Shasta and Sites, and Lake Oroville and Sites. The proponents of Sites Reservoir include 31 entities including San Bernardino Valley, who has made financial contributions to its planning and development. As a financial contributor to the project, SBVMWD would receive a share of deliveries to South of Delta agencies.

The final EIS/EIR for Sites Reservoir has been approved. Sites Reservoir is funded through a combination of state and federal funding, including California Proposition 1 (2014), Water Infrastructure Improvements for the Nation Act (WIIN), Infrastructure Investment and Jobs Act (IIJA), and an Environmental Protection Agency Water Infrastructure Finance and Innovation Act (WIFIA) loan, as well as funding support from project participants.

The Delta Conveyance Project (DCP) is a proposed water supply tunnel beneath the Delta that would add two additional diversion structures on the Sacramento River, north of the Delta, to work in combination with the South of Delta diversion facility at Clifton Court Forebay near Tracy to allow DWR increased operational flexibility when moving SWP water to State Water Contractors South of the Delta. By diverting water further up river, the salinity levels are less impacted by sea level rise, leading to reduced carriage water losses used to manage salinity at the current intakes. The Benefit-Cost Analysis of the Delta Conveyance Project report suggests that the DCP would increase long-term average total SWP Table A allocations by 403,000 AFY (approximately 9 percentage points) (Berkeley Research Group, 2024). The DCP forecasted operation date is after 2050, so it is outside the scope of this RUWMP.

Sites Reservoir and the DCP would increase SWP supplies over the long-term average, leading to more groundwater recharge, and would decrease the likelihood of SWP curtailments in direct deliveries to local agencies during dry years. Based on CalSIM3 modeling done in March 2026, the estimated long-term average deliveries from Sites Reservoir to SBVMWD are 11,200 AFY.

For purposes of this Plan, it is estimated that the Sites Reservoir Project will begin producing delivery benefits for San Bernardino Valley in 2040. DWR estimates of SWP supply reliability in its 2025 Delivery Capability Report are based on existing facilities, and do not include the proposed Sites Reservoir. For supply projections made for years 2030 through 2035, it is assumed that SWP reliability is equal to values shown in Table 3-3 (for normal years) and Table 3-4 (for dry, consecutive dry, and wet years). For supply projections made for years 2040 and beyond, 11,200 AFY deliveries from Sites Reservoir are included for normal years and single dry years. For the five consecutive dry year scenario, it is assumed that SBVMWD will have 50,000 AFY in storage at the beginning of the period and will use 10,000 AFY in each of the five dry years (Table 3-5). Section 5.1 discusses Sites Reservoir impacts to water supplies in more detail.

Table 3-5: Sites Reservoir Yield to SBVMWD

Year Type	Sites Reservoir Yield
Long-Term Average	11,200 AFY
Normal Year	11,200 AFY
Single Dry Year	11,200 AFY
Five Consecutive Dry Years	10,000 AFY

3.1.4 General Imported Water Strategy

As described in Section 3.1.1, there are several programs that give SBVMWD flexibility to increase deliveries above the Table A allocation in a given year, including the use of carry over water. As urban contractor demands increase in the future, the amount of water turned back and available for purchase will likely diminish. In critical dry years, DWR has formed Dry Year

Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased by DWR from willing sellers in areas that have available supplies and is then sold by DWR to contractors willing to purchase those supplies. Because the availability of these supplies is somewhat uncertain and do not represent a large quantity of water, they are not included as supplies available to San Bernardino Valley in this Plan. However, San Bernardino Valley's access to these supplies when they are available may enable it to improve the reliability of its SWP supplies in extremely dry years to help meet its direct delivery demands. The main strategy San Bernardino Valley will use to supplement supplies in dry years is wet year water stored in local groundwater basins and water banks. San Bernardino Valley is already implementing conjunctive use in the SBB and there are plans to develop additional conjunctive use programs.

3.2 Groundwater

Local precipitation that runs off as surface water and soaks into the ground, called "groundwater", meets about 80% of the demand of participating agencies in an average year. This section provides a description of local groundwater and surface water management in the San Bernardino Valley, including court judgments, groundwater management plans, and groundwater pumping rights. The groundwater basins utilized by agencies in the region are depicted in Figure 3-2.

3.2.1 Regional Groundwater and Surface Water Management

There are several court judgments, agreements, settlements and groundwater management plans that apply to multiple groundwater basins and surface water supplies in the region. These broader regional water management frameworks are described in this section and additional court judgments and agreements that apply only to a single basin are described in the applicable subsection for that basin.

3.2.1.1 Western Judgement & Orange County Judgment

The Western Judgment, entered simultaneously with the Orange County Judgment, proportioned the water resources within the upper Santa Ana River watershed amongst the residents of the watershed.

The Orange County Judgment ensures minimum flows in the Santa Ana River to Orange County and the Western Judgment generally provides for:

- A determination of safe yield of the San Bernardino Basin Area (SBBA) at 232,100 AFY, which includes surface water from the SAR, Mill Creek and Lytle Creek.
- Allocation of 27.95 percent of the safe yield, which equates to 64,862 AFY, to the Plaintiffs (agencies within Riverside County or Riverside Entities). An obligation of the non-plaintiff parties (agencies within San Bernardino County or San Bernardino Entities) to provide replenishment anytime their cumulative extractions exceed 72.05 percent of the safe yield, which equates to 167,238 AFY, but no limit on total extractions.
- An obligation of the Riverside Entities to replenish the Colton Basin Area and the Riverside North Basins if extractions for use in Riverside County in aggregate exceed the amount recorded during the base period (1959-1963), which was 3,381 AFY and 21,085 AFY, respectively.
- An obligation of the San Bernardino Entities to replenish the Colton Basin Area and Riverside North Basin Areas if water levels are lower than 822.04 MSL in specified index wells.

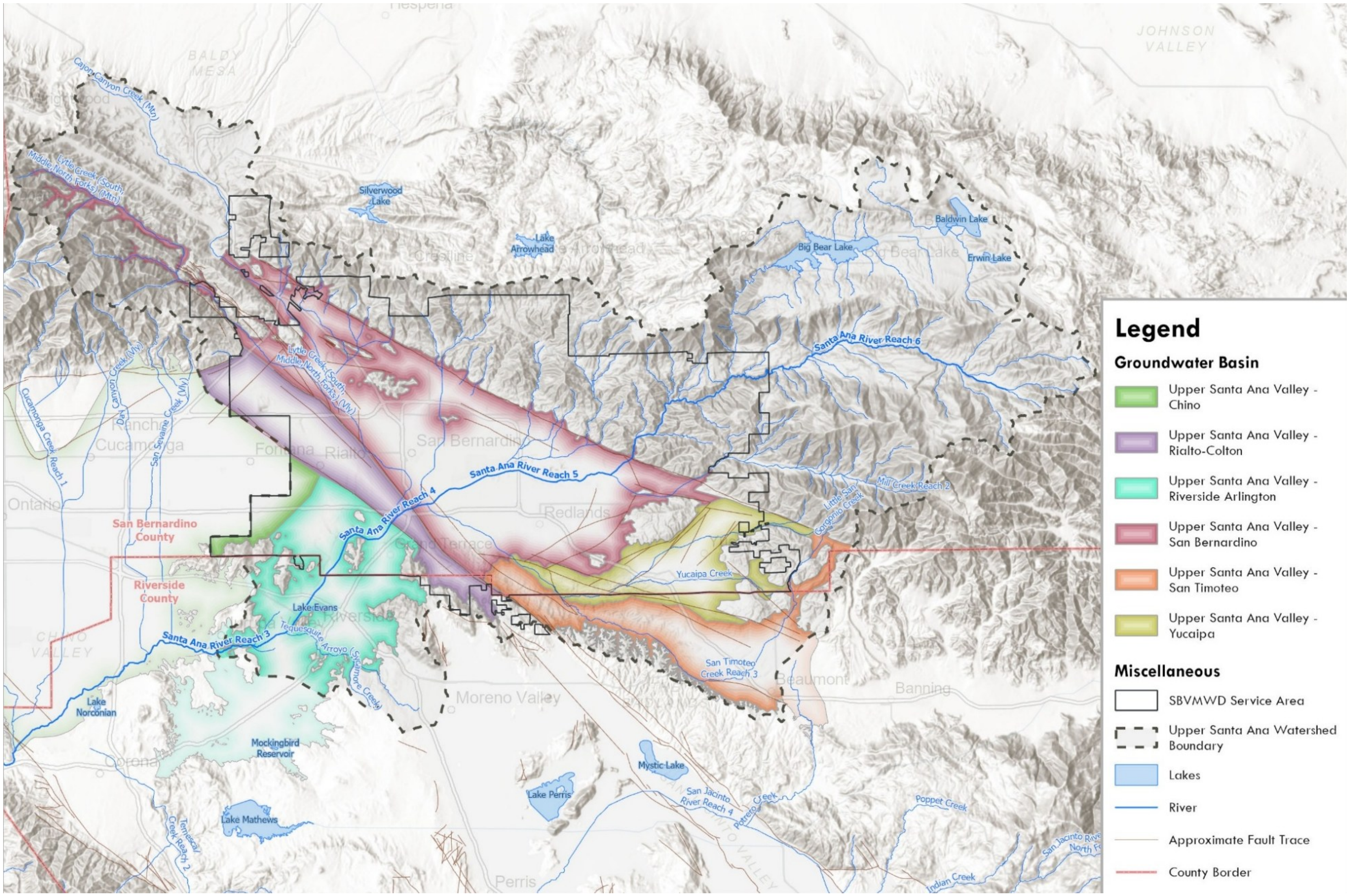

Figure 3-2: Groundwater Basins of the Region

The Riverside Entities include the City of Riverside (the successor to the Riverside Water Company and the Gage Canal Company), Riverside Highland Water Company, Meeks & Daley Water Company, and Regents of the University of California and each have an assigned fixed pumping right based on an allocation of the safe yield for the Riverside Entities. According to the Western Judgment, the Riverside Entities must not extract more than their respective portions of the safe yield on a 5-year average basis, adjusted for any net gains or losses of water to the SBBA. San Bernardino Entities do not have individual assigned pumping rights and are collectively allowed to extract more than their portion of the safe yield. The Judgment requires the San Bernardino Entities to provide replenishment water whenever the cumulative extractions exceed the cumulative safe yield. If the cumulative extractions are less than the cumulative safe yield, a “credit” is earned. When cumulative extractions are greater than the cumulative safe yield, a “debit” is taken. To date, the cumulative extractions have been less than the cumulative safe yield since the judgment was signed so that the San Bernardino Entities have never been required to recharge the basin under the terms of the Western Judgment.

San Bernardino County Entities are represented by San Bernardino Valley and Riverside County Entities are represented by Western Municipal Water District (Western). The Judgments establish a Watermaster to be responsible, on behalf of the numerous parties bound thereby, for ensuring implementation of the judgments. The Watermaster for the Western Judgment is made up of one representative from San Bernardino Valley and Western.

The Western Judgment contemplates that the parties will develop “new conservation” which is defined as any increase in replenishment from natural precipitation which results from operation of works and facilities not in existence as of 1969, other than works installed to offset losses from flood control channelization. The Western Judgment specifies that the parties to the Judgment have the right to participate in any new conservation projects, provided they pay the appropriate share of the cost. The net effect of new conservation is an increase in safe yield for both the Plaintiffs and non-Plaintiffs. A copy of the Western Judgment is provided in Part 3 Appendix B.

In 2013, both the Plaintiffs and Non-Plaintiffs agreed to participate in the cost to capture some of the water that historically flowed to the ocean. This New Conservation was due to the construction and operation of the Seven Oaks Dam. The 2015 Annual Report for the Western-San Bernardino Annual Report effectively increases the safe yield for both Parties as shown in Table 3-6.

Table 3-6: Adjusted SBBA Rights Due to New Conservation Allocation

Parties	Percentage	Safe Yield Allocation (AF)	New Conservation Allocation (AF)	Adjusted Right (AF)
Non- Plaintiffs	72.05%	167,238	5,507	172,745
Plaintiffs	27.95%	64,862	2,136	66,998
City of Riverside		52,199	1,719	53,918
Riverside Highland Water Company		4,294	141	4,435
Meeks & Daley Water Company		7,833	258	8,091
Regents of the University of California		536	18	554
Total Sum of Extractions	100%	232,100	7,643	239,743

The Western-San Bernardino Watermaster provides an annual accounting of both the plaintiff and non-plaintiff extractions and a comparison to the safe yield. . As of the accounting performed for the 2025 Annual Western-San Bernardino Watermaster Report, the Non-Plaintiffs have 623,692 AF of net credit accumulated in the SBB and are, therefore, not required to recharge. Although there is no recharge requirement under the Judgment, the San Bernardino Entities have continued to recharge the SBB voluntarily since 1973.

Orange County Judgment

In 1963, the Orange County Water District (OCWD) filed suit against substantially all water users in the area tributary to Prado Dam seeking adjudication of water rights on the Santa Ana River. The litigation ultimately involved over 4,000 served water users and water agencies, the four largest of which were OCWD, San Bernardino Valley, Western, and the Chino Basin Municipal Water District (now the Inland Empire Utilities Agency). Given the magnitude of the potential litigation, these four districts and other parties developed a settlement that was approved by the Orange County Superior Court in a stipulated judgment entered on April 17, 1969, Orange County Water District v. City of Chino et al., Case No. 117628 (Orange County Judgment). The Orange County Judgment imposes a physical solution that requires parties in the upper Santa Ana River watershed to deliver a minimum quantity of water to points downstream including Riverside Narrows and Prado Dam. A provision of the Orange County Judgment related to conservation establishes that, once the flow requirements are met, the Upper Area parties "may engage in unlimited water conservation activities, including spreading, impounding, and other methods, in the area above Prado Reservoir". The Orange County Judgment is administered by the five-member Santa Ana River Watermaster that reports annually to the court and the four representative agencies. San Bernardino Valley, the Inland Empire Utilities Agency, and Western nominate one member each to the Watermaster, OCWD nominates two members, and members are appointed by the court. A copy of the Orange County Judgment is provided in Part 3 Appendix B.

3.2.1.2 Seven Oaks Accord

On July 21, 2004, San Bernardino Valley, Western, the City of Redlands, EVWD, Bear Valley Mutula Water Company (BVMWC), Lugonia Water Company, North Fork Water Company, and Redlands Water Company signed a settlement agreement known as the Seven Oaks Accord (Accord). The Accord calls for San Bernardino Valley and Western to recognize the prior rights of the water users up to 88 cubic feet per second from the natural flow of the Santa Ana River. In exchange, the water users agreed to withdraw their protests to the water right application submitted by San Bernardino Valley on behalf of itself and Western. All the parties to the Accord have agreed to support the granting of other necessary permits to allow San Bernardino Valley and Western to divert water from the Santa Ana River for direct use, groundwater recharge, or exchanges. By means of the Accord, San Bernardino Valley agreed to modify its water right applications to incorporate implementation of the Accord. Additionally, the Accord requires San Bernardino Valley and Western to develop a groundwater spreading program in cooperation with other parties, "that is intended to maintain groundwater levels at the specified wells at relatively constant levels, in spite of the inevitable fluctuations due to hydrologic variation". As part of compliance with the Seven Oaks Accord, the BTAC has prepared a Regional Water Management Plan annually since 2008.

3.2.1.3 Annual Regional Water Management Plan and Cooperative Recharge

As discussed in Section 1.1.2, the BTAC was formed by the first IRWMP to implement the IRWMP and provide a forum to discuss technical issues regarding water management. BTAC works cooperatively and strives to make decisions by consensus. Currently, BTAC meets quarterly or as needed.

Each year, BTAC develops the Regional Water Management Plan that is considered by the two agencies that make up the Western Watermaster: San Bernardino Valley and Western Municipal Water District. The plan generally establishes a recharge threshold to ensure water levels do not increase liquefaction potential or move contamination plumes. The primary purpose of the Plan is for the coordinated use of available water resources and to cooperatively manage recharge without causing undesirable impacts. Since 2020, BTAC members have recharged over 180,000 acre-feet of local stormwater, recycled water, and SWP water largely through facilities operated by the San Bernardino Valley Water Conservation District and the San Bernardino County Flood Control District.

The latest version of the BTAC Regional Water Management Plan is available at http://www.sbvmwd.com/about-us/local-water-conditions.

3.2.2 San Bernardino Basin

The San Bernardino Basin (SBB) boundary used in this Plan is the California Department of Water Resources (DWR) Bulletin 118 Boundary for the San Bernardino subbasin (8-002.06) of the Upper Santa Ana Valley Region. The SBB was previously referred to by DWR as the Bunker Hill subbasin until 2018, when the name was formally changed to the San Bernardino subbasin. The majority of the northeastern and southeastern boundaries of the SBB coincide with the groundwater adjudication boundary in the 1969 Western-San Bernardino Judgment (Western Judgment), which refers to the “San Bernardino Basin Area” or SBBA, as discussed in Section 3.2.1.1.

The SBB has a surface area of approximately 141 square miles and lies between the San Andreas and San Jacinto faults. The basin is bordered on the northwest by the San Gabriel Mountains and Cucamonga fault zone; on the northeast by the San Bernardino Mountains and San Andreas fault zone; on the east by the Banning fault and Crafton Hills; and on the south by a low, east-facing escarpment of the San Jacinto fault and the San Timoteo Badlands. Alluvial fans extend from the base of the mountains and hills that surround the valley and coalesce to form a broad, sloping alluvial plain in the central part of the valley.

3.2.2.1 Lytle Creek Sub basin

Lytle Creek Basin is part of the SBB, and it is not identified as a separate sub-basin in DWR Bulletin 118; however, the sub basin is an integral part of the Upper Santa Ana Valley Groundwater Basin. Historically, local agencies have recognized Lytle Creek sub basin as a distinct groundwater sub basin, and it is subject to a separate court judgement as described in the following section. In the Western Judgment, the Bunker Hill and Lytle Creek sub basins are combined into the SBBA. The 1969 Western Judgment did not incorporate, supersede, or reopen the 1924 Lytle Creek Basin Judgment. The Lytle Creek Basin remains governed by its own adjudication, although it is commonly grouped within the SBBA for administrative, hydrologic, and reporting purposes.

However, the three separate water-bearing zones and intervening confining zones of the Bunker Hill sub basin are not observed in the Lytle sub basin. Sediments within the Lytle sub basin are, for the most part, highly permeable, and the aquifer has a high specific yield. High permeability and specific yield tend to result in an aquifer that responds rapidly to changes in inflow (precipitation and streamflow) and outflow (groundwater pumping, streamflow, and subsurface outflow).

Lytle Creek sub basin is adjoined on the west by the Rialto-Colton sub basin along the Lytle Creek fault, and on the east and southeast by the Bunker Hill sub basin along the Loma Linda fault and Barrier G. The northwestern border of the sub basin is delineated by the San Gabriel Mountains, and runoff from the mountains flows south/southeast through Lytle and Cajon Creeks into the basin.

Numerous groundwater barriers are present within Lytle Creek sub basin, resulting in six compartments within the sub basin. Barriers A through D divide the northwestern portion of the sub basin into five sub-areas and the southeastern portion of the sub basin comprises the sixth sub-area. Barrier F divides the northwestern sub-areas from the southeastern sub-area. Studies have shown that the groundwater barriers are less permeable with depth. When groundwater levels are high during wet years, more leakage occurs across the barriers than when groundwater levels are lower (i.e., during dry years). The amount of pumping in each sub-area, in large part, controls the movement of groundwater across the barrier within the older alluvium but not the younger alluvium.

3.2.2.1.1 1924 Lytle Creek Basin Judgment

The Lytle Creek Basin Judgment (1924 Judgment) was issued by the Superior Court of San Bernardino County on January 28, 1924, in *City of San Bernardino v. Fontana Water Co. et al*. (Judgment No. 17030). The judgment establishes a foundational legal framework governing groundwater rights and related surface water operations within the Lytle Creek Region, a defined area downstream of Lytle Creek Canyon.

The judgment was intended to resolve competing claims among municipal, private, and mutual water companies. Consistent with adjudicated basin practice, it did not create new water rights, but instead recognized and quantified existing rights as they existed at the time. Importantly, the judgment incorporates and builds upon prior surface water rights established under the 1897 McKinley Decree, while focusing more directly on the allocation and management of groundwater resources.

The 1924 Judgment defines the Lytle Creek Region as a geographically bounded area influenced by flows from Lytle Creek and recognizes the hydraulic connection between surface flows and groundwater within this region. Groundwater is treated as a shared resource, with quantified extraction rights assigned to a defined group of appropriators.

A key operational feature of the judgment is the regulation of diversions at the Fontana Power Company intake. The decree imposes conditions to ensure that sufficient flows continue downstream into the Lytle Creek channel and wash, particularly during variable flow conditions. These provisions are intended to support natural groundwater recharge through spreading in the creek’s alluvial system. During certain periods (including the winter season), flows are prioritized to meet downstream domestic and irrigation needs, with excess water allowed to pass for recharge when available.

To oversee implementation, the judgment established a five-member Watermaster committee, responsible for administering the decree, including oversight of diversion practices and recharge activities. Administration of these responsibilities continues today through successor entities, including the Lytle Creek Water Conservation Association, which coordinates basin operations among the parties.

The 1924 Judgment assigns quantified groundwater rights to twelve appropriators, expressed in “miner’s inches,” with one inch defined as a continuous flow equal to 1/50 of a cubic foot per second. The original appropriators primarily consisted of water companies and a limited number of public entities, including:

- City of San Bernardino
- City of Colton
- Rialto Domestic Water Company (rights later acquired by the City of Rialto)
- Fontana-related water companies
- Citizens Water Company
- Riverside Highland Water Company
- Terrace Water Company
- Rancheria Water Company
- Other mutual water companies
- One identified individual appropriator (James Barnhill)

While the 1924 Judgment remains an important component of water rights administration in the area, it functions as part of a broader legal and operational framework that has evolved over time, including subsequent adjudications and modern groundwater management practices. A copy of the 1924 Judgment is provided in Part 3, Appendix B.

3.2.3 Rialto-Colton Sub basin

The Rialto-Colton sub basin (DWR 8-02.04) underlies a portion of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. This sub basin is about 10 miles long and varies in width from about 3.5 miles in the northwestern part to about 1.5 miles in the southeastern part. This sub basin is bounded by the San Gabriel Mountains on the northwest, the San Jacinto fault on the northeast, the Badlands on the southeast, and the Rialto-Colton fault on the southwest. The Santa Ana River cuts across the southeastern part of the basin. The basin generally drains to the southeast, toward the Santa Ana River. Warm and Lytle Creeks join near the southeastern boundary of the basin and flow to meet the Santa Ana River near the center of the southeastern part of the sub basin.

The principal natural recharge areas are Lytle Creek, Reche Canyon in the southeastern part, and the Santa Ana River in the south-central part. Lesser amounts of recharge are provided by percolation of precipitation to the valley floor, underflow, and irrigation and septic returns. Underflow occurs from fractured basement rock and through the San Jacinto fault in younger Santa Ana River deposits at the south end of the sub basin and in the northern reaches of the

San Jacinto fault system. Groundwater recharge has historically been augmented through the use of spreading basins, however the original spreading basins used are no longer in operation due to ineffectiveness. The region is working on new spreading basins at the Cactus Basins east of the former Rialto Airport.

The groundwater extractions in the Rialto-Colton sub basin are governed by the Rialto Basin Decree, the Rialto Basin Settlement Agreement, and the Western Judgment. The basin was adjudicated under the 1961 Decree No. 81,264 of the Superior Court of San Bernardino County and is managed by the Rialto Basin Management Association (stipulated parties of the judgment). The Rialto Basin Decree only provides the rights of the stipulated parties to pump out of the Rialto Basin, which is an area defined within the Decree that is smaller than the Rialto-Colton sub basin and includes only a portion of the northwestern half of the Rialto-Colton Basin. The boundary of the Rialto Basin is described in the Rialto Decree as Exhibit 1. A copy of the Rialto Basin Decree is provided in Part 3 Appendix B.

When the basin's three index wells (WVWD Well No. 11, and 16, and Rialto's Well 4) have average mean groundwater level elevations above 1002.3 feet mean sea level (msl) when measured during March, April, or May, the stipulated parties have no restrictions on yearly extractions. When the average standing water levels in the three index wells falls below 1002.3 feet msl but is above 969.7 feet msl, the Rialto Basin Decree stipulated parties are restricted to total extraction rights of 15,290 AFY distributed amongst the parties as shown in Table 3-7.

When the average of the three index wells drops below 969.7 feet msl, ground water extractions are reduced for all parties stipulated in the decree by 1 percent per foot below the 969.7-foot level, but not to exceed 50-percent reduction. Historic reductions to adjustable rights are summarized in Table 3-8.

Table 3-7: 1961 Decree Adjudicated Rights to the Rialto Basin

Member	Adjustable Rights	Fixed Rights	Total Rights	Water Rights Allocation Percentage
Colton	3,010	890	3,900	25%
Rialto	2,846	1,520	4,366	29%
WVWD	5,594	510	6,104	40%
FUWC	550	370	920	6%
Total	12,000	3,290	15,290	100%

Table 3-8: Historic Reductions to Pumping Rights in the Rialto Decree Area

Water Year	% Reduction
2009-10	7
2010-11	14
2011-12	19
2012-13	17
2013-14	27
2014-15	32
2015-16	30
2016-17	31
2017-18	38
2018-19	39
2019-20	29
2020-21	29
2021-22	40
2022-23	41
2023-24	49
2024-25	50

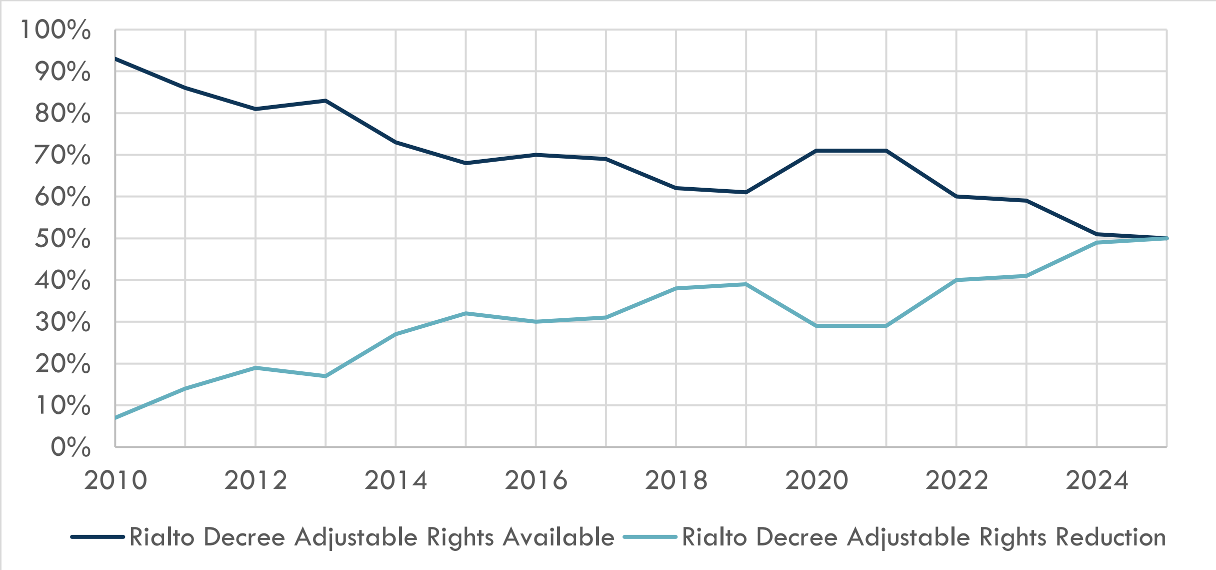

Figure 3-3: Rialto Decree % Adjustable Pumping Rights Reductions

Fontana Water Company and the City of Rialto extract water from a small area referred to as "No Man's Land" that is outside the boundary of the Rialto Basin in the 1961 Decree but is still believed to be within the Rialto-Colton sub basin. In 2018, Rialto, Colton, WVWD, San Bernardino Valley, Cucamonga Valley Water District, and Fontana Water Company entered into a Settlement Agreement that resulted in Fontana's No Man's Land production of 5,014-acre feet/year being counted as part of the Rialto Basin production limits in the 1961 Decree in addition to the total established decree rights of 15,290 AFY. The Settlement Agreement also obligates Fontana Water Company to recharge 61,000 acre-ft of supplemental water into the Rialto Basin. San Bernardino Valley agreed to facilitate obtaining and delivering up to 61,000 acre feet of replenishment water to recharge the Rialto Basin using the proceeds of a Replenishment and Sustainability Assessment (RSA), paid by the Fontana Water Company on an annual basis. Per the intent of the agreement, the replenishment water must be from an imported water source "outside" of San Bernardino Valley's SWP Table A allocation, unless San Bernardino Valley declares a portion of its Table A surplus. Furthermore, the agreement contemplated that San Bernardino Valley may accomplish the replenishment by means of exchanges, in-lieu recharge, direct recharge, direct delivery or other means reasonably acceptable to the settlement parties. The rights of the parties of the Settlement Agreement to extract water from the Rialto Basin based on the 1961 Decree and the Settlement Agreement are provided in Table 3-9. As part of the Settlement Agreement, these parties also agreed to form a Rialto Basin Groundwater Council (RBGC), which was established in February 2021.

The purposes of the RBGC is to provide for the funding, integration, and coordination of managing the Rialto Basin groundwater supply, including maintenance of conveyance and groundwater recharge facilities, and developing groundwater management strategies with other agencies in the region (Rialto Basin Groundwater Council, 2025). A Draft Rialto Basin Groundwater Management Plan (GWMP) has been developed to evaluate Rialto Basin conditions and perform hydrogeologic modeling analysis of current and potential future conditions. Preliminary results indicate that groundwater replenishment is needed to raise groundwater levels and reverse reduced water rights allocation from year to year.

Table 3-9: 2018 Settlement Agreement Updated Adjudicated Rights to the Rialto Basin

Member	Adjustable Rights	Fixed Rights	No Man's Land Adjustable Rights	Total Rights	Water Rights Allocation Percentage
Colton	3,010	890	0	3,900	19%
Rialto	2,846	1,520	0	4,366	22%
WVWD	5,594	510	0	6,104	30%
FUWC	550	370	5,014	5,934	29%
Total	12,000	3,290	5,014	20,304	100%

The Rialto-Colton sub basin is named the "Colton Basin Area" in the Western Judgment.

The Western Judgment requires the average lowest static water levels in three index wells in the Rialto-Colton Basin and Riverside North Basins to be no lower than 822.04 feet above msl. If the water levels fall below 822.04 feet above msl, the non-plaintiffs are obligated to recharge the basin with imported water or reduce extractions. Extractions by the plaintiffs are limited to 3,381 AFY.

The safe yield for the Rialto-Colton Basin was not defined by the Western Judgment or the Rialto Basin decree. For the purpose of the supply reliability analysis in this Plan, the available supply from the Rialto-Colton Basin for the San Bernardino Entities is assumed to be equal to their Base Period Production (1959-1963) in the Western Judgment, which was 8,235 AFY. However, the Western Judgment does not limit pumping so extractions can exceed this value. The groundwater elevations in the three index wells fell below the threshold of 822.04 feet above msl from 2018 to 2022 but have since increased to 852.93 feet above msl as of calendar year 2024 so no recharge is required and current extractions can continue. However, understanding the increasing variability in the frequency and quantity of precipitation in the region, the Watermaster agencies continue to work towards long-term sustainability of the basins. In addition to the Judgment-provided actions to achieve compliance, San Bernardino Valley and Western Water are working cooperatively to develop a response plan with specific actions to increase water levels in the Colton and Riverside North Basin Areas. Actions in the

Plan will be triggered when the static level in the key wells falls below San Bernardino Valley's replenishment threshold in the Judgment.

Riverside Highland Water Company is considered a Riverside County Entity in the Western Judgment, and its production is capped at 227 AFY, its portion of the 3,381 AFY extraction limit specified in the judgment.

3.2.4 Riverside-Arlington Sub basin

The Riverside-Arlington sub basin, (DWR 8-02.03) underlies part of the Santa Ana River Valley in northwest Riverside County and southwest San Bernardino County. This sub basin is bounded by impermeable rocks of Box Springs Mountains on the southeast, Arlington Mountain on the south, La Sierra Heights and Mount Rubidoux on the northwest, and the Jurupa Mountains on the north. The northeast boundary is formed by the Rialto-Colton fault, and a portion of the northern boundary is a groundwater divide beneath the community of Bloomington. The Santa Ana River flows over the northern portion of the sub basin. Annual average precipitation ranges from about 10 to 14 inches. The Riverside-Arlington sub basin is replenished by infiltration from Santa Ana River flow, underflow past the Rialto-Colton fault, intermittent underflow from the Chino sub basin, return irrigation flow, and deep percolation of precipitation.

The Western Judgment includes the Riverside Basin Area which consists of a portion of the Riverside-Arlington sub-basin upstream of Riverside Narrows. Groundwater extractions in the Riverside North Groundwater Basin (the portion of the Riverside Basin Area in San Bernardino County) are governed by the Western Judgment. Extractions from the Riverside North Basin by Riverside County Entities are limited to 21,085 AFY by the Judgment. Extractions by San Bernardino County Entities are unlimited, provided that water levels at three index wells in the Rialto-Colton and Riverside North Basins stay above 822.04 feet above msl. For the purpose of the supply reliability analysis in this Plan, the available supply from the Riverside Arlington Basin for the San Bernardino Entities is assumed to be equal to their Base Period Production (1959-1963) in the Western Judgment, which was 9,609 AFY. However, the Western Judgment does not limit pumping so extractions can exceed this value. As described for the Rialto-Colton Basin, the groundwater elevations in the three index wells were above the recharge threshold as of calendar year 2024 so no recharge is required and current extractions can continue.

Riverside Highland Water Company is considered a Riverside County Entity in the Western Judgment, and its production in Riverside North is capped at 3,752 AFY, its portion of the 21,085 AFY extraction limit specified in the judgment. The Riverside County Entities can also extract a total of 29,663 AFY from Riverside South, of which Riverside Highland Water Company is entitled to 555 AFY.

3.2.5 Yucaipa Sub basin

The Yucaipa sub basin (DWR 8-02.07) underlies the southeast part of San Bernardino Valley. It is bounded on the northeast by the San Andreas fault, on the northwest by the Crafton fault, on the west by the Redlands fault and the Crafton Hills, on the south by the Banning fault, and on the east by the Yucaipa Hills. The average annual precipitation ranges from 12 to 28 inches. This part of the San Bernardino Valley is drained by Oak Glen, Wilson, and Yucaipa Creeks south and west into San Timoteo Wash, a tributary to the Santa Ana River.

Natural recharge to the sub basin is from percolation of precipitation and infiltration within the channels of overlying streams, particularly Yucaipa and Oak Glen Creeks; underflow from the fractures within the surrounding bedrock beneath the sub basin; and artificial recharge of local stormwater and imported water at spreading grounds.

The Yucaipa Subbasin is a DWR high-priority groundwater basin and is subject to SGMA. In July 2017, San Bernardino Valley, the City of Calimesa, City of Redlands, San Gorgonio Pass Water Agency (Pass), South Mesa Water Company, South Mountain Water Company, Western Heights Water Company, City of Yucaipa, and Yucaipa Valley Water District formed the Yucaipa Sustainable Groundwater Management Agency (Yucaipa-SGMA) under the Sustainable Groundwater Management Act (SGMA). The City of Calimesa and the City of Redlands later withdrew from the Yucaipa SGMA. The Yucaipa-SGMA Groundwater Sustainability Plan (GSP) was completed in January 2022 and received approval from DWR in January 2024.

The Yucaipa GSP evaluated supplies and demands on the basin, established sustainability goals including recharge obligations to address any shortages between supplies and demands, and identified management actions and impacts of the GSP. The GSP establishes a framework for how the basin will be managed collaboratively by all entities who rely upon the basin.

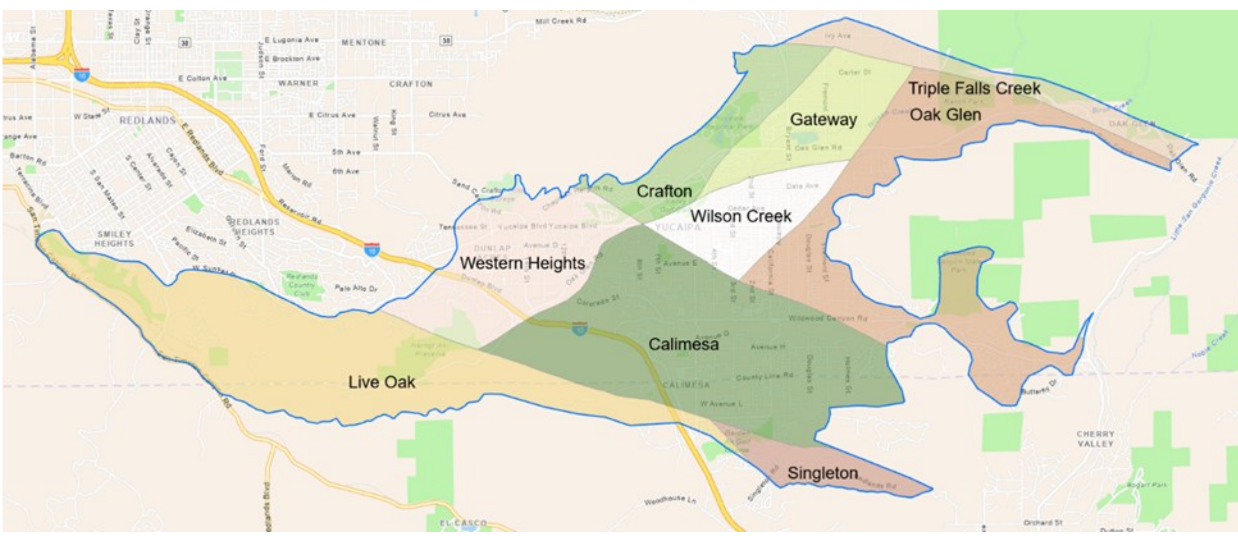

Figure 3-4: Yucaipa Basin Groundwater Management Zones

3.2.6 San Timoteo Sub basin

The San Timoteo Sub basin (DWR 8-02.08) is largely outside of the San Bernardino Valley service area but is one of the sources used by YVWD and SMWC (SMWC produces groundwater from the adjudicated Beaumont Basin area discussed below). The San Timoteo sub basin underlies Cherry Valley and the City of Beaumont in southwestern San Bernardino and northwestern Riverside counties. The sub basin is bounded to the north and northeast by the Banning fault and impermeable rocks of the San Bernardino Mountains, Crafton Hills, and Yucaipa Hills; on the south by the San Jacinto fault; on the west by the San Jacinto Mountains; and on the east by a topographic drainage divide with the Colorado River hydrologic region. The surface is drained by Little San Gorgonio Creek and San Timoteo Canyon to the Santa Ana River. Average annual precipitation ranges from 12 to 14 inches in the western part to 16 to 18 inches in the eastern part of the sub basin.

Holocene-age alluvium, which consists of unconsolidated clay, silt, sand, and gravel, is the principal water-bearing unit in this sub basin. The alluvium, which is probably thickest near the City of Beaumont, thins toward the southwest and is not present in the central part of the sub basin. The Pliocene-Pleistocene-age San Timoteo Formation consists of alluvial deposits that have been folded and eroded. These deposits are widely distributed and principally composed of gravel, silt, and clay, with comparatively small amounts of calcite-cemented conglomerate. The clasts are chiefly granitic, with lesser amounts of volcanic and metamorphic pebbles and cobbles. The total thickness of the San Timoteo Formation is estimated to be between 1,500 and 2,000 feet, but logs of deep wells near the central part of the sub basin indicate water-bearing gravels to depths of only 700 to 1,000 feet.

The Banning and Cherry Valley faults and two unnamed faults in the northeast part of the sub basin offset impermeable basement rocks, stepping down to the south. Water levels change across the Banning fault, dropping 100 to 200 feet to the south. In the western part of the sub basin, water levels drop to the south about 75 feet across the Loma Linda fault and about 50 feet across the San Timoteo barrier. In the northeastern part of the sub basin, water levels drop to the south across two unnamed faults. Each of these faults appears to disrupt groundwater movement in the sub basin.

Groundwater is replenished by subsurface inflow and percolation of precipitation, runoff, wastewater discharge, and imported water. Runoff and imported water are delivered to streambeds and spreading grounds for percolation. The San Timoteo Subbasin is not adjudicated, and reliable estimates of total groundwater extractions are not available. However, water table elevations within the San Timoteo Subbasin have not declined over the years which is likely due to the constant flow of treated wastewater from YVWD that flows through San Timoteo Creek.

The San Timoteo Subbasin was originally designated by DWR as a medium-priority groundwater basin subject to SGMA. In 2017, the San Timoteo Groundwater Sustainability Agency was formed by a Memorandum of Agreement (MOA) between the City of Redlands, SGPWA, BCVWD and YVWD to manage the non-adjudicated portion of the San Timoteo Subbasin. In 2018, Eastern Municipal Water District submitted a Basin Boundary Modification Request for the San Timoteo Subbasin that was subsequently approved by DWR.

In 2019, the basin was reprioritized as a very low priority by DWR and therefore preparation of a GSP is not required by SGMA, but encouraged and authorized. In 2020, a revised MOA was adopted by YVWD, the City of Redlands, BCVWD and the City of Banning reforming the San Timoteo GSA to further the shared intent of the parties to maximize funding opportunities, increase transparency and foster cooperation. It was agreed by the Parties of the San Timoteo GSA to establish Management Areas for the GSA for each agency's respective boundaries and to initially create separate GSPs for each Management Area that could be consolidated into a single GSP in the event that the priority of the basin is changed by DWR and a GSP is required. The lead agency for each management area, shown in Figure 3-5, is independently responsible for the development of a GSP for their respective Management Areas. The parties agreed to work together and with local stakeholders to carry out the policy, purposes, and requirements of SGMA within the boundaries of the San Timoteo GSA.

The adjudicated portion of the San Timoteo Subbasin, the Beaumont Basin Adjudicated Area, is managed by the Beaumont Basin Watermaster and not the San Timoteo GSA, as discussed in the following section.

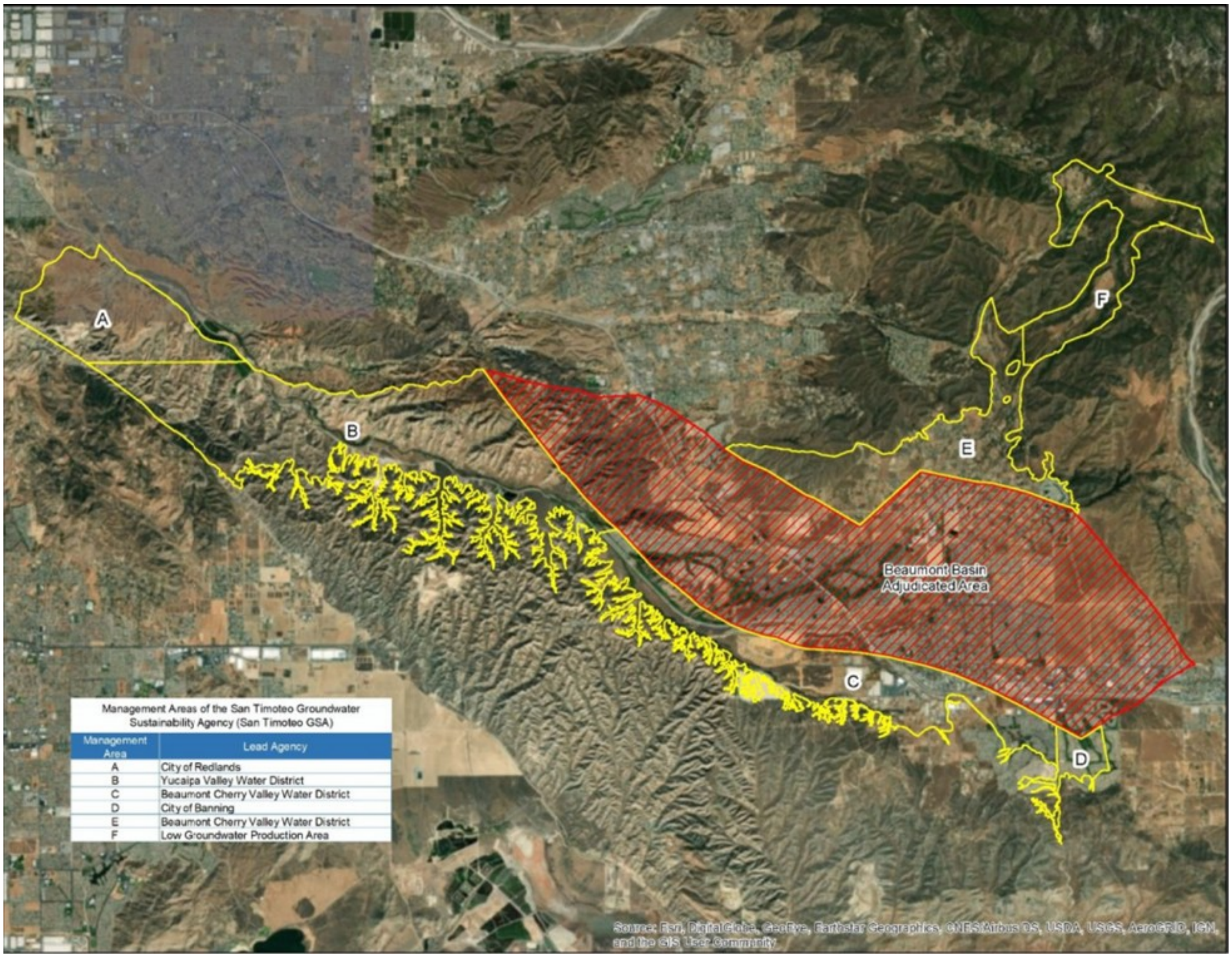

Figure 3-5: San Timoteo Subbasin Management Areas

3.2.6.1 Beaumont Groundwater Basin

DWR considers the Beaumont Groundwater Basin to be composed of two other groundwater basins, primarily the San Timoteo sub basin of the Upper Santa Ana Valley Groundwater Basin (DWR 8-02.08) and the San Gorgonio Pass Sub basin (No. 7-21.04). Locally, the Beaumont Basin is treated as a distinct basin. The Beaumont Basin is one of the sources used by YVWD and SMWC.

The Beaumont Basin is located in northwestern Riverside County, south of the Yucaipa Basin. The basin eventually drains to San Timoteo Creek, a tributary of the Santa Ana River, and covers approximately 26 square miles. Groundwater elevations generally slope from the northeast to southwest in the basin.

Groundwater within the basin is predominantly found in Holocene age alluvium and in the San Timoteo Formation. While the San Timoteo Formation extends to depths in excess of 1,500 feet, water bearing sediments within the Beaumont Basin exist to depths of 700 to 1,000 feet.

Estimates for total groundwater storage capacity within the basin vary. The Beaumont Basin storage capacity is estimated at approximately 1,000,000 AF.

In February 2004, the San Timoteo Watershed Management Authority filed a judgment adjudicating the groundwater rights in the Beaumont Basin and assigned the Beaumont Basin Watermaster (BBW) with the authority to manage the groundwater basin. The Beaumont Basin Watermaster is comprised of managers from the Beaumont Cherry Valley Water District, City of Banning, City of Beaumont, SMWC, and YVWD. The Beaumont Basin Watermaster originally established a long-term yield for the Beaumont Basin of 8,560 AFY. The adjudication of the Beaumont Basin has defined overlying and appropriator pumping rights and also allows for supplemental water to be stored and recovered from the basin.

The safe yield is reevaluated every ten years and on April 1st, 2015, the BBW approved the adoption of Resolution 2015-01 (2013 Reevaluation of the Beaumont Basin Safe Yield Report and Redetermination of the Safe Yield of the Beaumont Basin), which reduced the safe yield to 6,700 AFY. The 2023 Reevaluation of the Beaumont Basin Safe Yield recommended a Safe Yield of 7,100 AFY for 2024 through 2033.

The Beaumont Basin Watermaster Website provides copies of the Judgment, Annual Reports and related information: https://beaumontbasinwatermaster.org/.

The Judgement includes a controlled overdraft (temporary surplus) provision that allows extraction up to 160,000 AF over the 10-year period immediately following the Judgement inception. During the first 10 years, the agencies could extract 16,000 AFY; after the first 10 years, extractions are limited to the amount each agency has in storage or credit. Agencies must provide the BBW with funds necessary to replace any amount of overproduction that may have occurred over a 5-year consecutive period.

3.2.7 Recharge Area Programs

Conjunctive use of surface water and groundwater is a long-standing practice in the Region with artificial recharge of the Region’s groundwater basins occurring as early as 1912. Storage of imported water and local surface water during wet years, as well as recycled water, helps the Region be resilient to drought and agencies have already invested in groundwater wells to produce the stored water. Numerous groundwater spreading grounds have been developed to recharge the groundwater basins when adequate surface water supply is available. See Chapters 4 and 5 for a summary of estimated recharge for each groundwater basin in the Region and the volume of SWP expected to be available for recharge.

Because of the extremely permeable sand and gravel deposits in the Region’s groundwater basins, maximum instantaneous recharge rates are high. Because of the size of several of the recharge basins and exceptionally permeable material, a larger quantity of water could be imported and recharged along the base of the San Bernardino Mountains, if necessary. Any additional recharge is carefully planned and implemented to avoid liquefaction and unacceptable decreases or increases in groundwater levels in the basins.

Numerous existing groundwater recharge facilities (spreading grounds or spreading basins) are located in the SBB, Rialto-Colton, and Yucaipa Subbasins. Existing and proposed recharge basins are shown in Figure 3-6 and selected characteristics are summarized in Table 3-10.

SBVWCD facilities are used for both native water (Safe Yield), additional stormwater (new Santa Ana River water rights), and SWP recharge. In addition to incidental stormwater capture, existing turnouts provide SWP water to most recharge facilities.

Table 3-10: Regional Recharge Basins

Facility Name	Owner	Underlying GW Basin	Recharge Water Sources
Waterman Basin	SBCFCD	SBB/Bunker Hill A	Stormwater, SWP
East Twin Creek Spreading Grounds	SBCFCD	SBB/Bunker Hill A	Stormwater, SWP
Redlands Recharge Basins	Redlands	SBB/Bunker Hill B	Treated Wastewater (disposal)
Lytle Creek North WRP Effluent Disposal Ponds	San Bernardino County Special Districts Department (SBCSDD)	SBB/Lytle Basin	Treated Wastewater (disposal)
Wilson Basin	SBCFCD	Yucaipa Basin	Stormwater, SWP
Sweetwater Basins	SBCFCD	Bunker Hill	Stormwater, SWP
Santa Ana	SBVWCD	SBB/Bunker Hill B	Local surface water, SWP
Santa Ana Low	SBVWCD	SBB/Bunker Hill B	Local surface water, SWP
Mill Creek	SBVWCD	SBB/Bunker Hill B	Local surface water, SWP
Oak Glen	SBCFCD, YVWD	Yucaipa Basin	Stormwater, SWP
County Line Road Recharge Basin	SMWC, SBVMWD, SGPWA	Yucaipa Basin	SWP
Weaver Basins	San Bernardino Valley	SBB/Bunker Hill B	Recycled Water for groundwater recharge

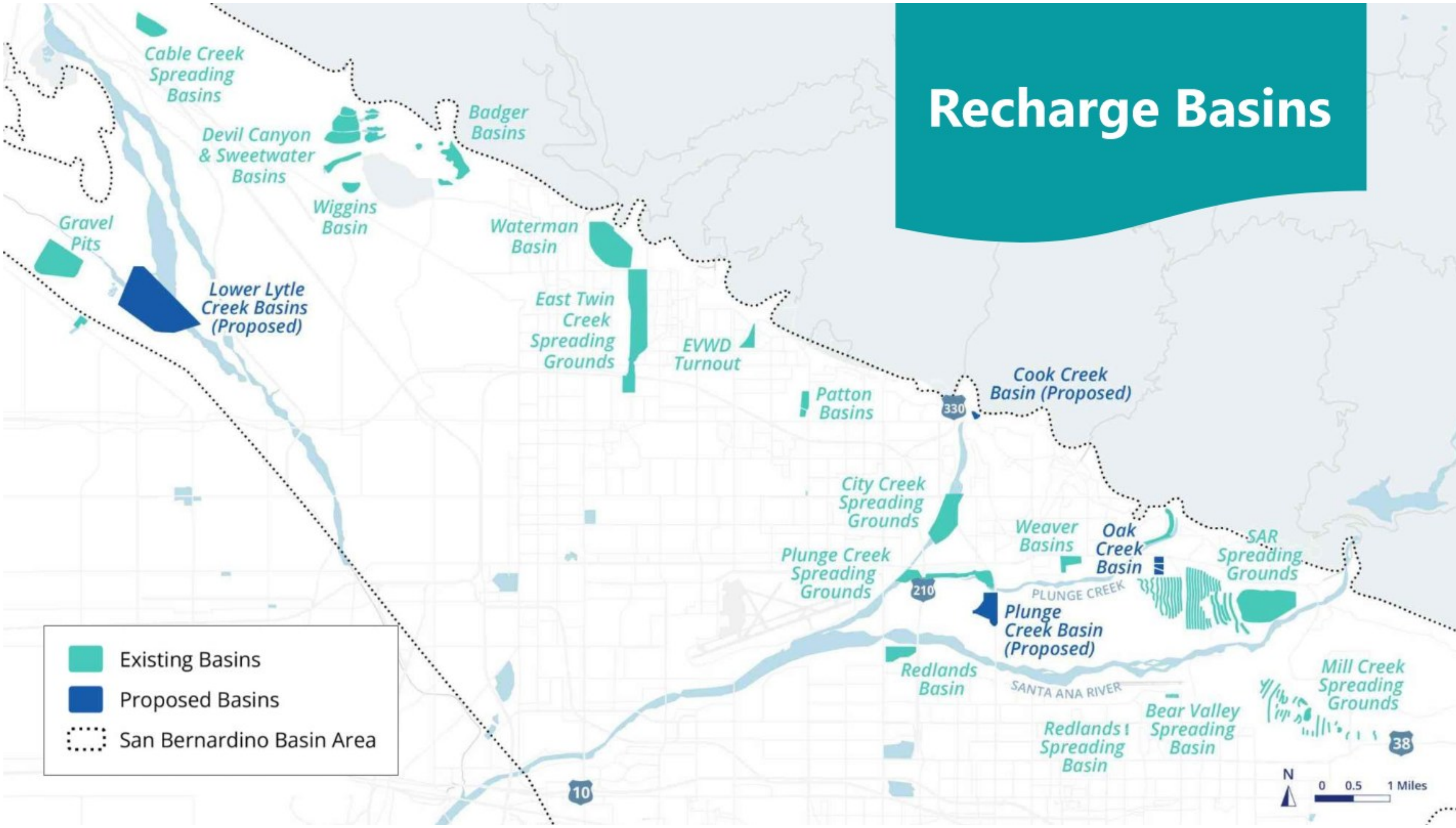

Figure 3-6: Groundwater Recharge Basins, from San Bernardino Basin Context Summary (WSC, 2024)

3.3 Surface Water

As described in Section 3.2.1.13.2.1 and 3.2.2, surface water supplies in the Region include flows from the Santa Ana River and two if its tributaries, Mill Creek and Lytle Creek. All these sources are managed in conjunction with SBB groundwater per the terms of the Western Judgment and the 1924 Lytle Creek Basin Judgment.

The retail water agencies in the Region that divert and treat local surface water as part of their potable water supply are West Valley Water District (who also diverts surface water rights on behalf of the City of Rialto), the City of Redlands, East Valley Water District and Fontana Water Company. Additionally, there are numerous other surface water rights holders in the Region that divert water for non-potable irrigation use.

Surface water flows can be highly variable from year to year. The largest monthly flows typically occur in February and March, and the lowest monthly flows typically occur between August and October. When surface water is available, retail water agencies typically prioritize this supply due to the typically high quality and low cost gravity conveyance to the treatment plants. When surface water flows are low, or the quality is degraded due to high storm flows, fires, or other impacts, retail agencies and other water rights holders shift their supply strategy to use groundwater and/or SWP water instead of local surface water. The associated water rights can be produced as either surface water or groundwater so the total supply available to these agencies does not change. SAR and Mill Creek surface water flows that are not diverted by retail suppliers for treatment, are generally recharged to retain the supply for future use as groundwater.

3.4 Stormwater

As discussed previously, stormwater capture is a critical component of the Region's conjunctive use and groundwater management strategy. Stormwater management has been an ongoing challenge in the Region and flood control facilities, such as detention basins, have provided much needed control of these flows. While conveying flood water safely through the upper SAR watershed is of critical importance, detaining runoff for recharge is also desirable. The region's groundwater managers are working with flood control agencies to optimize the use of these flood control facilities to increase the recharge of stormwater into the groundwater basin. The goal is to strike a balance between flood control and recharge that will ensure protection from flooding, while providing additional supplies to meet growing future demands and to supplement these supplies during drought years. San Bernardino Valley has had an agreement with SBCFCD since 1972 which allows San Bernardino Valley to recharge water in flood control detention basins. Additionally, the Conservation District has a Planning Memorandum of understanding (MOU) with SBCFCD that identifies SBCFCD facilities where stormwater may be diverted for recharge purposes, granted that diversion does not impact SBCFCD's facilities functionality and purpose to maintain protection from floods. Future studies pertaining to eligible facilities, the amount and quality of storm water flows for recharge, the location and capacity of SBCFCD facilities, recharge impacts to groundwater levels, migration of contaminant plumes, sand and gravel extraction or other land uses in the vicinity, subsidence protection, endangered and sensitive species habitat preservation, and any other concerns will need to be evaluated (San Bernardino County Flood Control District, January 2021).

The native water historically captured and recharged at the existing recharge facilities is embedded in the natural safe yield calculations for the SBB, except for the additional amount the Watermaster determined to be New Conservation because of the construction of Seven Oaks Dam. For proposed recharge activities that were not part of the safe yield calculation, the Western -San Bernardino Watermaster evaluates whether the recharge will result in a net increase to the SBB that would be considered New Conservation under the Western Judgment.

3.5 Recycled Water

The development and utilization of recycled water is another important water supply strategy for the Region. Although implementing recycled water infrastructure requires significant capital investment, the supply is highly reliable because wastewater flows to treatment plants remain relatively constant during dry hydrologic conditions. For this reason, recycled water is often considered a "drought-proof" supply.

Some retail agencies in the Region provide recycled water to their customers for non-potable use, such as irrigation and industrial cooling water. The Region has also recently begun using recycled water for groundwater recharge in the SBB. Recycled water produced in the San Bernardino Valley service area that is not currently used for non-potable reuse or groundwater recharge is either disposed of in disposal ponds that overlie SBB or discharged to the SAR or its tributaries. Recycled water discharges have become a critical source of water that sustains habitat in natural rivers and streams, including the Santa Ana Sucker, which is a Federally listed endangered species. Development of new recycled water supplies in the upper SAR watershed must be balanced with the need to conserve and maintain this habitat in accordance with the Upper Santa Ana River Habitat Conservation Plan (River HCP), which is under review by the United States Fish and Wildlife Service and is anticipated to be approved in 2026. Additionally, recycled water discharges to SAR are used to meet the Region’s downstream obligations. San Bernardino Valley contracted with the City of San Bernardino and the City of Colton to ensure that the RIX facility continues to release quantities of treated effluent to the SAR adequate to fulfill San Bernardino Valley service area’s obligation to provide 15,250 AF of baseflow each year at the Riverside Narrows as called for in the Orange County Judgment.

Wastewater treatment facilities in the Region are described in the next section, followed by a description of existing and planned recycled water programs in the Region. Potential recycled water supplies for each retailer are described in their respective chapters in Part 2. Anticipated recycled water supplies are included in the regional summary of supplies in Chapters 4 and 5.

3.5.1 Wastewater

There are 8 publicly owned WWTPs located within the Region as shown in Table 3-11.

Table 3-11: Wastewater Treatment Plans in the Region

FACILITY	INFLUENT FLOW SOURCE	CAPACITY (MGD)	2025 AVERAGE FLOW (MGD)	EFFLUENT USE
San Bernardino County Special Districts Department Lytle Creek North WRP	SBCSDD, WVWD	1.75	0.4 (est.)	Non-potable reuse for Irrigation and Dust Control Remaining discharged onsite disposal ponds
Rialto WWTP	Rialto	11.7	7	Discharged to Rialto Channel/SAR
Colton WRP	Colton & RHWC	10.4	5	Conveyed to RIX
SBMWD WRP	SBMWD, Loma Linda	33	15	Conveyed to RIX. Planned TTS will produce RW for groundwater recharge
RIX WWTP	Colton WRP & SBWRP	40	19	100% Discharged to SAR
Redlands WWTF	Redlands	9.5	5	Non-potable reuse for Irrigation and Industrial Remaining discharged to onsite disposal ponds
YVWD WRWRF	YVWD	8	3.8 (est.)	Non-potable reuse for irrigation Remaining discharged to San Timoteo Creek Groundwater recharge (planned)
EVWD SNRC	EVWD	8	6	Groundwater recharge

3.5.2 Recycled Water Programs

Several agencies in the Region have existing recycled water programs or plans to improve recycled water production capacity and use in the future, as discussed in the following subsections.

3.5.2.1 Regional Recycled Water System

SBVMWD, SBMWD, City of Redlands and EVWD have partnered to form the Bunker Hill Regional Recycled Water Coalition to facilitate recharge or disposal of recycled water into the SBB and to construct a Regional Recycled Water System.

In 2024, EVWD began operating the Sterling Natural Resource Center (SNRC), a water reclamation plant which produces tertiary treated recycled water that is used for groundwater recharge at the Weaver Basins, a set of recharge basins on the north side of the Santa Ana River that are owned by SBVMWD. SNRC's treatment train includes headworks, fine screens, membrane bioreactor (MBR) with aeration tanks, and ultraviolet (UV) disinfection. The facility also includes a food waste handling system, odor control, and anaerobic digesters for solids. SNRC's current capacity is 8 MGD with provisions to be expanded to 10 MGD (11,200 AFY) under buildout conditions within EVWD's service area. SNRC came online in early 2024, operating at 6 MGD after all planned flow had been diverted to SNRC. Since the Weaver Basins are the only discharge point, all 6 MGD is being recharged into SBB and all future flows are planned to be discharged there as well.

SBMWD's Water Reclamation Plant (SBWRP) is a 33 MGD secondary water reclamation facility located at 399 Chander Place, San Bernardino, CA 92408 that treats wastewater from the cities of Loma Linda and San Bernardino and nearby San Bernardino County areas. The SBWRP formerly also treated wastewater from EVWD until the construction of SNRC. The SBWRP was constructed in 1958 and produces secondary effluent through a treatment train consisting of headworks, primary clarifiers, aeration basins, and secondary clarifiers. The SBWRP currently treats approximately 15 MGD.

Effluent from the SBWRP is conveyed to a separate facility where it combines with secondary effluent from the City of Colton's WWTP and is treated to tertiary standards at the Rapid Infiltration and Extraction (RIX) facility. The RIX process works by distributing effluent to percolation basins adjacent to the Santa Ana River, where it undergoes soil aquifer treatment and is then extracted by downgradient wells, treated by UV disinfection, then discharged to the Santa Ana River. The RIX facility also has cloth filtration and granular media filtration systems that can be used when additional capacity is needed. Effluent from the RIX plant is considered tertiary by CCR Title 22 standards. The RIX discharge to the Santa Ana River is used to meet flow obligations from both the 1969 Orange County Judgment and the River HCP, although the discharge is currently more than what is required to meet those commitments and can be reduced.

The Tertiary Treatment System (TTS) adds tertiary treatment after the secondary treatment train on the SBWRP site. TTS Phase 1 is complete and produces recycled water for onsite use only at the SBWRP. Phase 2 of TTS would consist of additional cloth disk filters, UV disinfection, discharge pumping facilities, and an extension of the Regional Recycled Water Pipeline to the SBWRP so tertiary effluent can be recharged at the Weaver Basins. SBMWD is also considering a future TTS Phase 3 to produce additional recycled water for recharge, provided there is excess flow beyond the discharge obligations.

SBVMWD owns the Weaver Basins and the Regional Recycled Water Pipeline, which conveys recycled water from SNRC to the Weaver Basins. A future phase may expand the pipeline to ultimately convey TTS Phase 2 recycled water from TTS to the Weaver Basins. The Regional Recycled Water System is shown in Figure 3-7.

Figure 3-7: Regional Recycled Water Facilities

3.5.2.2 Recycled Water Use for Redlands

Redlands operates the Redlands Wastewater Reclamation Facility (WRF), a 9.5 MGD water reclamation facility that treats wastewater from the City of Redlands. The WRF was constructed in the 1960s and produces both secondary and tertiary effluent through a 6.5 MGD capacity MBR plant and a 3.0 MGD capacity conventional activated sludge plant. Tertiary effluent is provided to customers for irrigation and industrial use. Secondary effluent from the conventional plant is disposed of in a set of disposal ponds (the Redlands Basins) that overlie SBB south of the Santa Ana River. Redlands recently finished a preliminary design to expand recycled water deliveries within their 1350 pressure zone to assist in meeting peak irrigation demands in their blended non-potable/recycled system.

3.5.2.3 Recycled Water Use for City of Rialto

The City of Rialto operates the Rialto WWTP which was originally constructed in 1955 and serves the City of Rialto, portions of the Cities of Colton and Fontana, and unincorporated areas of San Bernardino County. It has been upgraded and expanded multiple times, most recently in 2020. Following secondary treatment, the current treatment train includes cloth disk filters and chlorination with sodium hypochlorite to meet California Title 22 tertiary recycled water standards. The City of Rialto uses plant effluent for various functions around the WWTP and formerly delivered water to Caltrans for irrigation of the I-10 median but does not currently use or sell recycled water. Rialto currently discharges all of its tertiary treated effluent to the Rialto Channel, which is tributary to the SAR.

The City of Rialto currently has a requirement to provide 7 cfs or 3.8 MGD for the benefit of the habitat in the Rialto Channel/Santa Ana River. For the protection of the habitat in the Santa Ana River, the River HCP identified that it is desirable to remove the Rialto WWTP flows from the Rialto Channel during the summer months, when the temperature of the water has an adverse impact on native species. The City of Rialto is currently designing the Habitat Nature Center Project, a roughly 8-acre lake and wetland facility located on the south side of the Rialto WWTP property. The lake will be filled with dechlorinated effluent from the Rialto WWTP via a series of fill laterals on the north and west sides of the lake and will be drained using a pump station in the southeast corner of the lake which will discharge into the Rialto Channel at the same location as the Rialto WWTP's existing discharge point. Habitat Nature Center's purpose is to provide wetland habitat, improve water quality, remove salt and nitrogen from the Santa Ana River ecosystem, and reduce discharge temperatures for downstream sensitive fish species, while also providing walking space and educational opportunities. The required inflow for Habitat Nature Center is not yet finalized but is estimated to be approximately 1 MGD.

The City of Rialto also entered into a long-term recycled water purchase agreement with the Inland Empire Utilities Agency (IEUA) in 2022. Under the agreement, which has a 50-year term, Rialto sells a portion of its excess tertiary recycled water supply that would otherwise be discharged to the Santa Ana River, particularly during the summer months when removing the discharge from the Rialto Channel provides habitat benefits. Under the agreement, IEUA will have exclusive rights to divert a constant flow of 7 MGD of Rialto's recycled water into the IEUA recycled water system annually from May 1st to October 31st, and IEUA may purchase additional recycled water when available.

3.6 Transfers and Exchanges

3.6.1 Transfers and Exchanges

Regional exchange programs are discussed in this section and agency specific transfers and exchanges are discussed in chapters for each individual agency in Part 2.

3.6.1.1 Exchange Plan

On May 3, 1976, the San Bernardino Valley Water Conservation District (Conservation District), San Bernardino Valley, BVMWC, City of Redlands, Crafton Water Company, EVWD, Lugonia Water Company, North Fork Water Company (now owned by EVWD), Redlands Water Company, and YVWD entered into the Santa Ana River – Mill Creek Cooperative Water Project Agreement (Exchange Plan). The Exchange Plan provided a way for San Bernardino Valley to provide SWP water to the Yucaipa area, by exchange, before San Bernardino Valley had a pipeline to deliver SWP water directly to Yucaipa. Since the construction of the State Water Project East Branch Extension and the Crafton Hills Pump Station, SWP water deliveries can be made directly to Yucaipa so that San Bernardino Valley no longer requires the Exchange Plan.

In 2019, the parties to the Exchange Plan began the process of reviewing the plan to determine if it would be beneficial to amend the agreement to enable exchanges that may help the region overcome issues like varying surface water quality, or an outage on the State Water Project. The discussions did not result in an amendment to the Exchange Plan but may be revisited again in the future. The original Exchange Plan is still in effect.

3.6.1.2 Metropolitan Coordinated Operating Agreement

In 2021, SBVMWD entered into a new Coordinated Operating Agreement (COA) with Metropolitan that would sell them SBVMWD's surplus imported water when available; this COA replaced the previous version that expired in 2016. One of the terms of the COA requires Metropolitan to offer 50% of any surplus water purchased under this agreement to their member agencies in the SARCCUP Program. The COA is included in Part 3 Appendix B.

3.7 Groundwater Banking Programs

As stated previously, storing water in local groundwater basins during wet years for later use during droughts is one of the primary management strategies in the Region.

3.7.1 SARCCUP and BHCUP

The five regional water agencies in the Santa Ana River Watershed have identified a watershed scale project, the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP), a cooperative program with Metropolitan and other agencies in the Santa Ana Watershed to store imported water during wet years for use during dry years.

The group includes representatives from the following regional water agencies:

- San Bernardino Valley
- Western
- Eastern Municipal Water District
- IEUA
- Orange County Water District

The program goals of SARCCUP include:

- Providing watershed-wide benefits based upon regional collaboration
- Creating significant new dry-year yield
- Increasing the resiliency and reliability of the water supply

SARCCUP includes four separate groundwater banks located in different groundwater basins within the Santa Ana Watershed, including a comprehensive conjunctive use program in the SBB. SARCCUP will provide water for the SBB and the companion project, Bunker Hill Conjunctive Use Program (BHCUP) provides the extraction facilities for the SBB.

Conjunctive use will benefit the retail water agencies with wells in the San Bernardino Basin by increasing water levels and reducing pumping costs. The portion of these projects ultimately available to agencies in the San Bernardino Valley can provide up to 29,500 acre-feet of dry year yield (single year) for up to three years.

3.8 Development of Desalination

3.8.1 Opportunities for Brackish Water and/or Groundwater Desalination

Desalination, or desalting, is a process to create drinking water from water containing higher salt levels. Desalination can use a thermal distillation process or a membrane process (such as electrodialysis or reverse osmosis). All desalination processes produce a brine waste stream that must be disposed of. Brackish groundwater desalting is not currently needed in the San Bernardino Valley.

3.8.2 Opportunities for Seawater Desalination

Because the San Bernardino Valley is an inland area and has developed less costly management strategies to achieve a reliable water supply, the region is not pursuing this option.

3.9 Water Quality

This section discussed the water quality of each of the Region's supplies, along with associated impacts to supply reliability.

3.9.1 Imported Water Quality

San Bernardino Valley imports water through the SWP which is Sierra snow melt with consistently low TDS levels of 200 to 300 mg/L (DWR 2003a) except during periods of drought, flood events, reservoir management practices, and salt input from local streams.

DWR has conducted water quality monitoring for the SWP since 1968. Initially, this program sought to monitor eutrophication (an increase in chemical nutrients) and salinity in the SWP. Over time, the water quality program expanded to include parameters of concern for drinking water, recreation, and wildlife. Water quality samples are collected at regular intervals throughout the year for chemical, physical, and biological parameters. The SWP water has moderate total organic carbon levels, resulting in higher disinfection byproduct (DBP) formation, and also has some taste and odor causing compounds. Real time data and forecasting for SWP water quality is available on DWR's website (https://water.ca.gov/Programs/State-Water-Project/Operations-and-Maintenance/Water-Quality). SWP quality is suitable for treatment and potable use and for groundwater recharge.

In order to protect against any water quality impacts from imported water, the City of Corona, City of Riverside, Eastern Metropolitan Water District, Elsinore Valley Municipal Water District, Orange County Water District, San Bernardino Valley, San Gorgonio Pass Water Agency, and Western (Recharge Parties) entered into the "Cooperative Agreement to Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basin" with the SARWQCB in 2007. The initial term of the agreement was 10 years, and it has been extended to January 18, 2028 and is expected to continue into the foreseeable future.

This order states that long-term conjunctive use of groundwater in the Region requires that the quality of water in groundwater basins in the region be managed to meet the water quality objectives for nitrogen and TDS (collectively, the Salinity Objectives) adopted by the SARWQCB in the 1995 Water Quality Control Plan for the Santa Ana River Basin, as amended in 2004 by R8- 2004-0001 (Basin Plan).

The parties that recharge imported water within the Santa Ana Region (Recharging Parties) agree to collect, compile, and analyze the total inorganic nitrogen (TIN) and TDS water quality data necessary to determine whether the intentional recharge of imported water in the region may have a significant adverse impact on compliance with the Salinity Objectives within the Region.

This agreement provides a framework for groundwater recharge of imported water and will facilitate conjunctive management in the region while protecting water quality. A copy of the agreement is included in Part 3 Appendix B.

3.9.2 Groundwater Quality

Groundwater quality varies among the Region's groundwater basins due to geology and faulting patterns and recharge points, and from anthropogenic sources of contamination.

3.9.2.1 Ambient Water Quality

The Basin Plan for the Santa Ana River Basin (Region 8) requires the implementation of a watershed-wide TDS and nitrogen groundwater monitoring program to determine ambient water quality (AWQ) in groundwater, assess compliance with groundwater quality objectives, and determine if assimilative capacity exists in groundwater management zones (GMZs). To date, seven AWQ determinations have been made with the most recently completed for the 1998 to 2018 time period. The AWQ computation for the period through 2021 is expected to be complete in 2026, after which the AWQ will be recomputed every 5 years. The AWQ computation for the period through 2026 is expected to be complete in 2028. The GMZs are shown in Figure 3-8.

According to the Basin Plan (RWQCB, 2016a): "TDS and nitrate-nitrogen water quality objectives for each management zone are based on historical concentrations of TDS and nitrate-nitrogen from 1954 through 1973 and are referred to herein as the 'antidegradation' objectives. This period brackets 1968, when the State Water Resources Control Board (State Water Board) adopted the state's antidegradation policy in Resolution No. 68-16, "Policy with Respect to Maintaining High Quality Waters". This Resolution establishes a benchmark for assessing and considering authorization of degradation of water quality.

By definition, assimilative capacity is determined to be the difference between the objective and the current AWQ: if the current quality of the GMZ is better than the water quality objective, then assimilative capacity exists. Assimilative capacity does not exist if the current quality of a GMZ is the same as or poorer than the water quality objectives.

According to the Basin Plan (RWQCB, 2016a), when a GMZ has little or no assimilative capacity: "The Regional Board addresses such situations by providing dischargers with the opportunity to participate in TDS offset programs, such as the use of desalters, in lieu of compliance with numerical TDS limits. These offset provisions are incorporated into waste discharge requirements . . . An alternative that dischargers might pursue in these circumstances is revision of the TDS or nitrogen objectives, through the Basin Plan amendment process. Consideration of less stringent objectives would necessitate comprehensive antidegradation review, including the demonstrations that beneficial uses would be protected and that water quality consistent with maximum benefit to the people of the State would be maintained . . . a number of dischargers have pursued this 'maximum benefit objective' approach, leading to the inclusion of 'maximum benefit' objectives and implementation strategies in this Basin Plan.

Discharges to areas where the 'maximum benefit' objectives apply will be regulated in conformance with these implementation strategies."

The 2021 AWQ for the GMZs with "maximum benefit" objectives were determined in 2023 for the Yucaipa GMZ and the San Timoteo GMZ. The 2021 AWQ for the remaining GMZs is expected to be complete in 2026, after which the AWQ will be recomputed every 5 years. The AWQ computation for the period through 2026 is expected to be completed in 2028 (West Yost, October 2023). Table 3-12 shows the water quality objectives for both TDS and Nitrate for the nine (9) groundwater GMZs used within the Region. As shown in the table below, the San Timoteo and Yucaipa GMZs have "maximum benefit" water quality objectives that require the implementation of certain projects and programs by specific dischargers as part of their maximum benefit demonstrations is required for the continued application of the "maximum benefit" objectives. The bold orange numbers in the table indicate that the 2018 AWQ is above the WQO and assimilative capacity does not exist.

Table 3-12: Total Dissolved Solids Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity

GROUNDWATER MANAGEMENT ZONE	DWR BASIN NAME	WATER QUALITY OBJECTIVE	2018 AMBIENT TDS	WATER QUALITY OBJECTIVE NITRATE	2018 AMBIENT NITRATE
Bunker Hill-A	SBB	310	**330**	2.7	**3.9**
Bunker Hill-B	SBB	330	280	7.3	5.8
Lytle	SBB	260	240	1.5	**2.4**
Colton	Rialto-Colton	410	**490**	2.7	**3.3**
Rialto	Rialto Colton	230	**240**	2.0	**3.4**
Riverside A	Riverside-Arlington	560	440	6.2	5.6
San Timoteo, "maximum benefit"	San Timoteo	400	**420**	5.0	2.0
San Timoteo, "antidegradation"	San Timoteo	300	**420**	2.7	2.0
Yucaipa, "maximum benefit"	Yucaipa	370	320	5.0	**6.2**

GROUNDWATER MANAGEMENT ZONE	DWR BASIN NAME	WATER QUALITY OBJECTIVE	2018 AMBIENT TDS	WATER QUALITY OBJECTIVE NITRATE	2018 AMBIENT NITRATE
Yucaipa, “antidegradation”	Yucaipa	320	320	4.2	**6.2**

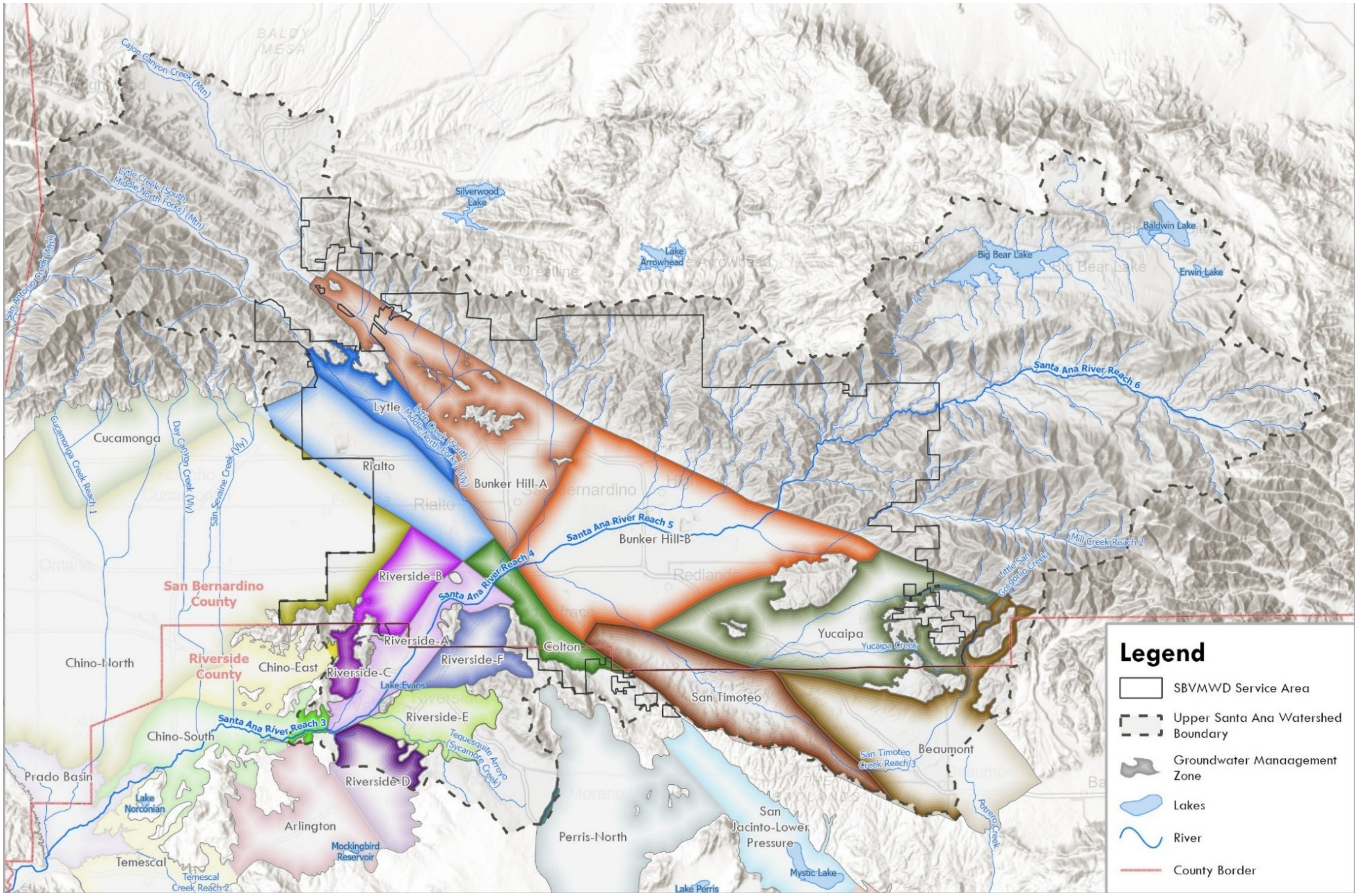

Figure 3-8: Groundwater Management Zones in the Region

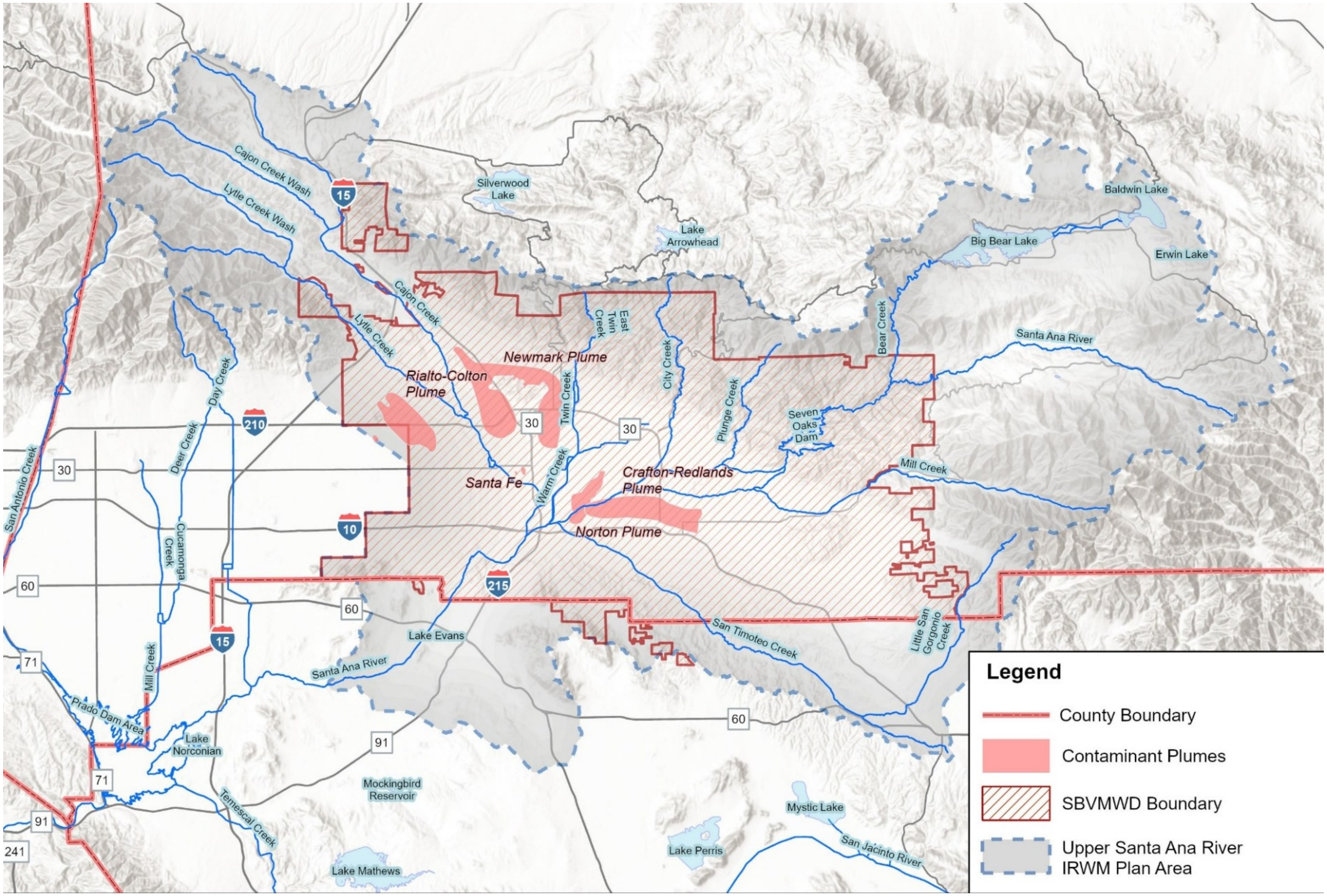

Figure 3-9: Groundwater Contaminant Plumes in the Region

3.9.2.2 Groundwater Plumes

The Region has the following groundwater contaminant plumes, described further below and depicted in Figure 3-9:

- The Crafton-Redlands plume, with trichloroethylene (TCE) and lower levels of perchloroethylene (PCE), debromochloropropane (DBCP) and perchlorate (SBB)
- The Norton Air Force Base TCE and PCE plume (SBB)
- The Muscoy and Newmark plumes near the Shandin Hills, which are Superfund sites with TCE and PCE (SBB)
- The Santa Fe plume with PCE, TCE, and 1,2 dichloroethylene (1,2-DCE) (SBB)
- Rialto Area Perchlorate Plume (Rialto-Colton Basin)
- North Riverside Basin MTBE Contamination (Riverside North Basin)

Separately from the foregoing remediation efforts, Fontana Water Company currently operates and maintains a groundwater remediation project at its Plant F10 pursuant to a long-term agreement with San Bernardino County, the owner and operator of the Mid Valley Sanitary Landfill and corresponding Clean-Up and Abatement Order issued to San Bernardino County by the RWQCB. The 5,000-gallons per minute (gpm) treatment plant utilizes liquid phase granular activated carbon to treat for volatile organic compounds including, but not limited to, PCE, TCE, 1,1-DCE, and cis-1,2-DCE. The plant treats and removes those contaminants from groundwater extracted from both the Rialto-Colton and No Man's Land sub basins.

3.9.2.2.1 Crafton-Redlands Plume

Two commingled plumes, comprising the Crafton-Redlands plume, have impacted water supply wells for the cities of Riverside, Redlands, and Loma Linda, including Loma Linda University wells since they were discovered in 1980. One plume contains TCE and the other perchlorate; both are in the upper 300 to 400 feet of groundwater. Both plumes are attributed to the former Lockheed Propulsion Company site located at the eastern end of the SBB. The site comprises 495 acres and was in operation from 1954 to 1974. Current RWQCB orders regarding the Crafton-Redlands plumes issued to Lockheed Martin Corporation (Lockheed) include Investigation Order No. 94-11, Cleanup and Abatement Order No. 94-37, and Cleanup and Abatement Order No. 97-58 (as amended by RWQCB Order No. 01-56). The Investigation Order No. 94-11 applies to the former Lockheed Propulsion Company site. Cleanup and Abatement Order No. 94-37 and Cleanup and Abatement Order No. 97-58 (as amended by Order No. 01-56) apply to the Crafton-Redlands TCE plume and perchlorate plume, respectively, both downgradient of the former Lockheed Propulsion Company site.

As required by the SARWQCB, Lockheed has prepared contingency plans to address impacts of the plume on water supply wells. These include blending, treatment, and/or providing alternative water supply sources. The remedy consists of four regional treatment plants and one wellhead treatment facility that are intended to treat water containing TCE and/or perchlorate with concentrations above the maximum contaminant level (MCL), which is 5 ppb for TCE and 6 ppb for perchlorate. Three of the treatment plants (Raub, Tippecanoe and Sunnyside) and the wellhead treatment facility (Gage 46-1R-IX) are connected to City of Riverside water supply wells. One of the treatment plants (Richardson) is connected to City of Loma Linda water supply wells (Tetra Tech, Inc., 2022). In 2004, Lockheed installed a temporary perchlorate treatment system on the City of Redlands' Rees well to remove perchlorate. This system remained in operation until 2007 and was removed in 2009. In 2010, Lockheed funded the conversion of a portion of the existing granular activate carbon (GAC) treatment facility at the Rees well to ion exchange (IX) treatment for perchlorate removal and this system is currently in service, operated by City of Redlands.

As a result of the cleanup operation, the plumes have been contained and the quality of groundwater is improving. The mass of TCE and perchlorate in Basin groundwater has been on a 20- year declining trend and continues to decline. The areas of the TCE and perchlorate plumes have been shrinking for 20 years and continue to decline. The highest concentrations of trichloroethene and perchlorate in the Basin have also been on a general downward trend. Finally, the number of water supply wells that exceed the maximum contaminant level for trichloroethene and perchlorate have been declining. Based on 2021 data, four water supply wells exceed the MCL for TCE (Gage 51-1, Gage 29-3R, Richardson #5, and Mountain View #6). Based on 2021 data, several water supply wells currently exceed the MCL for perchlorate of industrial origin (Gage 29-3R, Gage 51-1, Gage 92-1, Richardson #5, Mountain View #6) (Tetra Tech, Inc., 2022). The maximum TCE concentration detected during the 2020 comprehensive groundwater sampling event was 13 ppb and the maximum perchlorate concentration detected during the 2020 comprehensive groundwater sampling event was 47 μg/L (Tetra Tech, 2020).

3.9.2.2.2 Norton Air Force Base Plume

The Norton Air Force Base plume, located just to the southwest of the former installation in the City of San Bernardino, is a major contaminant plume, consisting primarily of TCE and PCE. The plume has impaired 10 wells owned by the City of Riverside and the City of San Bernardino. Cleanup efforts by the Air Force, consisting of soil removal, soil gas extraction, and groundwater treatment, have significantly reduced this plume. The treatment plants now operate in a standby mode.

3.9.2.2.3 Newmark and Muscoy Plumes

Within the City of San Bernardino, the Newmark plume and the Muscoy plume consist primarily of PCE and TCE. The plumes have impacted San Bernardino water supply wells. Under the federal Superfund Program, the U.S. Environmental Protection Agency (EPA) has implemented cleanup of these plumes, including use of groundwater extraction and treatment using granulated activated carbon. The treated water is then used to supplement the City of San Bernardino's potable water supply.

3.9.2.2.4 Sante Fe Plume

The Santa Fe groundwater plume consists primarily of 1,2-DCE, TCE, and PCE. This plume is currently being monitored.

3.9.2.2.5 Rialto Area Perchlorate Plume

Since 2002, the SARWQCB has been conducting an investigation of groundwater contamination in the area of the City of Rialto. The focus of the investigation has been facilities located on a 160-acre site in Rialto. The site has also been designated as a Superfund site by the US EPA. In 2005 the SARWQCB Executive Officer issued a Cleanup and Abatement Order and subsequent amendments naming a number of responsible parties. Since that time, the Cleanup and Abatement Order has been the subject of challenges in petitions filed by entities named as parties responsible for the contamination.

In September 2010, EPA issued the Interim Action Record of Decision to the Source Area Operable Unit (SAOU) of the B.F. Goodrich Superfund Site, now referred to as the “Rockets, Fireworks, and Flares Superfund Site”. The EPA’s Remedy required Emhart Industries to install, operate, and maintain a groundwater pump and treatment system to intercept and control the spread of contaminated groundwater from the 160-acre parcel. The EPA Remedy is designed to capture and remove perchlorate and Trichloroethylene (TCE) in the groundwater in the Rialto-Colton Groundwater Basin emanating from a 160-acre parcel located in north Rialto.

On August 12, 2015, the Rialto, Colton, the County of San Bernardino and Emhart Industries (Emhart), entered into a Four-Party Implementation Agreement to implement the interim remedial action plan as required by the Consent Decree as entered on July 2, 2013. The remedial action required by the Work Consent Decree was selected and approved and overseen by the EPA. A copy of the Four Party Agreement is included in Part 3 Appendix B.

The County and Emhart agreed that the EPA Remedy would be combined with an existing groundwater extraction and treatment remedy designed and constructed by the County to capture and remove perchlorate and TCE in the Basin due to the landfill and required by the SARWQCB. This combined project is referred to as the “Combined Remedy” project.

The Combined Remedy includes:

1. Installing a new extraction well (EW-1), located at the northwest corner of Jerry Eves Park and piping to the water treatment system,
2. Expanding the existing County groundwater treatment system at the Rialto 3 well site to treat extracted water from EW-1,
3. Upgrading the chlorination station at the Combined Remedy site,
4. Constructing an inter-tie between Rialto and Colton to deliver Colton’s water rights produced out of EW-1 and,
5. System improvements to the Colton’s drinking water distribution system, specifically modifications made by Emhart to a reservoir and pump station.

3.9.2.2.6 North Riverside Basin MTBE Contamination

In 1988, the SARWQCB issued a Cleanup and Abatement Order to the SFPP Colton Fuel Terminal (owned by Kinder Morgan) located in Bloomington, California. The Terminal, which is located just south of the I-10 freeway on the east side of Riverside Avenue, is a bulk petroleum storage and distribution facility which was built in the 1950s. It currently occupies 82 acres and contains 32 refined petroleum product tanks and fuel-loading racks where transport tanker trucks are filled.

In response to the Cleanup and Abatement Order, a monitoring and extraction well network for the Terminal was constructed. It consists of 131 wells in and around the Terminal as well as 14 soil vapor extraction wells. The site samples for Benzene, methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA).

3.9.3 Surface Water Quality

Three reaches of the SAR run through the Region: Reach 6, which spans from the headwaters of the watershed to Seven Oaks Dam, Reach 5 which spans from Seven Oaks Dam to the San Jacinto Fault in San Bernardino and Reach 4 which spans from the San Jacinto Fault to Mission Blvd. in Riverside. Surface water is diverted from Reaches 5 and 6 for treatment, irrigation use and groundwater recharge. Treated wastewater effluent is discharged to Reach 4.

Reaches 1 and 2 of Mill Creek also run through the Region: Reach 1 spans from the confluence with Santa Ana River to the Bridge Crossing Route 38 at Upper Powerhouse and Reach 2 spans from the Bridge Crossing Route 38 at Upper Powerhouse to the Headwaters. Surface water is diverted for treatment, irrigation use and groundwater recharge.

Water quality within the Upper SAR watershed is addressed through several plans, regulations and guidelines including the Basin Plan, which includes beneficial use designations and water quality objectives. Those water bodies not meeting the Basin Plan water quality objectives and determined to have beneficial uses are listed on the State’s 303(d) list of impaired water bodies and require a TMDL to be developed. Table 3-13 shows the water bodies in the Region watershed that are listed on the State’s 303(d) list for water quality impairments.

Two TMDLs have been adopted to address the above impairments in the Upper SAR:

- TMDLs for Bacterial Indicators in the Middle Santa Ana River Watershed (February 3, 2005): Addresses pathogens in the Santa Ana River, Reach 3.
- Nutrient TMDL for Dry Hydrological Conditions for Big Bear Lake (April 21, 2006): Addresses nutrients in Big Bear Lake.

Table 3-13: 303(d) Listed Water Bodies in the Region

WATER BODY	IMPAIRMENTS
Big Bear Lake	Mercury, Noxious Aquatic Plants, Nutrients, PCBs
Lytle Creek	Pathogens
Mill Creek, Reach 1	Pathogens
Mill Creek, Reach 2	Pathogens
Santa Ana River, Reach 6 (Seven Oaks Dam to Headwaters)	Cadmium, Copper, Lead
Santa Ana River, Reach 4 (Mission Blvd. in Riverside to San Jacinto Fault)	Pathogens
Santa Ana River, Reach 3 (Prado Dam to Mission Blvd. – Baseflow)	Copper (wet weather only), Lead, Pathogens

The SARWQCB states that the quality of the SAR is a function of the quantity and quality of the various components of the flows (SARWQCB 1995). Three components make up the flow of the water in the SAR: (1) storm flows, (2) baseflow, and (3) non-tributary flow. The relative proportion of these components varies throughout the year.

The first component, storm flows, results directly from rainfall, usually occurring between the months of December and April. Much of the rainfall and surface water runoff from the storms is captured and percolated into the groundwater basins. The quality of storm flow water is highly variable.

Baseflow makes up the second component of water flow in the SAR, a large portion coming from the discharge of treated wastewater into the river in addition to rising groundwater in the basin. This baseflow includes the non-point source discharges as well as the uncontrolled and unregulated agricultural and urban runoff. Water quality objectives are set in relation to the baseflow in the river, not to the total flow in the river (see Table 3-14). The intent of these objectives is to protect the river's groundwater recharge beneficial use. Compliance with these objectives is verified by annual measurement of the baseflow quality.

Table 3-14: SAR Basin Surface Water Quality Objectives (WQO) in mg/L

INLAND SURFACE STREAMS	TDS	HARDNESS (CaCO3)	SODIUM (Na)	CHLORIDE (Cl)	TOTAL INORGANIC NITROGEN (TIN)[1]	SULFATE (SO4)	CHEMICAL OXYGEN DEMAND (COD)
SAR Reach 4	550	---	---	---	10	---	30
SAR Reach 5	300	190	30	20	5	60	25
SAR Reach 6	200	100	30	10	1	20	5
Mill Creek Reach 1	200	100	30	10	1	20	5
Mill Creek Reach 2	110	100	25	5	1	15	5

Source: SARWQCB 2019

Note: [1]Total nitrogen, filtered sample.

The SARWQCB sets discharge requirements on wastewater discharges, the major source of baseflow in the SAR. Waste discharge requirements are developed on the basis of the limited assimilative capacity of the river. Non-point source discharges, generally from urban runoff and agricultural tailwater, are regulated by requiring compliance with Best Management Practices (BMPs), where appropriate.

The third component of flow in the SAR that influences water quality is characterized by the SARWQCB as non-tributary flow. Non-tributary flow is generally imported water released in the upper basin for recharge in the lower basin (SARWQCB 1995).

Streams on the Santa Ana Basin generally have increasing dissolved minerals as one goes downstream. This effect is due to the fact that water is used, recycled, and used again. The magnitude or amount of TDS concentration rises with each use of water. Groundwater also enters basin streams in some reaches, and their sampling indicated that some of the highest TDS (and in some cases nitrates) may occur at sites on the valley floor that are dominated by rising groundwater (USGS 2006). Nitrate concentrations are higher in Santa Ana Basin streams receiving treated wastewater than in streams without treated wastewater. The principal source of nitrate is fertilizer from historic agricultural operations.

Table 3-15 provides a summary of the available historical surface water quality data for TDS and nitrogen at points along the SAR (USGS 2007).

Table 3-15: Average Historic Surface Water Quality for Locations on the SAR (1990-2001) (mg/L)

WATER QUALITY CONSTITUENT	METROPOLITAN CROSSING GAGE (REACH 3)[A]	RIX-RIALTO EFFLUENT OUTFALL (REACH 4)[A]	MENTONE GAGE (REACH 5)[A]
TDS	560[b]	520[c]	230[b]
TDS Basin Plan Objective by Reach	700	550	300
Total Inorganic Nitrogen (TIN)	7.3[b]	8.5[c]	0.3[b]
TIN Basin Plan Objective by Reach	10[d]	10	5

Notes: a. USGS gage data. Data for River Only Mentone Gage begins in October 1998. Data for Riverside Narrows Gage begins in August 1997.

b. USGS 2004.
c. The TDS and TIN values assigned for RIX-Rialto are the maximum values that occurred during 2001-2002 as reported in Table 4.4-9 of the SBMWD RIX Facility Recycled Water Sales Program Preliminary Environmental Impact Report (PEIR), March 2003.
d. Total nitrogen, filtered sample.

3.9.4 Salt and Nutrient Management Plan

The Basin Plan includes a Salt and Nutrient Management Plan for the SAR watershed as a whole. In addition, the stakeholders who use groundwater from basins in the Upper Santa Ana River Watershed have formed an SNMP Workgroup and are collaboratively investigating the salt and nutrient loading to several of the underlying groundwater basins, particularly SBB. Prolonged droughts have highlighted the need for an enhanced water supply portfolio, which includes plans to increase stormwater capture and recycled water use. Without access to sufficient assimilative capacity for TDS, existing and new recycled water projects in the SBB may be subject to costly salt removal using advanced treatment such as reverse osmosis (RO). The SNMP Workgroup is considering preparing a Subregional SNMP as part of a comprehensive approach that would offset TDS in the future as needed to support continued use of recycled water in the SBB. Through regional collaboration and additional technical analysis and commitments, a Subregional SNMP could support the use of TDS assimilative capacity and provide flexibility in the implementation timing of the selected salinity management strategies, subject to approval by the Santa Ana Water Board. A Subregional SNMP would further evaluate the impacts of recycled water recharge projects on the BH-B GMZ, provide for enhanced monitoring of the quality of the basin, and establish specific commitments to offset the impacts of the recycled water projects. A Subregional SNMP would include sufficient antidegradation analysis and demonstration of maximum benefit to people of the State to justify a request to use assimilative capacity. This would inform future permitting efforts for recycled water projects discharging to the BH-B GMZ.

Preliminary actions to prepare a Subregional SNMP were taken from 2021 through 2023, including the development of the Upper Santa Ana River Watershed Salt and Nutrient Management Strategy Study (SNMSS) by the SNMP Workgroup, which is currently comprised of a series of 5 Technical Memorandums (TMs):

- Phase 1 TM #1 – *Water Quality Characterization*
- Phase 1 TM #2 – *Nitrogen Losses During Recycled Water Recharge in the Upper Santa Ana Watershed, Technical Workplan*
- Phase 2 TM #1 – *Volume and Quality of Imported Water and Stormwater Captured by Active Recharge Projects in the San Bernardino Basin*
- Phase 2 TM #2 – *Recycled Water Evaluation*
- Phase 2 TM #3 – *Characterize the Probable Cumulative Impacts to Groundwater Quality*

Following completion of the Phase 2 TM #3, the Bunker Hill Regional Recycled Water Coalition prepared the Bunker Hill Regional Recycled Water Salinity Management Feasibility Study, which was completed in February 2025. The purpose of the Feasibility Study is to identify, screen, and evaluate multiple salinity management strategies to protect the beneficial uses of the BH-B GMZ while supporting continued and expanded use of recycled water. The Feasibility Study concluded that a regional recycled water desalter would ultimately be needed to maintain compliance with the WQO in the SBB. However, prior to initiating implementation of a regional desalter, the Feasibility Study recommended that the Coalition and the SNMP Workgroup complete several ongoing and near-term planning efforts that will enable them to refine the future groundwater quality analysis, the total TDS offset requirements, the timing of when the desalter would be needed, and the sizing of the desalter (Water Systems Consulting, Inc., 2025).

In early 2026, the SNMP Workgroup (which includes the Coalition members) initiated Phase 3 of the SNMSS, which will use updated hydrology and planning inputs to update and refine the future groundwater quality analysis. Following the completion of Phase 3, it is anticipated that the Coalition and the SNMP Workgroup, in collaboration with the Regional Board, will determine whether to move forward with preparation of a Subregional SNMP.

3.9.5 Water Quality Impacts on Supply Reliability

Imported water quality from the SWP is typically suitable for potable use following conventional treatment and for groundwater recharge. Even during drought periods when TDS can be elevated, the water quality does not constrain the use of SWP locally because it is well below the MCLs and groundwater quality is managed over a 20-year period, allowing for natural variations in water quality.

Groundwater quality is monitored, tracked, and addressed by implementing treatment or blending, as necessary. In addition to the groundwater plumes described above, there are other contaminants in the basin, including but not limited to nitrate and DBCP, which can require treatment. There are also emerging contaminants and new water quality regulations which could increase the level of required treatment, particularly per and polyfluoroalkyl substances (PFAS).

PFAS are manmade fluorinated organic compounds found in and used in the manufacturing of common items such as carpet, clothing, fabric, food packaging, nonstick cookware, and fire-retardant foams. PFAS are synthetically made to be resistant to both water and liquids, are not easily broken down and destroyed, and are believed to have adverse health effects. At the federal level, EPA finalized National Primary Drinking Water Regulations for certain PFAS compounds in April 2024, establishing enforceable MCLs of 4 parts per trillion (ppt) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) under the Safe Drinking Water Act. EPA also adopted MCLs for several additional PFAS compounds and a mixture-based hazard index in the 2024 rule; however, in May 2025, EPA announced its intent to retain the PFOA and PFOS MCLs while reconsidering or rescinding the remaining PFAS standards and extending compliance deadlines, with further rulemaking anticipated. In California, the State Water Resources Control Board has not yet adopted state-specific MCLs for PFAS but has established notification levels and response levels for multiple PFAS compounds, including PFOA, PFOS, and PFHxS, which trigger required actions when exceeded. California has identified PFAS drinking water standards as a highest regulatory priority and is in the process of adopting federal PFAS MCLs and evaluating additional California-specific regulatory approaches, including potential treatment-based standards.

Water agencies are responsible for providing treatment to ensure their potable water supply meets all applicable water quality regulations. When new drinking water rules are implemented, or when contaminant concentrations in wells increase unexpectedly, water suppliers must either blend affected wells with other sources to meet the MCLs or take the wells offline until treatment can be employed to meet the MCLs. It can take several years to fund, design and construct new treatment facilities so supply reliability can be impacted on a short term basis until corrective measures can be implemented. When this occurs, agencies typically shift to other water sources or rely on excess well capacity that is not affected.

Local surface water supply is generally of very high quality and is suitable for groundwater recharge and potable use following conventional treatment. TDS levels typically are typically consistent, averaging 178 mg/l. However, there are times when water quality is degraded by high storm flows and other conditions in the upper portion of the watershed, such as the 2024 Line Fire that burned nearly 44,000 acres of the Santa Ana Watershed. During these conditions, the water is often not suitable for treatment and potable use because the treatment processes are not designed to handle high turbidity and other constituents typically present in storm flows. During these periods, water agencies with treatment plants must stop diverting surface water and either use imported water at their treatment plants or shift to groundwater pumping to meet demands.

For recharge, the first flush of storms flows with the highest levels of debris and turbidity are typically allowed to flow by to limit maintenance needs, with recharge diversions beginning a few hours after the initial storm. Sediment buildup in the recharge basins is expected for stormwater capture and sediment removal is part of routine basin operation, so stormwater quality is generally not a concern for recharge.

3.10 Planned Water Supply Projects and Programs

The agencies in the Region have collaborated to manage the region's unique water supply, water quality, flood, and habitat challenges. These challenges are key considerations in the implementation of new water supply projects in the Region, as described in this section.

3.10.1 Recycled Water

Planned recycled water projects are described in Section 3.5.

3.10.2 Groundwater Recharge

One of the primary water supply strategies of the region is to recharge groundwater through spreading of imported water or through direct use of imported water which results in in-lieu recharge, managing floods and increasing stormwater recharge, and percolating recycled water. The region utilizes multiple spreading basins to recharge imported water and excess surface water, percolates effluent from multiple wastewater treatment facilities, and receives some recharge through percolation of stormwater. Potential new recharge projects under development are described in the following subsections and summarized in Table 3-16. The implementation timing for these projects has not yet been finalized by the Region. For the purposes of this Plan, it is assumed that one new project will be constructed in each 5-year period. The average long term yield of all of the projects is approximately 2,000 AFY so it is assumed that volume of new stormwater capture will be implemented every 5 years.

3.10.2.1 Santa Ana River Tributary Active Recharge Projects and Program for Expansion of Recharge Capacity (PERC) Projects

The Active Recharge Project is a collection of potential stormwater capture projects envisioned to help enhance capture and recharge of surface water into the SBB.

In 2015, a stormwater flow and capture analysis was performed to determine:

- The volume of surface water which has historically migrated out of the SBB.
- The volume of surface water that is generated internally within the SBB as the result of historical and on-going urbanization of the SBB.
- The quantity of stormwater that is generated by the major tributary creeks to the Santa Ana River.
- The location and preliminary (conceptual) designs of potential new stormwater capture facilities that could maximize the capture and recharge of surface water flows.
- Potential environmental constraints for each of the selected tributaries.
- Potential modifications to existing retention basins and spreading grounds to further increase surface water capture and recharge.
- The volume of potential additional recharge to the SBB and the effect to surface water volumes leaving the SBB that will occur as a result of implementation of an active recharge project (this remaining flow out of the SBB would be available for recharge in

the proposed Riverside North Aquifer Storage and Recovery Project; see Section 3.10.2.4).

The study included preparation of proposed conceptual designs for new and improved existing surface water capture and recharge facilities in areas of the tributary creeks having the greatest stormwater flows and the least number of environmental constraints.

A Partnership Agreement for joint Active Recharge Project development under the River HCP was entered into by SBVMWD and the Conservation District in January 2019 (2019 Agreement). This Agreement built upon the past history between the two agencies for cooperating and pooling resources for the regional betterment of the availability, quality and flexibility of groundwater supplies and management. SBVWCD sought conservation easements on 295 acres of Conservation District property for use as mitigation under the River HCP, which includes the Active Recharge Projects as Covered Activities. The 2019 Agreement established payment from SBVMWD to Conservation District for a total of $36,950,000 for these conservation easements, and provided that these funds would be used by the Conservation District in furtherance of water conservation efforts, land acquisitions, water quality or supply facilities development, such as implementation of a subset of the Active Recharge Projects in the Conservation District Service area, which were later renamed as the Program for Expansion of Recharge Capacity (PERC) projects. In addition, a PERC Policy Committee (Policy Committee) was established to review and advise the Conservation District on the development of the PERC projects. The Policy Committee includes the general managers and one Board appointed member of both the Conservation District and SBVMWD, or their designees, and one representative of the BTAC.

In late 2025, the Conservation District completed the Final Draft PERC Comprehensive Feasibility Study (PERC CFS), which consists of Volumes 1 through 4. The PERC CFS evaluated ten PERC project alternatives in the Upper Santa Ana River Watershed located at six recharge sites within the Waterman, Twin, Lynwood, Oak Creek, Plunge Creek, and Mill Creek watersheds, all of which would recharge local runoff into the Basin. Each site was evaluated for hydrology, grading design, operational potential, and environmental conditions. The updated long term yields from the PERC CFS are included in this Plan.

3.10.2.2 Santa Ana River Enhanced Recharge Project

The Enhanced Recharge Project is located on the Santa Ana River and has the capacity to divert up to 500 cubic feet per second (cfs) and up to approximately 80,000 AFY downstream of Seven Oaks Dam. The first phase of the project (upstream diversion and sedimentation facilities) was completed in 2019, the second phase of the project (enhanced recharge basins and facilities) was completed in 2024, and a future third phase will complete additional flexibility and redundancy improvements to optimize the diversion and delivery of diverted water for direct use and recharge.

3.10.2.3 Cactus Basin Recharge

San Bernardino Valley and the members of the Rialto Groundwater Council are working with SBCFCD to pursue recharge of imported SWP water into the existing Cactus Basins, which overlie the Rialto-Colton basin and are currently used for flood control only. The proposed project includes recharging imported water into Cactus Basins 3/3A and 5 and construction of the Cactus Basins Pipeline, approximately 2,200 feet from the Devil Canyon Azusa Pipeline to Cactus Basins. Recharge is planned to occur only during the dry season when the basins are not needed for flood control.

3.10.2.4 Riverside North Aquifer Storage and Recovery

The Riverside North Aquifer Storage and Recovery Project is a proposed storm water capture project located in the southern portion of the City of Colton and north of the City of Grand Terrace. The project consists of proposed in-channel and off-channel recharge. The proposed off-channel recharge facility location is along the west side of the Santa Ana River and proposes the construction of up to eight individual recharge basins encompassing approximately 25 acres. The in-channel recharge basin proposes construction of an inflatable dam across the Santa Ana River channel, which can be raised and lowered depending on the amount of water flowing in the river. This project is estimated to provide up to 6,000 acre-feet of new water per year. The in-channel and off-channel water captured will be recharged into the Riverside North sub basin and a portion of the retained water will be diverted to the Riverside Canal pipeline for direct use.

Proposed new recharge projects under development are described in the following subsections and summarized in Table 3-16.

Table 3-16: Potential Groundwater Recharge Projects

PROJECT NAME	BASIN	ESTIMATED YIELD (AFY)	WATER SOURCE RECHARGED
Cactus Basins	Rialto-Colton	3,000	SWP
Lynwood Basins	SBB	687	Stormwater
Mill Creek Basin Grading (Alternatives 1, 2, or 3)	SBB	2,248 - 3,751	Stormwater
Oak Creek Basins	SBB	1,020	Stormwater
Plunge Creek – Interim Alternative	SBB	1,790	Stormwater
Plunge Creek – Ultimate Alternative	SBB	3,656	Stormwater

PROJECT NAME	BASIN	ESTIMATED YIELD (AFY)	WATER SOURCE RECHARGED
Twin Creek (Small or Large Grading Alternatives)	SBB	480 – 1,900	Stormwater
Waterman Basin Grading	SBB	2,171	Stormwater
Devil Creek Basin	SBB	2,051	Stormwater
Cable Creek Basins	SBB	2,389	Stormwater
Cajon Creek	SBB	TBD	Stormwater
Cajon – Vulcan 1 Basins	SBB	579	Stormwater
Vulcan 2	SBB	782	Stormwater
Daley Canyon	SBB	TBD	Stormwater
Little Sand Creek	SBB	TBD	Stormwater
Enhanced Recharge in SAR Basins, Phases 1C	SBB	N/A	Stormwater
Lytle Creek Basin	SBB/Lytle	3,620	Stormwater
Lytle – Cajon Basin	SBB/Lytle	1,090	Stormwater
Riverside North Aquifer Storage & Recovery (Rubber Dam)	Riverside-Arlington	6,000	Stormwater
Oak Glen and Wilson Creek	Yucaipa	TBD	Stormwater
San Timoteo Creek	Yucaipa	TBD	Stormwater
Sand Creek	Yucaipa	TBD	Stormwater
Wildwood Creek	Yucaipa	TBD	Stormwater
Yucaipa Creek	Yucaipa	TBD	Stormwater
Zanja Creek	Yucaipa	TBD	Stormwater

4.0 Regional Water Use

This chapter provides a summary of the projected water demands for the Region through 2050, by agency and source. This chapter also describes the significant improvements in water use efficiency that have been achieved within the Region as well as planned water use efficiency programs.

IN THIS SECTION

4.1 Total Regional Water Demand

As described in Part 1 Chapter 2, the most recent population projections for the Region show slower growth than projected in previous plans. Accordingly, the total demand projections in this Plan are slightly lower than the projections from 2020 due to slower growth and increased water use efficiency.

Figure 4-1 shows a comparison of the 2020 IRUWMP vs. 2025 RUWMP demand projections and Table 4-1 summarizes the 2025 demand projections for Participating Agencies for a normal year from 2030 to 2050. This includes potable, non-potable, and recycled water demands, but excludes demands for water going into groundwater recharge. For the three Participating Agencies which are partially outside of SBVMWD (WVWD, RHWC, and SMWC), their entire service area demand is represented.

Table 4-1: Regional Demand Projections, 2030 - 2050 (AFY)

AGENCY	2030	2035	2040	2045	2050
Colton[1]	9,445	9,703	9,882	10,060	10,239
Loma Linda	5,195	5,318	5,434	5,553	5,676
Redlands	28,820	29,882	30,678	31,474	32,271
Rialto	9,475	9,610	9,745	9,880	10,015
RHWC	5,269	5,216	5,245	5,275	5,305
SBMWD	38,925	40,044	41,233	42,421	43,610
SMWC	2,348	2,502	2,532	2,561	2,591
WVWD	21,907	23,071	23,903	24,783	24,783
Total, Participating Agencies	121,384	125,346	128,652	132,007	134,490

Note 1: Terrace Water Company demands are included in Colton's demands.

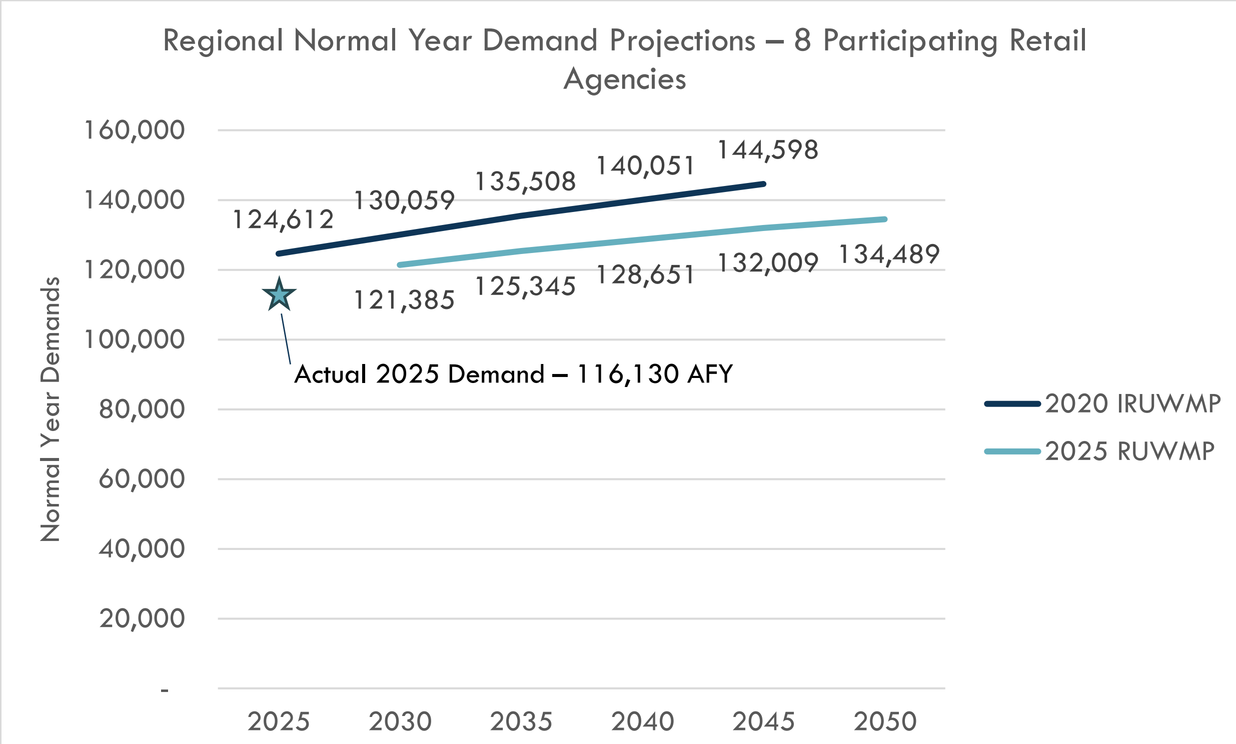

Figure 4-1: Comparison of 2020 and 2025 Demand Projections for Participating 2025 RUWMP Agencies

In addition to the Participating Agencies, this RUWMP incorporates data from other agencies within San Bernardino Valley that rely wholly or partially on the shared water resources analyzed in this Plan. While these agencies are not participants in this RUWMP, their water demands and associated supply needs are included to accurately evaluate regional water supply reliability through 2050.

For the urban water suppliers preparing separate 2025 UWMPs (EVWD, FWC, and YVWD), demand projections from their respective 2025 UWMPs were incorporated into this Plan. For agencies who use external supplies not evaluated in this Plan, only the portion of their demand that will be met by supplies in this Plan are included in the regional demand totals.

Fontana Water Company's demands within the region are set to their projected use of regional water resources (SWP water from SBVMWD, Lytle Creek surface water, Lytle groundwater [SBB], and Rialto-Colton groundwater), but exclude demands met by other external sources.

Similarly, YVWD's demands within the Region are based on the projected use of groundwater from SBB and Yucaipa Basin and SWP from SBVMWD only. Some of the supply projections shown in this RUWMP for YVWD differ from those shown in YVWD's 2025 UWMP. YVWD's 2025 UWMP shows all potentially available supplies and a supply surplus at the retailer level, whereas this RUWMP uses a different approach to the regional supply analysis that focuses on specific supplies that agencies intend to use to meet future demands and evaluates total supply surplus on a regional level. This RUWMP includes assumptions about future supply use for

YVWD to align with this regional methodology, but all retailers have the flexibility to modify their supply strategies to meet their demands.

SMWC total demands are included in their UWMP Chapter in Part 2, but for the regional demand analysis, only their projected use of Yucaipa Basin Groundwater is included.

RHWC's use of SBB groundwater is not included in the regional demands because the Riverside Entities' portion of the SBB supply is not evaluated in this Plan.

For the agencies who are not urban water suppliers and do not prepare UWMPs, their demands and associated supply needs were estimated and incorporated into this Plan based on direct input from the agency, records of prior water use, or assumed to be the same as projections from the 2020 IRUWMP.

Figure 4-2 shows demand projections for regional supplies for all regional agencies for a normal year from 2030 to 2050. This includes potable, non-potable, and recycled water demands, but excludes demands for water used for groundwater recharge. The total projected water demands of participating and non-participating agencies within SBVMWD's service area are expected to increase by approximately 17,000 AFY between 2030 and 2050.

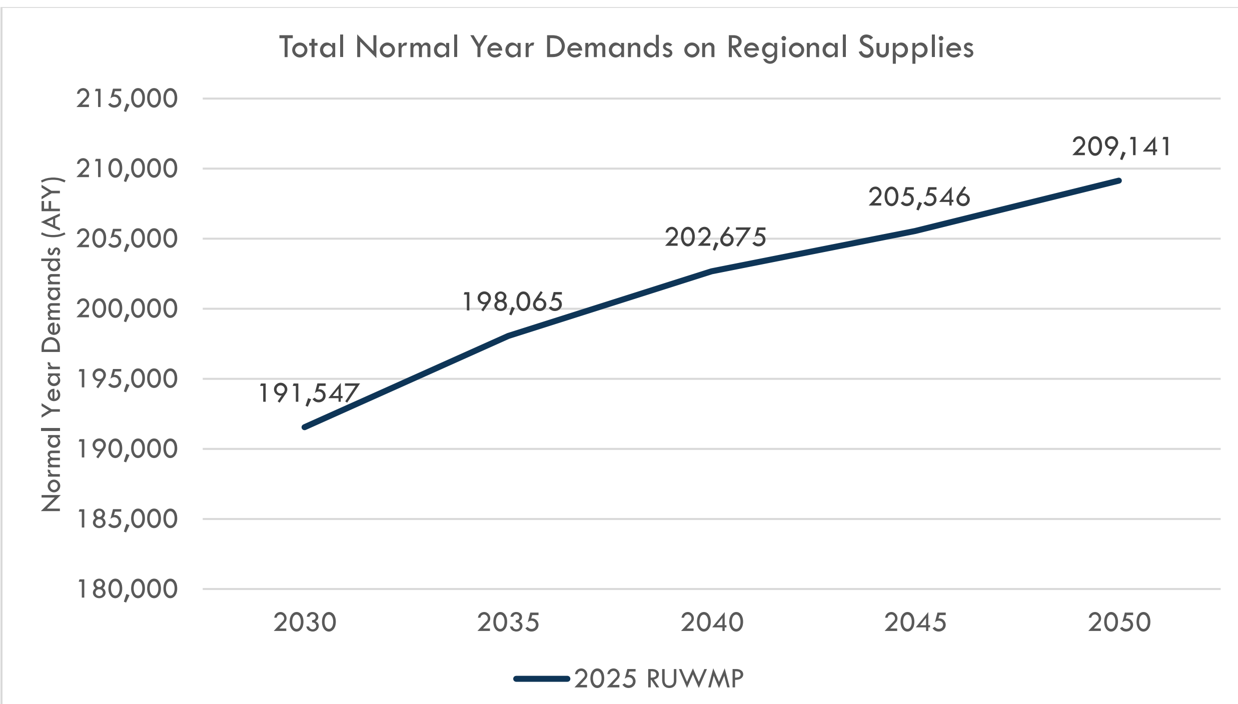

Figure 4-2: Regional Demand Projections for Regional Supplies in the RUWMP 15 Agencies plus Other/Private San Bernardino County Entities

4.2 Demands for Local Groundwater and Surface Water Supplies

This section summarizes the anticipated demand for each water source based on the planned use by each agency in the Region. For basins subject to the Western Judgement, demands are subtotaled by San Bernardino County Entities and compared to the pumping provisions in the Western Judgement specific to the San Bernardino County Entities. For agencies participating in this Plan, demand projections were developed for normal years, and then a breakdown of which supplies would be used to meet those demands was prepared, providing planned production from each supply source. For agencies not participating in this plan, projected production from each supply source was either based on information provided by that agency, or on 2020 IRUWMP projections.

4.2.1 San Bernardino Basin

As detailed in Part 1 Chapter 3, local groundwater sustainability under the Judgment is generally maintained by providing supplemental recharge whenever cumulative extractions exceed cumulative safe yield or when groundwater levels are lower than certain specific water level elevations in specified wells. In the SBB, any supplemental supply determined by the Watermaster as “New Conservation” (which can include recycled water or stormwater recharge) increases the safe yield and any “return flow” from sources outside of the safe yield calculation are credited against cumulative extractions for the purpose of determining the recharge obligation.

For the SBB, the Watermaster assumes a 36% return flow for extractions above safe yield and imported water use. In this Plan, the 36% return flow is not credited to supply in the SBB to be conservative and avoid potential double-counting. Although ongoing and future recycled water recharge and stormwater capture projects do add water to the SBB, they are also not credited as supplies in addition to the safe yield established by the Judgment, because they have not been determined to be “New Conservation” by the Watermaster.

Table 4-2: Planned Pumping and Diversions from San Bernardino Basin (AFY)

AGENCY	2030	2035	2040	2045	2050
SBB Groundwater	**106,773**	**112,113**	**115,927**	**118,001**	**120,797**
Colton[1]	1,950	2,208	2,387	2,565	2,744
Loma Linda	5,195	5,318	5,434	5,553	5,676
Redlands	14,963	15,872	16,537	17,202	17,867
Rialto	5,917	6,052	6,187	4,722	4,857
SBMWD	37,581	38,700	39,889	41,077	42,266
WVWD	6,759	7,923	8,755	9,635	9,635
East Valley Water District	14,789	16,372	16,871	17,378	17,885
Fontana Water Company	6,390	6,390	6,390	6,390	6,390
Muscoy Mutual Water Co.	1,600	1,600	1,600	1,600	1,600
Other/Private SB Pumpers	10,878	10,878	10,878	10,878	10,878
Yucaipa Valley Water District	750	800	1,000	1,000	1,000
SBB Surface Water	**21,665**	**21,767**	**21,799**	**21,831**	**21,864**
Redlands	9,500	9,500	9,500	9,500	9,500
Rialto	1,000	1,000	1,000	1,000	1,000
WVWD	3,800	3,800	3,800	3,800	3,800
Bear Valley Mutual Water Co.	1,557	1,557	1,557	1,557	1,557
East Valley Water District	948	1,050	1,082	1,114	1,147
Fontana Water Company	4,860	4,860	4,860	4,860	4,860
Total SBB Production, San Bernardino County Entities	**128,428**	**133,880**	**137,726**	**139,862**	**142,661**
RHWC (Riverside County Entity)	1,800	1,800	1,800	1,800	1,800

Note 1: Terrace Water Company production is included in Colton's production.

SBB planned production and Judgment safe yield are compared in Table 4-3. RHWC is a Riverside County entity in the Judgment which has numerical rights to the SBB and pumps within them. Their production is captured in Table 4-2, but their production and rights are not included in the San Bernardino County Entities obligations in the Judgment, so they are not reflected in Table 4-2.

Table 4-3: SBB Supply and Demand Balance (AFY)

SAN BERNARDINO COUNTY ENTITIES	2030	2035	2040	2045	2050
Total Planned Pumping and Diversions	128,428	133,880	137,726	139,862	142,661
Adjusted Safe Yield with New Conservation[1]	172,745	172,745	172,745	172,745	172,745
Judgment-based Need for Imported Water Recharge	Not required	Not required	Not required	Not required	Not required
Judgment-based Surplus Supply	44,307	38,865	35,019	32,913	30,084

Note 1: Per the Western-San Bernardino Judgment, 36% of direct deliveries and extractions over safe yield are credit as a return flow that increase SBB production rights. That is not reflected in this analysis to be conservative.

Despite not being obligated to recharge the SBB under the terms of the Judgment, the region is proactively investing in projects to recharge the SBB to protect the sustainability of the Basin. Table 4-4 and Figure 4-3 shows existing and proposed projects which would supplement storage in the SBB. The recycled water and stormwater capture projects have not been evaluated by the Watermaster to determine whether they are “New Conservation” under the Judgment. While these projects do increase recharge into the SBB, at the time of the Judgment was made most of the area was on septic systems and more of the area was undeveloped, so a portion of the water recharged due to current stormwater capture and recycled water projects may have already been included in the original safe yield number. Therefore, they are excluded from the supply totals in this Plan to avoid double counting supplies. Table 4-4 also includes recycled water projects which offset the use of potable supplies in the SBB.

Table 4-4: Existing and Proposed SBB Supply Improvement Projects (AFY)

	2030	2035	2040	2045	2050
Existing SBB Local Supply Projects	**17,738**	**18,064**	**18,354**	**18,649**	**18,951**
SNRC Recharge at Weaver Basins	9,000	9,000	9,000	9,000	9,000
Redlands WRF Recharge (disposal)[4]	4,037	4,210	4,368	4,532	4,702
Redlands Recycled Water Direct Use	3,357	3,510	3,642	3,773	3,905
SBMWD TTS Phase 1 (1.2 MGD)[1]	1,344	1,344	1,344	1,344	1,344
Potential SBB Local Supply Projects	**6,256**	**8,256**	**10,256**	**12,256**	**18,736**
SBWRP TTS Phase 2 (3.8 MGD)[1]	4,256	4,256	4,256	4,256	4,256
SBWRP TTS Phase 3 (4.0 MGD)					4,480
Stormwater Capture Projects	2,000	4,000	6,000	8,000	10,000
Potential SBB Imported Supply Projects	**16,000**	**16,000**	**27,200**	**27,200**	**27,200**
Imported Water Recharge[2]	16,000	16,000	16,000	16,000	16,000
Sites Reservoir – Long-term Average[3]			11,200	11,200	11,200
Total Existing and Potential SBB Supply Projects	**39,994**	**42,320**	**55,810**	**58,105**	**64,887**

Notes: [1]Tertiary Treatment System Phase 1 (1.2 MGD) is active and produces recycled water for onsite use only and does not include recycled water recharge. Phase 2 is the first phase with recharge. Phase 3 is anticipated by 2050.

[2]16,000 AFY is the current average annual voluntary imported water recharge into the SBB from 2000-2025.

[3]Latest CalSIM3 model predicts 11,200 AFY long-term average yield to SBVMWD from Sites Reservoir. Most of this supply would go toward the SBB in the form of direct recharge or in-lieu recharge from decreased pumping.

[4]Bunker Hill Salinity Management Feasibility Study (Water Systems Consulting, Inc., 2025).

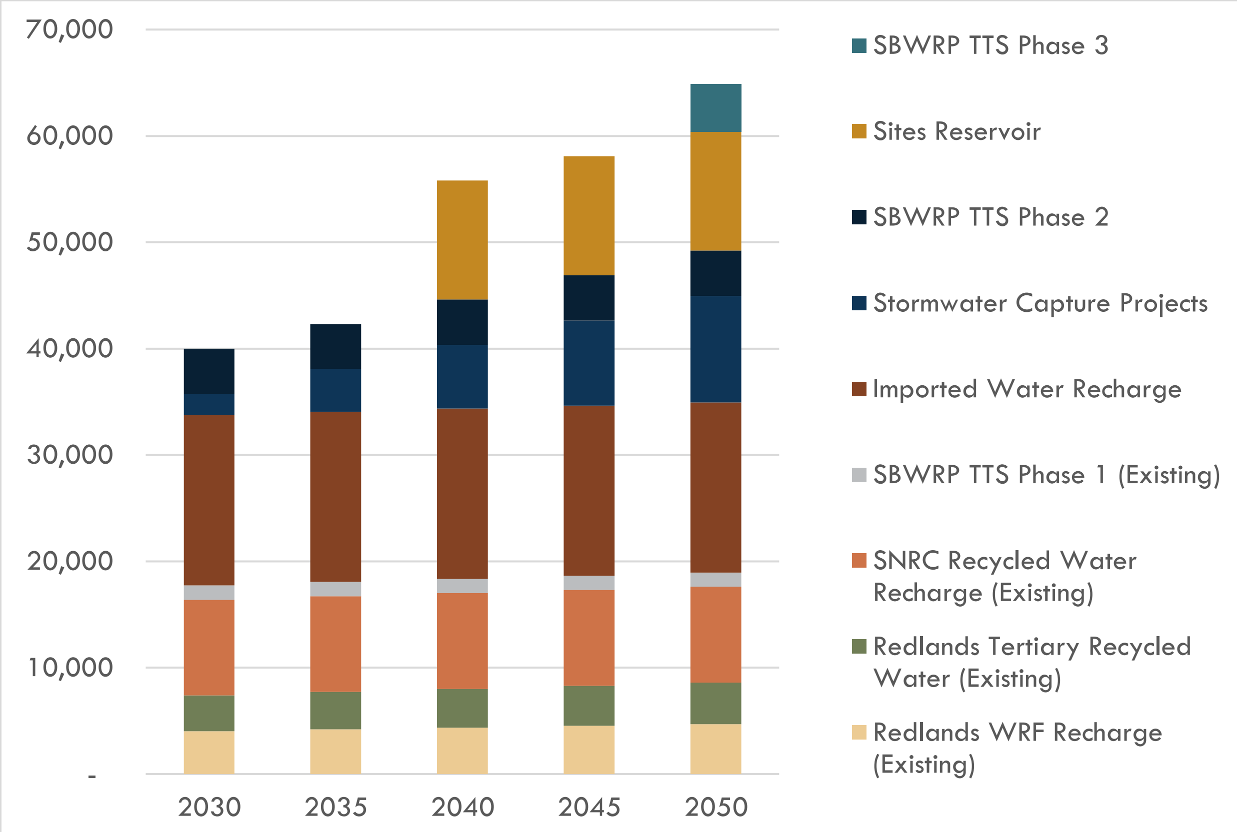

Figure 4-3: Existing and Proposed SBB Supply Improvement Projects (AFY)

4.2.2 Rialto-Colton Basin

Planned normal year production from the Rialto-Colton Basin is summarized in Table 4-5. Due to low groundwater levels, pumping within the Rialto Basin Decree boundary is assumed to remain at a 50% curtailment throughout the planning period for this Plan (see Section 3.2). Colton has two wells outside of the Decree boundary, and Other/Private wells are outside the scope of the Decree.

Table 4-5: Planned Pumping from Rialto-Colton (AFY)

AGENCY	2030	2035	2040	2045	2050
Colton	3,395	3,395	3,395	3,395	3,395
Rialto[2]	1,343	1,343	1,343	2,943	2,943
WVWD	3,307	3,307	3,307	3,307	3,307
Fontana Water Company[2]	4,750	4,750	4,750	3,150	3,150
Other/Private SB Pumpers	70	70	70	70	70
Total Rialto-Colton Basin Production, San Bernardino County Entities[1]	**12,865**	**12,865**	**12,865**	**12,865**	**12,865**

Notes: [1]San Bernardino County entities base period production (1959-1963) was 8,235 AFY. Even when production exceeds base period production, recharge is not required as long as the three index wells water level is above 822 ft.

[2]After 2040, a 1,600 AFY lease of Rialto Basin production rights from Rialto to FWC will end so a like amount of production is assumed to shift from FWC back to Rialto.

There is no current obligation to recharge the Rialto-Colton Basin under the Western Judgment, because the mean water level of three index wells is above 822.04 ft (see Section 3.2). However, to restore water levels in the Rialto Basin Decree area, the following recharge efforts are planned:

- Up to 2,500 AFY via in-lieu recharge by FWC through the Summit WTP

  In accordance with the Settlement Agreement described in Section 3.2.3, this in-lieu recharge approach is part of the FWC's obligation to deliver 61,000 AF of replenishment water to recharge the Rialto Basin. Per the intent of the agreement, the replenishment water must be from an imported water source "outside" of San Bernardino Valley's Table A allocation, unless San Bernardino Valley declares a portion of its Table A surplus.

- 3,000 AFY long-term average recharge through SWP spreading at Cactus Basins.

In addition to the recharge required by the Settlement Agreement, members of the Rialto Groundwater Council can voluntarily purchase SWP from SBVMWD's Table A supply to recharge the Rialto-Colton Basin, once the Cactus Basin Recharge project is implemented.

4.2.3 Riverside North Basin

Planned normal year production from the Riverside North Basin is summarized in Table 4-6. There is no current obligation to recharge the Riverside North Basin under the Western Judgment, because the mean water level of three index wells is above 822.04 ft (see Section 3.2). There are currently no recharge efforts planned, however two possible recharge methods have been proposed: the Riverside North Aquifer Storage and Recovery (Rubber Dam) project (discussed in Section 3.10.2.4) and imported water spreading at turnout WR-23.

Table 4-6: Planned Pumping from Riverside North Basin (AFY)

AGENCY	2030	2035	2040	2045	2050
Colton	4,100	4,100	4,100	4,100	4,100
Rialto	1,200	1,200	1,200	1,200	1,200
WVWD	1,041	1,041	1,041	1,041	1,041
Other/Private SB Pumpers	1,520	1,520	1,520	1,520	1,520
RIX Over-extractions[2]	2,700	2,700	2,700	2,700	2,700
Total Riverside North Basin Production, San Bernardino County Entities[1]	**10,561**	**10,561**	**10,561**	**10,561**	**10,561**
RHWC[3]	**3,219**	**3,166**	**3,195**	**3,225**	**3,255**

Notes: [1]San Bernardino County entities base period production (1959-1963) was 9,609 AFY. Even when production exceeds base period production, recharge is not required as long as the three index wells water level is above 822 ft.

[2]RIX Over-extractions are groundwater extractions by RIX treated with UV disinfection and discharged to the Santa Ana River in excess of groundwater infiltrations from the RIX plant in order to maintain hydraulic control. The estimate of 2,700 AFY is from the year 2040 estimate from the SBMWD SBWRP 2020 Facilities Master Plan.

[3]RHWC is a Riverside County entity in the Judgment which has numerical rights to the SBB and pumps within them.

4.2.4 Yucaipa Basin

Planned normal year production from the Yucaipa Basin is summarized in Table 4-7. The Yucaipa Basin is managed by a Groundwater Sustainability Plan which established the sustainable yield at 10,980 AFY. Planned production is below the safe yield, so recharge is not required. However, YVWD and Western Heights Water Company are planning voluntary recharge projects, which are estimated to recharge 5,500 AFY long-term average into the Yucaipa Basin.

Table 4-7: Planned Pumping from Yucaipa Basin (AFY)

AGENCY	2030	2035	2040	2045	2050
South Mesa Water Company	1,878	2,002	2,025	2,049	2,073
Yucaipa Valley Water District	3,045	3,500	4,000	4,500	5,000
Western Heights Water Company	2,200	2,200	2,200	2,200	2,200
South Mountain Water Company	540	540	540	540	540
Total	**7,663**	**8,242**	**8,765**	**9,289**	**9,813**
Yucaipa Basin GSP Safe Yield	10,980	10,980	10,980	10,980	10,980
Supply Surplus	**3,317**	**2,738**	**2,215**	**1,691**	**1,167**

4.3 Demands for Imported Water

In the Region, imported water is used for direct deliveries to several retail water producers, direct delivery to Bear Valley Mutual Water Company in-lieu of releases from Big Bear Lake, and groundwater recharge.

4.3.1 Direct Deliveries

Several retail water producers have water treatment plants to treat imported water. The following agencies are planning to continue taking direct delivery of imported water in the future: EVWD, Redlands, WVWD, YVWD, FWC, CLAWA, and Marygold Mutual Water Company (via WVWD).

4.3.2 In-Lieu Deliveries

Bear Valley Mutual Water Company constructed the original Bear Valley Dam in 1884 to create Big Bear Lake as a storage reservoir for their customers, downstream farmers. In 1964, the residents of Big Bear Lake formed the Big Bear Municipal Water District (Big Bear Municipal) in an effort to eliminate Lake releases to Bear Valley Mutual so that the lake level would remain high for recreational use and tourism. After more than a decade of litigation, a Judgment was executed in 1977 which reduced the amount of Lake releases to Bear Valley Mutual. Under the terms of the 1977 Judgment, Big Bear Municipal purchased from Bear Valley Mutual the lake bottom, Bear Valley Dam, and the right to utilize and manage the surface of Big Bear Lake for recreation and wildlife. In return, deliveries to Bear Valley Mutual were capped at a total of 65,000 AF in any ten-year period. These deliveries can be made in the form of Lake releases or can be provided from other sources “in-lieu” of Lake releases (in-lieu deliveries). In-lieu deliveries to Bear Valley Mutual are preferable to Big Bear Municipal since they do not result in water being removed from the lake.

In 1996, Big Bear Municipal Water District entered into a water purchase agreement with San Bernardino Valley that reduces the amount of water Big Bear Municipal must release from Big Bear Lake. For an annual payment to San Bernardino Valley, San Bernardino Valley provides SWP water for the downstream water needs that would have historically been met by lake releases whenever the Lake is at specified levels. San Bernardino Valley may also provide water from other sources when the SWP supply is limited. This historic agreement helped Big Bear Municipal achieve its mission of Lake level stabilization for recreation while providing Bear Valley Mutual with the water it needs for its customers. Under the terms of the Agreement, Bear Valley Mutual may request any amount of delivery for a given year, provided that the total of all their requested deliveries do not exceed 65,000 AF in any ten-year period. Bear Valley Mutual typically limits its request to no more than the ten-year average, or 6,500 AFY. SBVMWD may also provide water from other sources, such as groundwater in storage, when the SWP supply is limited.

4.3.3 Groundwater Recharge

One of the primary water management strategies in the Region is to store imported water when it is available so that it can be used during drought periods. Any unused San Bernardino Valley SWP water is available to be purchased by retail agencies and other customers to be stored in the regional groundwater basins for later pumping.

4.3.4 Total Imported Water Demands

Requests for delivery of supplemental imported water in the SBVMWD service area are subject to approval as set forth in SBVMWD Resolution 888. Table 4-8 summarizes projected normal year direct and in-lieu demands for imported water during the period of this Plan. Planned deliveries may be higher or lower depending on SWP Table A allocation and available carryover water. Projected uses of imported water for groundwater recharge is discussed further in Section 5.1.1.2.

Table 4-8: Normal Year Imported Water Direct Deliveries (AFY)

AGENCY	2030	2035	2040	2045	2050
Redlands	1,000	1,000	1,000	1,000	1,000
CLAWA	60	60	60	60	60
WVWD	7,000	7,000	7,000	7,000	7,000
BVMWC	6,500	6,500	6,500	6,500	6,500
EVWD	3,223	3,568	3,677	3,788	3,898
FWC	3,200	3,200	3,200	3,200	3,200
Marygold MWC	320	320	320	320	320
YVWD	6,000	6,000	6,000	6,000	6,000
Total	27,303	27,648	27,757	27,868	27,978

4.4 Demands for Recycled Water

Some water agencies in the Region are currently using recycled water to meet non-potable demands and for groundwater recharge. Additional recycled water production and use is planned in the future. Table 4-9 summarizes the anticipated future uses of recycled water and additional details are included in each agency's respective chapter in Part 2.

Table 4-9: Recycled Water Use Projections (AFY)

AGENCY[1]	2030	2035	2040	2045	2050
Direct Use (Non-Potable)	**4,716**	**4,869**	**5,001**	**5,132**	**5,264**
Redlands	3,357	3,510	3,642	3,773	3,905
Rialto	15	15	15	15	15
SBMWD	1,344	1,344	1,344	1,344	1,344
Groundwater Recharge (all in SBB)	**17,293**	**17,466**	**17,624**	**17,788**	**22,438**
Redlands[2]	4,037	4,210	4,368	4,532	4,702
SBMWD	4,256	4,256	4,256	4,256	8,736
EVWD	9,000	9,000	9,000	9,000	9,000

Notes: [1] While YVWD and FWC are included in other supply tables that are shared supplies with participating agencies, they are excluded from this table because their direct non-potable recycled water use is independent of participating agencies.

[2]Bunker Hill Salinity Management Feasibility Study (Water Systems Consulting, Inc., 2025).

4.5 Water Use Efficiency

The Region has invested in expanding and optimizing local water resources to improve long term water supply reliability for its residents. At the same time, the Region continues to advance water use efficiency and conservation programs that have meaningfully reduced per-capita demand and strengthened long-term supply reliability. These conservation efforts are a core component of the Region's resource management strategy and help maximize the value of available supplies.

Since 2005, there have been several regulatory changes related to conservation including new standards for plumbing fixtures, a new landscape ordinance, a state universal retrofit ordinance, metering and billing requirements, new Green Building standards, demand reduction goals and more.

4.5.1 Reducing Per Capita Water Use

The Water Conservation Act of 2009 (SB X7-7) required a 20-percent reduction in urban per capita water use in California by December 31, 2020 (20 by 2020). The bill required each urban retail water supplier to determine their baseline per capita water use (gallons per capita per day or gpcd), develop an urban water use target for year 2020 and set a 2015 interim urban water use target. Each of the agencies participating in this Plan have met their 2020 targets, as shown in Figure 4-4 and some have continued to reduce their per capita water demand beyond the 2020 target. These significant reductions in per capita water use essentially expand the water supply for the Region by reducing use of local groundwater supplies.

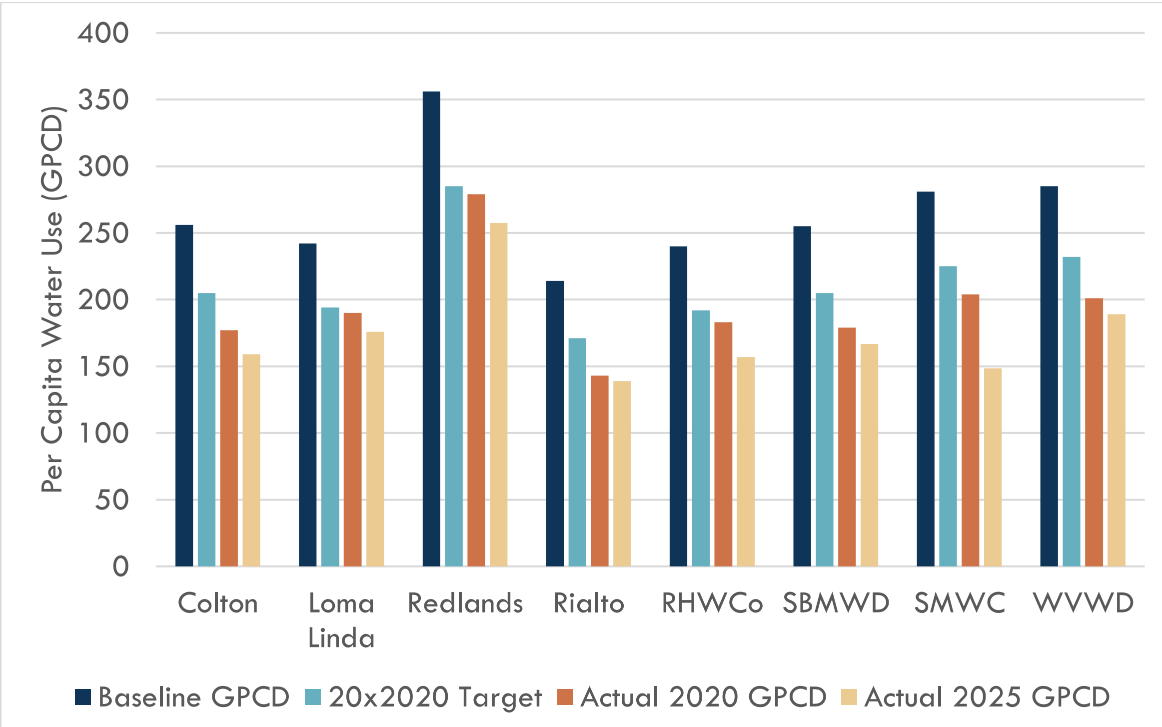

Figure 4-4: 20x2020 Compliance

4.5.2 New Water Conservation Legislation

Going forward, Participating Agencies that are retail suppliers are continuing to align with new water use efficiency standards from the CWOL Regulation, which supersede SBX7-7 standards. In 2018, two policy bills were enacted by the California Legislature, Assembly Bill 1668 (AB1668, Friedman) and Senate Bill 606 (SB606, Hertzberg), collectively referred to as the "2018 Water Conservation Legislation." Based on the 2018 Water Conservation Legislation, related legislation, and subsequent adoption of the CWOL Regulation, each urban retail water supplier must calculate and comply with its specific Urban Water Use Objective (UWUO), with efficiency standards becoming increasingly stringent through 2040. DWR and the State Water Resources Control Board (State Board) have developed a reporting framework for calculating the UWUO and compliance annually. The UWUO is composed of several standards to create one comprehensive objective, as shown in Figure 4-5 and described further below. Additionally, each urban retail water supplier must submit an Annual Water Use Report (AWUR) starting January 1, 2024 to document progress toward complying with the UWUO regulations. The required calculations and reporting associated with the CWOL Regulations are complex and extensive and are therefore not required to be included in the UWMP.

Figure 4-5. Urban Water Use Objectives Regulation Overview

Indoor Residential

The indoor residential water use standard was set as part of Senate Bill (SB) 1157, which adopts recommendations made by DWR and the State Water Board to reduce indoor water use targets from 55 gpcd to 47 gpcd by 2025 and 42 gpcd by 2030.

Outdoor Residential

Outdoor residential use is expected to be based on the amount of irrigable area and an increasingly stringent landscape efficiency factor with compliance progress measured annually through 2035, when the efficiency factor is proposed to remain constant. The SWRCB assists agencies in calculating outdoor residential use budgets by providing aerial imagery that delineates irrigable irrigated, irrigable but not irrigated, and non-irrigable areas. This data has been provided to suppliers and is expected to be updated in five-year cycles.

Commercial, Industrial, and Institutional Landscape

Commercial, industrial, and institutional (CII) standards will be based on total gallons used and will require implementation of dedicated irrigation meters or in-lieu technologies, and other performance measures for conservation. Additionally, CII customer accounts will need to be classified into specific and general categories for reporting and compliance over the course of several years yet to be determined by the State.

4.5.2.1 Water Loss

The water loss component of the UWUO is a standalone component that must be met on its own beginning in 2028, as described in this section.

Distribution system water losses are the physical potable water losses from the water system, calculated as the difference between water produced and the amount of water billed to customers plus other authorized uses of water. Sources of water loss include:

- Leaks from water lines – Leakage from water pipes is a common occurrence in water systems. A significant number of leaks remain undetected over long periods of time as

they are very small; however, these small leaks contribute to the overall water loss. Aging pipes typically have more leaks.
- Water used for flushing and fire hydrant operations.
- Unauthorized uses or theft of water.
- Customer Meter Inaccuracies – Customer meters can under-represent actual consumption in the water system

In accordance with DWR requirements, the individual retail agencies have quantified their water losses, using the American Water Works Association (AWWA) Water Audit process, in their respective UWMPs. Water lost through leaks represents a loss of revenue for the retail agencies and increases the amount of groundwater or surface water that must be produced. Because the region relies so heavily on groundwater, this water is not permanently lost; it eventually contributes to recharge of the local groundwater basin.

CWC Section 10608.34 required the State Water Board to develop water loss performance standards for urban retail water suppliers to minimize water waste through system leaks. Water loss performance standards were developed through a rulemaking that became effective in 2023. Under the regulations, each supplier will be required to comply, by 2028, with an individualized volumetric water loss standard based on real loss, using the economic model developed by the State Water Board and the supplier's own unique data. Real loss is the physical loss of water from water distribution systems, as opposed to apparent losses, which are revenue losses due to meter inaccuracies, billing errors or unauthorized consumption. A supplier's baseline water loss is calculated as the average water loss from at least 3 of the 4 water loss audits from 2017 – 2020. The real water loss performance standard is based on gallons per service connection per day (gpscd), or gallons per mile of pipe per day (gpmd), depending on how the supplier reports real loss. Post-2028 compliance with volumetric water loss standards will be assessed every three years based on the average of the supplier's real loss from the preceding three years, with an allowed variation of 5 gallons per connection per day above the supplier's water loss standard. Apparent loss standards are equal to the baseline apparent loss and compliance is evaluated at the same time as compliance with the Real Water Loss Performance Standard.

Although the compliance period has not yet started, CWC Section 10631 (d)(3)(C) requires water suppliers to provide data in the UWMP to show whether the supplier met its State Water Board water loss performance standard. Each supplier's 2025 UWMP includes a discussion water loss performance and actions that are being taken to reduce water loss.

4.5.3 Regional Demand Management Measures

San Bernardino Valley has consistently invested in water conservation efforts since its Water Conservation Master Plan was first adopted in 2007. The demand reduction measures in the Master Plan were incorporated into the 2010 RUWMP, 2015 RUWMP, and 2020 IRUWMP updates and are making a measurable impact on demand reduction.

In 2021, SBVMWD developed an enhanced Demand Management Program that will use demand management measures (DMMs) as the basis for funding and assessing the performance of water conservation measures, programs, and incentives within the Region. This data-oriented and performance-based approach will allow SBVMWD to fund a wide range of water conservation measures, programs and incentives proposed by retail suppliers that will have a greater impact on reducing the total amount of water use.

The overarching goal is consistent demand management into the future. The proposed program includes both demand-side and supply-side conservation and is cost effective through economies of scale and leveraging grant funding for the service area. The program focuses on enhancing the technical, managerial, and financial capacity of retail agencies to deliver on urban water conservation and utilize broad-based partnerships and public engagement to help the retail agencies meet their upcoming water use objectives.

Demand Management Measures being implemented by individual retail agencies are described in their respective UWMPs.

5.0 Comparison of Regional Supplies and Demands

This chapter compares the total supplies and demands in the Region under various hydrologic scenarios, including an average (or “normal”) year, single dry year, 5-year drought. Wet year impacts and water quality impacts are also discussed. The analysis concludes that the Region has sufficient supplies to meet demands through 2050 in all analyzed hydrologic scenarios.

IN THIS SECTION

The UWMP Act requires urban water suppliers to assess water supply reliability by comparing total projected water use with the projected water supply over the next twenty years or beyond in 5-year increments. The UWMP Act also requires an assessment for a single-dry year and 5-year drought.

5.1 Water Supply Reliability

Chapter 3 provided information about regional water supplies and Chapter 4 provided information on total projected demands during a normal year. This section compares the total supplies and demands in the Region under the different hydrologic conditions listed above. A discussion of the supplies and demands for each participating retail agency are described in their respective chapters in Part 2, or the respective UWMPs of non-participating agencies.

5.1.1 Imported Water Supply Reliability

Imported water supply reliability is discussed in detail in Section 3.1. According to the 2025 Delivery Capability Report, SBVMWD expects its Table A allocation to vary depending on the type of year, and generally be reduced in the future. For single dry years, SBVMWD anticipates taking delivery of 10,000 AFY of carryover water stored from previous years to supplement Table A deliveries. During 5-year droughts, it is assumed that carryover water will not be available. SBVMWD prioritizes direct deliveries to surface water treatment plants when supplies are limited and coordinates with the requesting agencies to allocate available supplies if full delivery requests cannot be met. For purposes of this Plan, an example of direct delivery curtailments are given during dry years, however this Plan does not prescribe how supplies will actually be distributed when all delivery requests cannot be met. As described in Section 3.1, SBVMWD has invested in Sites Reservoir, which is anticipated to provide deliveries by 2040 and will supplement water supplies during single dry and multiple dry years.

Table 5-1: San Bernardino Valley Anticipated Imported Water Supplies (AFY)

	2030	2035	2040	2045	2050
Normal Year (1922-2021)					
% Table A Available (Table 3-3)	51%	49%	46%	43%	41%
Anticipated Deliveries (Table 3-3)	52,668	49,932	47,196	44,460	41,724
Carryover from Previous Table A (Section 5.1.1)	-	-	-	-	-
Storage from Sites Reservoir (Section 3.1.4)	-	-	11,200	11,200	11,200
Total Normal Year Supply	**52,668**	**49,932**	**58,396**	**55,660**	**52,924**

	2030	2035	2040	2045	2050
Single Dry Year (2014, 2021, 2022)					
% Table A Available (Table 3-4)	5%	5%	5%	5%	5%
Anticipated Deliveries (Table 3-4)	5,130	5,130	5,130	5,130	5,130
Carryover from Previous Table A (Section 5.1.1)	10,000	10,000	10,000	10,000	10,000
Storage from Sites Reservoir (Section 3.1.3)	-	-	11,200	11,200	11,200
Total Single Dry Year Supply	**15,130**	**15,130**	**26,330**	**26,330**	**26,330**
5 Consecutive Dry Years (Table 3-4)					
% Table A Available (Table 3-4)	15%	15%	14%	14%	14%
	15,105	14,820	14,535	14,250	13,965
Carryover from Previous Table A (Section 5.1.1)	-	-	-	-	-
Storage from Sites Reservoir (Section 3.1.3)	-	-	10,000	10,000	10,000
Total 5 Dry Year Supply	**15,105**	**14,820**	**24,535**	**24,250**	**23,965**
Wet Year (Table 3-4)					
% Table A Available (Table 3-4)	84%	83%	83%	82%	82%
Anticipated Deliveries (Table 3-4)	86,184	85,158	85,158	84,132	84,132
Carryover from Previous Table A (Section 5.1.1)	-	-	-	-	-
Storage from Sites Reservoir (Section 3.1.3)	-	-	-	-	-
Total Wet Year Supply	**86,184**	**85,158**	**85,158**	**84,132**	**85,132**

5.1.1.1 Dry Year Direct Delivery Reductions

Direct delivery imported water demands are met by normal year Table A allocations. In both single dry and consecutive dry years, approximately 15,000 AFY of imported water is available (excluding Sites Reservoir), as shown in Table 5-1. The numbers differ slightly; single dry years have lower Table A allocations but have carryover water available, and multiple dry years have higher Table A allocations and are assumed to have no carryover water available. Normal year direct delivery demands are projected to be 27,648 AFY in 2035 (see Section 4.3.1). Direct deliveries would need to be reduced from normal year levels in response to lower imported water availability until Sites Reservoir is online in 2040. Table 5-2 provides an example of how direct deliveries could be reduced in dry years to align with available supply. However, this Plan does not prescribe how supplies will be distributed when all delivery requests cannot be met (actual deliveries would be determined by SBVMWD in collaboration with the retailers requesting direct delivery in a given year). These example reductions were applied in each participating agency's UWMP dry year water supply reliability analysis.

BVMWC typically receives 6,500 AFY of imported water in-lieu of receiving Big Bear Lake releases (see Section 4.3.2). SBVMWD can deliver SBB groundwater to BVMWC instead of imported water if imported water supplies are not available. In 2022, which was a very dry year with 5% Table A allocation, BVMWC took 1,750 AFY of imported water and 6,500 AFY of SBB groundwater. There may be operational requirements that prevent Bear Valley Mutual from taking any less imported water, so 1,750 AFY was considered the minimum quantity of imported water that could be given to BVMWC, with the balance of its in-lieu demand met by SBB groundwater. The remaining agencies would distribute the remaining imported water proportionally to normal year supplies, each receiving approximately 40% less than normal year deliveries.

Starting in 2040, Sites Reservoir would provide supplemental imported water supplies in dry years that would avoid the need for a reduction in direct deliveries to any agency except for BVMWC, which would have varying reductions of up to 4,000 AFY through 2050 that would be made up with in-lieu SBB groundwater.

Table 5-2: Example Reductions in Imported Water Direct Deliveries (AFY)

AGENCY	2035 NORMAL YEAR DELIVERY	2035 DRY YEAR DELIVERY
Redlands	1,000	600
CLAWA	60	36
WVWD	7,000	4,200
BVMWC	6,500	1,750

AGENCY	2035 NORMAL YEAR DELIVERY	2035 DRY YEAR DELIVERY
EVWD	3,568	2,141
Marygold MWC	320	192
FWC	320	1,920
YVWD	6,000	3,600
Total Demand	**27,648**	**14,439**
2035 Single Dry Year Imported Water Available		**15,130**
2035 Five Consecutive Dry Year Imported Water Available		**14,820**

5.1.1.2 Imported Water Recharge

While recharge is not currently required under the Western Judgment or under the Yucaipa GSP for any groundwater basin in this Plan, the regional water agencies remain committed to proactively recharging groundwater basins with imported water, when available in excess of direct delivery demands. Table 5-3 shows the proposed voluntary recharge amounts for each basin over a long-term average, totaling 22,500 AFY. Recharge typically does not occur in dry years since Table A supplies are prioritized for direct deliveries, therefore during wet years, more recharge must occur to achieve the desired long-term average.

Table 5-3: Proposed Long-term Average Imported Water Recharge (AFY)

BASIN	QUANTITY	NOTES
San Bernardino Basin	16,000 AFY	2000-2025 average imported water recharge
Rialto-Colton Basin	3,000 AFY	Cactus basin spreading
Yucaipa Basin	3,000 AFY	YVWD purchases, 2021-2025 average
Yucaipa Basin	500 AFY	WHWC ASR well

BASIN	QUANTITY	NOTES
Total	22,500 AFY	Long-term average

[1]FWC in-lieu Rialto-Colton Basin recharge through the Summit WTP is excluded because it generally does not use Table A supplies.

Table 5-4 the amount of imported water available for recharge in normal years and wet years. During wet years, agencies may also take more imported water as direct deliveries above their normal year amounts, which would have an in-lieu recharge effect as they use less groundwater.

Table 5-4: Imported Water Recharge and Available Supply in Different Year Types (AFY)

	2030	2035	2040	2045	2050
Normal Year / Long-Term Average					
Available Imported Water Supplies	52,668	49,932	58,396	55,660	52,924
Direct Delivery Demands	27,303	27,648	27,757	27,868	27,978
Available for Recharge	25,365	22,284	30,639	27,792	24,946
Wet Year					
Available Imported Water Supplies	86,184	85,158	85,158	84,132	84,132
Direct Delivery Demands	27,303	27,648	27,757	27,868	27,978
Available for Recharge	58,881	57,510	57,401	56,264	56,154

The Region has enough imported water supplies to meet direct delivery demands and the 22,500 AFY of proposed recharge. Starting in 2040, due to falling Table A allocations with climate change, long-term average Table A allocations alone would not provide enough for normal year direct deliveries and 22,500 AFY of recharge. However, with Sites Reservoir yielding deliveries starting in 2040, the region would be able to meet normal year direct deliveries and 22,500 AFY of recharge, as shown in years 2040-2050 in Table 5-4. Without Sites Reservoir, the region would be more susceptible to reduced long-term average recharge and reductions in direct deliveries in dry years, resulting in increased reliance on groundwater. Additional local stormwater capture projects could be considered to achieve the desired groundwater recharge (see Section 3.10.2).

5.1.2 Local Water Supply Reliability

During multi-year and single-year droughts, total SWP supplies and local surface water supplies are reduced so the Region is more reliant upon groundwater.

Although local and imported surface water supplies are highly dependent on local and statewide hydrology, the Region benefits from more than 5.6 million acre-feet of available groundwater storage capacity in the San Bernardino Basin,1.7 million acre-feet of available groundwater storage in the Rialto-Colton Basin, and 2.8 million acre-feet of available groundwater storage in the Yucaipa Basin (Geoscience, 2020). The San Bernardino Basin and Yucaipa Basin can be recharged with imported water and are used to store water when supplies are available and then pumped in dry years. The Rialto Basin will also soon be able to be recharged with imported water. By maximizing deliveries of SWP water in wet years when those supplies are available and supplementing that with other local supplies like stormwater capture and recycled water, the Region expects to accrue sufficient storage to enable a high level of water supply reliability, even during extended droughts.

Annual change in storage evaluations prepared by San Bernardino Valley show that the SBB experiences significant increases in storage during wet years such as 2005, 2011, 2019, and 2023, as shown in Table 5-5.

Table 5-5: SBB Storage Increase in Wet Years

YEAR	INCREASE IN GROUNDWATER IN STORAGE (AF)
2005	223,000
2011	159,000
2019	161,000
2023	223,000

In addition to existing recharge programs, SBVMWD, SBVWCD, Western, SBMWD and RPU are currently developing Projects for Enhanced Recharge Capacity (PERC) and additional Active Recharge Projects (see Section 3.10.2). The list of projects has not been prioritized or scheduled for construction, but for purposes of this Plan, it is assumed that one recharge project will come online every five years starting in 2030, with an average long-term yield of 2,000 AFY per project.

Storing local surface water and imported SWP water in the local groundwater basins in wet years for later use during dry periods will continue to be one of the foundational water management strategies in the Region. As a result of this strategy and the demonstrated success, the available supply from the local groundwater basins in this analysis is not reduced in dry and multiple dry years.

5.2 Summary of Regional Supplies and Demands

5.2.1 Normal Year

In a normal year, SWP and local surface water supplies are used at retail agency treatment plants and any unused SWP supply is available to be recharged. Some non-potable demands in the region are met with recycled water and additional recycled water is recharged into the SBB. The remaining demands are met from local groundwater sources.

Table 5-6 and Figure 5-1 provide a comparison of regional water supplies and demands for a normal year and demonstrate that adequate regional supplies are anticipated for years 2030 to 2050 under normal/average conditions. In a normal year across all of the supplies available in the region, there is a surplus of supply, which results in accumulated storage in local groundwater basins for use in dry years.

Table 5-6: Normal Year Regional Supply and Demand Balance

	2030	2035	2040	2045	2050
San Bernardino Basin					
Surface Water Production	21,665	21,767	21,799	21,831	21,864
Groundwater Production[1]	106,773	112,113	115,927	118,001	120,797
Total Production	128,438	133,880	137,726	139,832	142,661
Safe Yield with New Conservation	172,745	172,745	172,745	172,745	172,745
San Bernardino Basin Balance	**44,307**	**38,865**	**35,019**	**32,913**	**30,084**
Rialto-Colton Basin					
Groundwater Production	12,865	12,865	12,865	12,865	12,865
Baseline Period Pumping	8,235	8,235	8,235	8,235	8,235
Rialto-Colton Basin Balance[2]	**(4,630)**	**(4,630)**	**(4,630)**	**(4,630)**	**(4,630)**
Riverside North Basin					
Groundwater Production	10,561	10,561	10,561	10,561	10,561
Baseline Period Pumping	9,609	9,609	9,609	9,609	9,609
Riverside North Basin Balance[1,2]	**(952)**	**(952)**	**(952)**	**(952)**	**(952)**
Yucaipa Basin					
Groundwater Production	7,663	8,242	8,765	9,289	9,813
Safe Yield	10,980	10,980	10,980	10,980	10,980
Yucaipa Basin Balance	**3,317**	**2,738**	**2,215**	**1,691**	**1,167**
Imported Water					
Direct Deliveries	27,303	27,648	27,757	27,868	27,978

	2030	2035	2040	2045	2050
Imported Water Available[3]	52,668	49,932	58,396	55,660	52,924
Imported Water Balance[4]	**25,365**	**22,284**	**30,639**	**27,792**	**24,946**
Recycled Water Direct Use[5]					
Recycled Water Demands	4,716	4,869	5,001	5,132	5,264
Recycled Water Supplies	4,716	4,869	5,001	5,132	5,264
Total Demands	191,547	198,065	202,675	205,546	209,141
Total Supplies	258,953	256,370	264,966	262,361	259,757
Total Supply Balance	**67,407**	**58,306**	**62,290**	**56,814**	**50,615**

Notes: [1]Excludes RHWC demands on each supply source and its rights to produce from those basins.

[2]Rialto-Colton and Riverside North Basins are not under recharge obligations because the three key index wells are above 822 ft. If projected pumping above baselines leads to falling groundwater levels and triggers a recharge obligation, imported water supplies can be used to recharge the basins.

[3]Includes Sites Reservoir starting in 2040.

[4]Balance of imported water is available for recharge.

[5]Excludes recycled water recharge, summarized in Section 4.4.

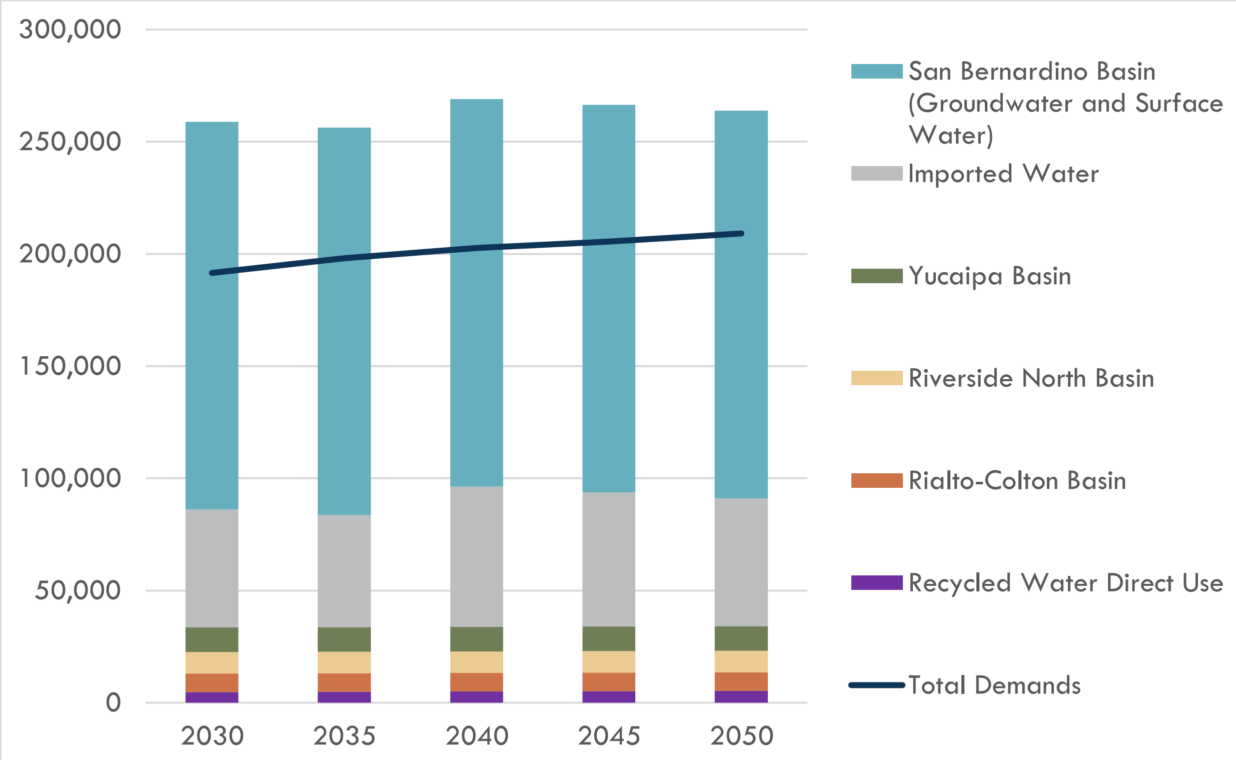

Figure 5-1: Normal Year Regional Supply and Demand Balance (AFY)

While the Region currently has sufficient supplies, it continues to invest in additional water supply projects to ensure it has enough for the future. Figure 5-2 shows that the Region currently has invested in over 17,000 AFY of recycled water recharge and direct use in the SBB and has identified projects to provide an additional 45,000 AFY in recharge of stormwater, imported water, and recycled water by 2050.

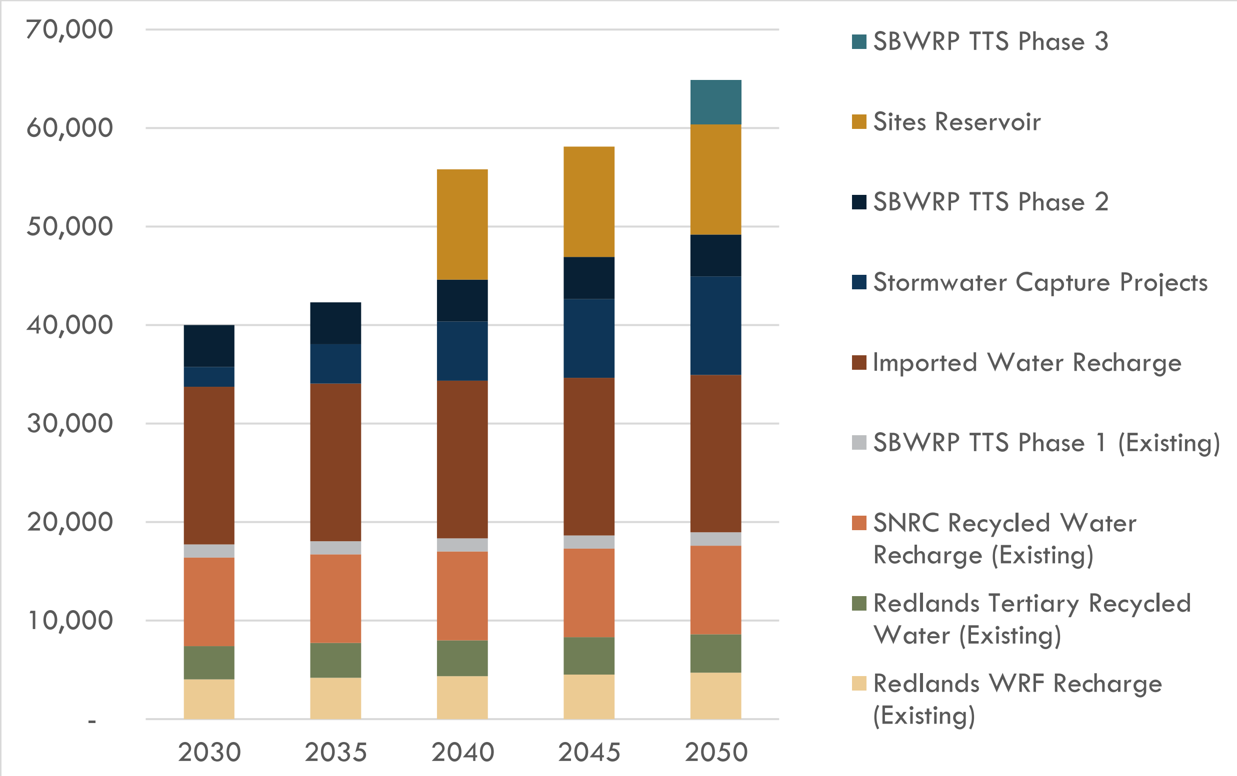

Figure 5-2: Existing and Proposed SBB Supply Improvement Projects (AFY)

5.2.2 Single Dry Year

In addition to population and employment, two major factors that affect water usage are weather and water conservation. Historically, when the weather is hot and dry, water usage increases due to outdoor irrigation uses. The increases vary according to the number of consecutive years of hot, dry weather and the conservation activities imposed. For this analysis it is estimated that total regional demands will increase by approximately 5 percent during dry years, based on an average of dry year demand increases across all Participating Agencies.

Table 5-7 and Figure 5-3 provide a comparison of regional water supplies and demands for a single dry year and demonstrate that adequate regional supplies are anticipated for years 2030 to 2050 even under dry conditions.

Total dry year demands in Table 5-7 do not appear significantly higher than normal year demands in Table 5-6 despite the 5% increase in demands during dry years. This is because some non-participating agencies receive less supplies from this region during dry years but make up those supplies by relying on supplies outside the scope of this Plan, therefore the demand on those supplies does not appear in this table. For instance, FWC receives approximately 6,500 AFY less in dry years from SBB Groundwater (Lytle), SBB Surface Water (Lytle Creek), and Imported Water from SBVMWD, but makes up those supplies as well as weather-related demand increases with Chino Basin groundwater and/or imported water from IEUA, which are not recorded as demands in this table.

Table 5-7: Single Dry Year Regional Supply and Demand Balance (AFY)

	2030	2035	2040	2045	2050
San Bernardino Basin Supply	172,745	172,745	172,745	172,745	172,745
Rialto-Colton Basin Supply	8,235	8,235	8,235	8,235	8,235
Riverside North Basin Supply	9,609	9,609	9,609	9,609	9,609
Yucaipa Basin Supply	10,980	10,980	10,980	10,980	10,980
Imported Water Supply	15,130	15,130	26,330	26,330	26,330
Recycled Water Supply	4,716	4,869	5,001	5,132	5,264
Total Single Dry Year Supplies	**222,621**	**222,775**	**234,105**	**234,237**	**234,368**
Total Dry Year Demands	194,299	201,143	205,984	208,999	212,773
Total Supply Balance	**28,322**	**21,632**	**28,122**	**25,238**	**21,595**

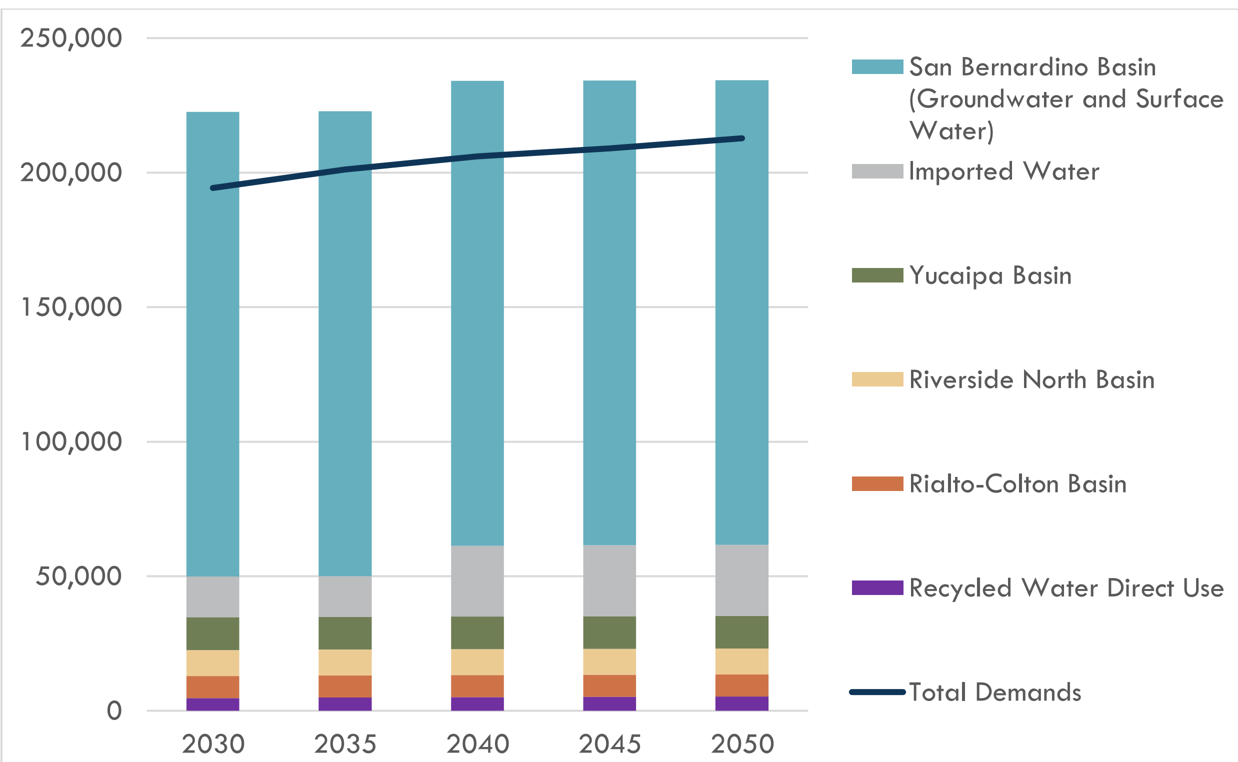

Figure 5-3: Single Dry Year Regional Supply and Demand Balance (AFY)

5.2.3 5-Year Drought

For this analysis, it is estimated that total regional demands will increase by approximately 5 percent during dry periods, including a 5-year drought. Although conservation efforts may be effective in reducing demands during the later years of a 5-year drought, a 5% increase is assumed to be constant through the 5-year drought to be conservative.

During a 5-year drought, Table A supplies are, on average, higher than a single dry year, but carryover water is assumed not to be available. Because of this, slightly less imported water is available in each year of a 5-year drought as a single dry year. Starting in 2040, supplemental imported water supplies from Sites Reservoir help to meet the demands of direct deliveries.

Table 5-8 and Figure 5-4 provide a comparison of regional water supplies and demands for a 5-year drought and demonstrate that adequate regional supplies are anticipated for years 2030 to 2050 even under extended dry conditions.

Total dry year demands in Table 5-8 do not appear significantly higher than normal year demands in Table 5-6 despite the 5% increase in demands during dry years. This is because some non-participating agencies receive less supplies from this region during dry years but make up those supplies by relying on supplies outside the scope of this Plan, therefore the demand on those supplies does not appear in this table, as explained in the Single Dry Year analysis.

Table 5-8: Five Consecutive Dry Year Regional Supply and Demand Balance (AFY)

	2030	2035	2040	2045	2050
San Bernardino Basin Supply	172,745	172,745	172,745	172,745	172,745
Rialto-Colton Basin Supply	8,235	8,235	8,235	8,235	8,235
Riverside North Basin Supply	9,609	9,609	9,609	9,609	9,609
Yucaipa Basin Supply	10,980	10,980	10,980	10,980	10,980
Imported Water Supply	15,105	14,820	24,535	24,250	23,965
Recycled Water Supply	4,716	4,869	5,001	5,132	5,264
Total 5-Year Drought Year Supplies	**221,390**	**221,259**	**231,105**	**230,951**	**230,798**
Total Dry Year Demands	194,299	201,143	205,984	208,999	212,773
Total Supply Balance	**27,091**	**20,116**	**25,121**	**21,952**	**18,024**

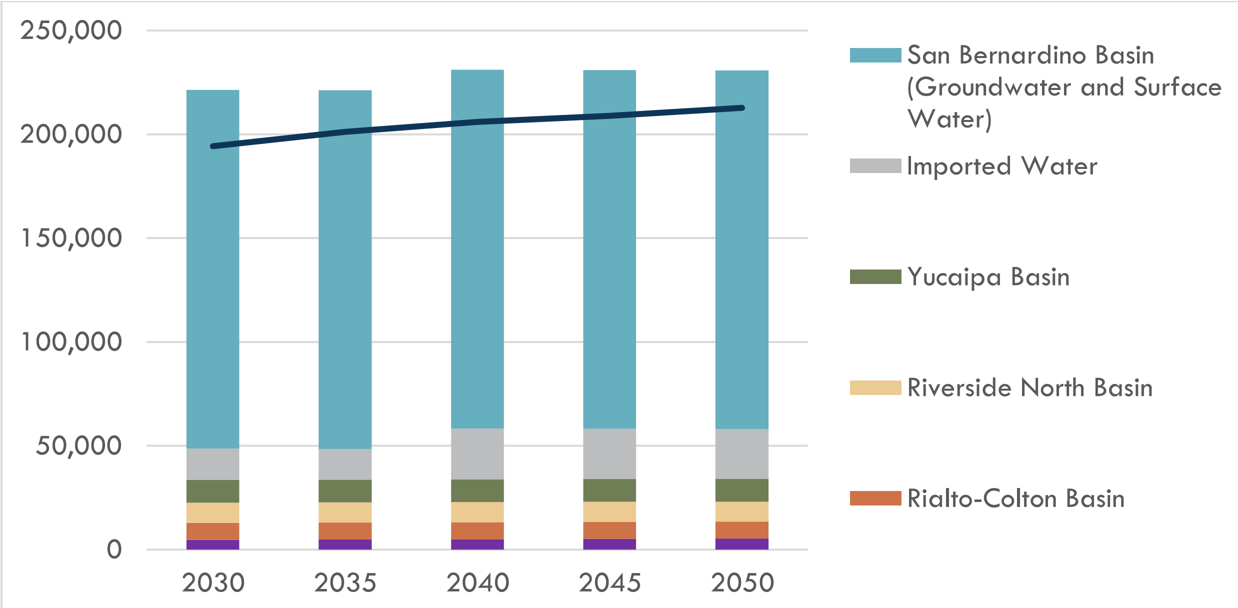

Figure 5-4: Five Consecutive Dry Year Regional Supply and Demand Balance

5.2.4 Long-Term Drought

Analysis of a long-term drought is not required by the UWMP Act but was included in this Plan as a qualitative discussion to be comprehensive and demonstrate how the Region responds to extended droughts. Figure 5-5 shows how imported water supplies may be impacted during a period of 20 dry years, assuming a 95% level of concern of climate change risk (95% likely to not be worse than this), to be conservative. The most recently modeled 20-year period had average SWP Table A allocations of 37%, and the lowest 20-year allocation period modeled was 1922-1941 with a 35% allocation. Long-term droughts typically have average higher supply than a single dry year or five-year drought, because there are typically some wetter years scattered throughout a long-term drought, as shown in Figure 5-5.

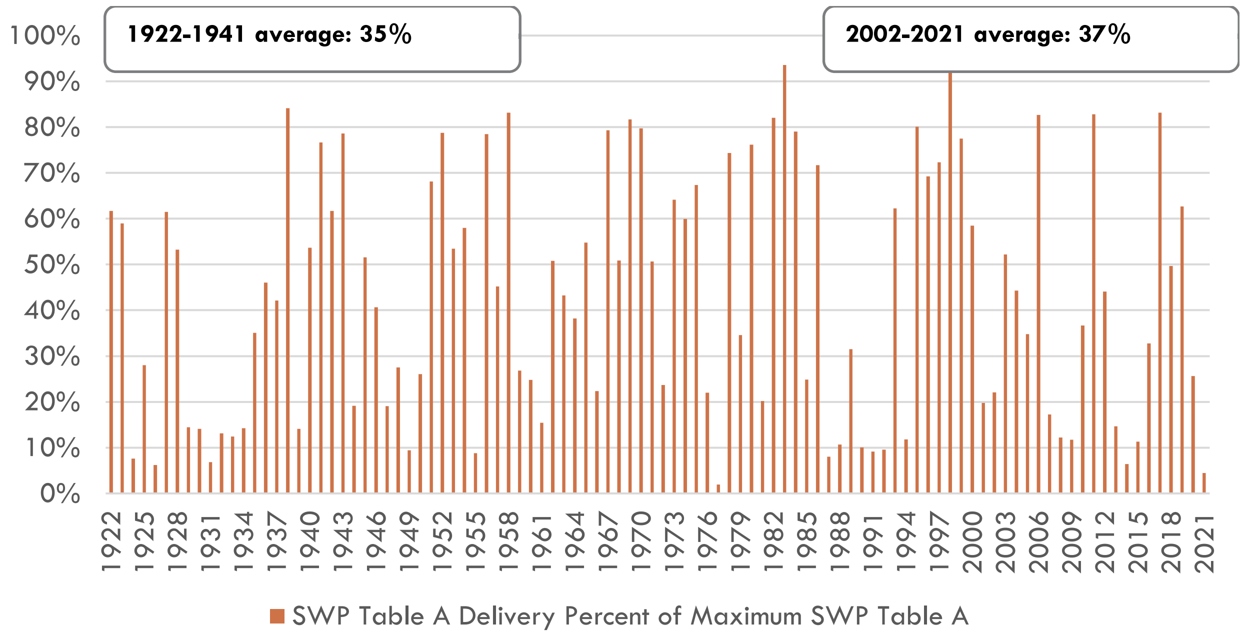

Figure 5-5: Modeled Table A Allocation at 95% Climate Change Level of Concern Based on Historic Hydrology (2025 DCR)

In an extended drought, the Region would continue to prioritize direct deliveries with imported water. A 35% average SWP allocation equates to 35,910 AFY of Table A supply and would be sufficient to meet SBVMWD's demand for direct deliveries, but with little leftover to recharge compared to the region's recharge targets in Section 5.1.1.2. Higher temperatures and lower rainfall during drought would also lead to higher outdoor water use in many years, similar to a 5-year drought.

The Region has invested in groundwater recharge to prepare for extended droughts and currently has 4.9 million acre-feet stored in the San Bernardino Basin and 2.2 million acre-feet stored in the Yucaipa Basin as of 2025, and an additional 2.2 million acre-feet between the Rialto-Colton Basin and Riverside Basin (as of 2020), which can all be drawn upon if needed. Over the course of a drought, groundwater levels would decline as natural and supplemental recharge is limited and groundwater pumping is higher than usual. However, wetter years within the long-term drought period would provide critical opportunities to recharge groundwater supplies drawn down over time. Figure 5-6 shows how during the last extended drought, which started around 2000, the San Bernardino Basin experienced reduced groundwater in storage over time. It also shows that in the occasional wet years such as 2005, 2011, 2019, and 2023, storage levels temporarily rebounded due to natural and supplemental recharge, which helped support ongoing reliance on groundwater storage during subsequent dry years.

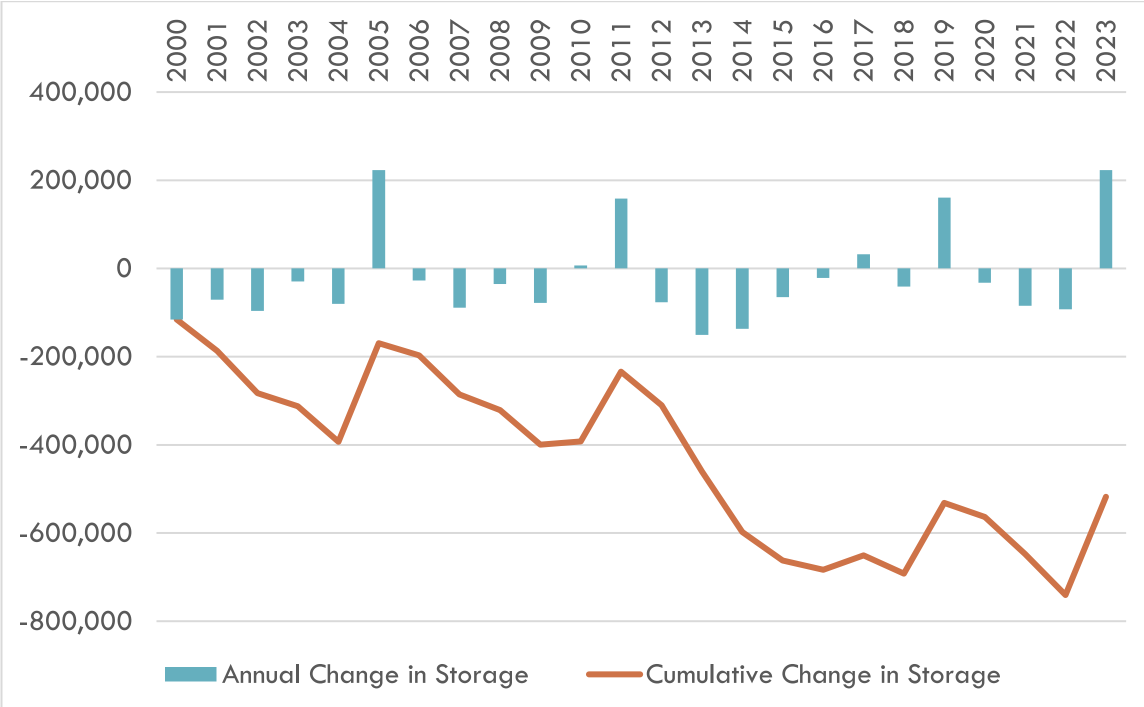

Figure 5-6: San Bernardino Basin Groundwater Change in Storage (AFY)

Finally, each supplier in the region has also prepared Water Shortage Contingency Plans that outline demand management actions that could be implemented if needed in an extended drought to help reduce demand and stretch available supplies. The Region has invested in a diverse set of supplies and infrastructure and has focused on maximizing groundwater storage to prepare itself for future dry periods. The Region intends to further expand recharge opportunities to provide additional supply reliability during future long-term droughts.

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