WATER | ENERGY | LIFE

CITY OF RIVERSIDE

PUBLIC UTILITIES

RIVERSIDE PUBLIC UTILITIES

2020 Urban Water Management Plan

JULY 1, 2021

Prepared by Water Systems Consulting, Inc.

WSC

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ACRONYMS & ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
AB	Assembly Bill
AF	Acre Foot
AFY	Acre Feet per Year
AHHG	Area of Historic High Groundwater
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DFW	California Department of Fish and Wildlife
DIP	Ductile Iron Pipe
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ESA	Endangered Species Act
ET	Evapotranspiration
ETo	Reference Evapotranspiration

GAC	Granulated Activated Carbon
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
HECW	High-Efficiency Clothes Washer
HET	High-Efficiency Toilet
IX	Ion Exchange
IRWMP	Integrated Regional Water Management Plan
IWMP	Integrated Water Management Plan
KAF	Thousand Acre Feet
KAFY	Thousand Acre Feet per Year
LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
MF	Multi-family
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCE	Perchloroethylene
PVC	Polyvinyl Chloride
QWEL	Qualified Water Efficient Landscaper
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SB X7-7	Senate Bill 7 of Special Extended Session 7
SF	Single Family
SOC	Synthetic Organic Chemicals
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids

TCE	Trichloroethylene
ULFT	Ultra-Low Flush Toilet
UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VOC	Volatile Organic Compound
WBIC	Weather Based Irrigation Controller
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WSS	Water Sense Specification
WTP	Water Treatment Plant
WUE	Water Use Efficiency
WWTP	Wastewater Treatment Plant

Lay Description

This Urban Water Management Plan (UWMP) presents a discussion of how Riverside Public Utilities (RPU) manages its water supplies to meet customer demands.

RPU is required to prepare an UWMP and submit it to the California Department of Water Resources (DWR) every five years. DWR prepares guidance materials for water suppliers to help them prepare UWMPs that meet requirements of the California Water Code (CWC). RPU has used these guidance materials to prepare its 2020 UWMP.

IN THIS SECTION

- Summary of fundamental determinations of the UWMP

UWMP Requirements

California urban water suppliers that serve more than 3,000 acre-feet per year (AFY) are required to prepare an Urban Water Management Plan (UWMP) every five years. These reports are submitted to the California Department of Water Resources (DWR), who reviews the reports and verifies that they meet the requirements of the California Water Code (CWC). The CWC defines an urban water supplier (Supplier) as an agency that provides water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet annually, Riverside Public Utilities (RPU) delivers more than 3,000 AFY and is thus required to prepare a UWMP every five years. RPU's last UWMP was submitted in June 2016 and included data through the end of 2015. For the 2020 cycle, there are some new requirements for UWMPs that have been implemented through legislation passed since 2015. DWR prepared the following summary of new requirements for 2020:

- Five Consecutive Dry-Year Water Reliability Assessment. The Legislature modified the dry-year water reliability planning from a "multiyear" time period to a "drought lasting five consecutive water years" designation. This statutory change requires a Supplier to analyze the reliability of its water supplies to meet its water use over an extended drought period.
- Drought Risk Assessment ("DRA"). The California Legislature created a new UWMP requirement for drought planning in part because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The DRA requires a Supplier to assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years.
- Seismic Risk. The Water Code now requires Suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan. An important aspect of this provision is the intersection of water supply infrastructure planning with a county or regional hazard mitigation plan.
- Energy Use Information. The Water Code now requires Suppliers to include readily obtainable information on estimated amounts of energy for their water supply extraction, treatment, distribution, storage, conveyance, and other water uses. The reporting of this information was voluntary in 2015.
- Water Loss Reporting for Five Years. The Water Code added the requirement to include the past five years of water loss audit reports as part of this UWMP.
- Water Shortage Contingency Plan. In 2018, the Legislature modified the UWMP laws to require a WSCP with specific elements. The WSCP is a document that provides a Supplier with an action plan for a drought or catastrophic water supply shortage. Although the new requirements are more prescriptive than previous versions, many of these elements have long been included in WSCPs, other sections of UWMPs, or as part of a Supplier's standard procedures and response actions. Many of these actions were implemented by Suppliers during the last drought, to successfully meet changing local water supply challenges. The WSCP will also have statewide utility for DWR, the State Water Board, and the Legislature in addressing extreme drought conditions or statewide calamities that impact water supply availability.
- Groundwater Supplies Coordination. In 2014, the Legislature enacted the Sustainable Groundwater Management Act (SGMA) to address groundwater conditions throughout California. The Water Code now requires Suppliers' 2020 UWMPs to be consistent with Groundwater Sustainability Plans (GSP), in areas where those plans have been completed by Groundwater Sustainability Agencies (GSA).
- Lay Description. The Legislature included a new statutory requirement for Suppliers to include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks. This section of

the UWMP could be viewed as a go-to synopsis for new staff, new governing members, customers, and the media, and it can ensure a consistent representation of the Supplier's detailed analysis. The lay description can be treated like an Executive Summary of the UWMP, written in clear eighth grade language that summarizes the key information regarding water supplies, water demands, water service reliability (including catastrophic potential) and DRA. However, a Supplier may also choose to summarize each chapter up front in a similar manner. It is recommended that the Supplier clearly label and identify their lay description in order for DWR to check whether that requirement was met.

In addition to preparing a 2020 UWMP to meet these new requirements, RPU prepared a Water Shortage Contingency Plan (WSCP) as a stand-alone document that will be reviewed and considered for adoption alongside the UWMP.

Water Supplies

RPU's primary source of supply is local groundwater. RPU also distributes recycled water for non-potable uses. These two locally controlled supplies have been highly reliable. RPU also has an agreement with Western Municipal Water District (WMWD) to access imported water when needed. This agreement can provide RPU with up to 21,700 acre-feet per year (AFY) of imported water. Since 2009, RPU has~~'s~~ been imported ~~-~~water independent by rela~~y~~ing solely on local water supplies to meet the water demands of its service area.

Water Demands

RPU's demands are projected to increase during the next 25 years. The demand projections were developed considering variables like climate, population growth, and customer behaviors. The UWMP includes a description of the Demand Management Measures (DMMs) that RPU has in place to encourage efficient water use by all customers. Through these programs, RPU has seen significant reductions in water use by customers since 2010. As new information becomes available, ~~like~~such as refined population projections using the 2020 Census data and/or updates to the City's General Plan, RPU will use that information when estimating future water demands in its service area.

Drought Risk

The UWMP presents a comparison of expected supplies and demands during future conditions. RPU is committed to efficient water use, and if needed RPU can implement its WSCP to reduce demands. However, RPU anticipates being able to meet all demands through 2045, even during a five-year dry period. Thanks to the storage capacity of the groundwater basins, supplies are very reliable from year to year because RPU can pump enough groundwater to meet demands.

In the longer term, continued reliability depends on the continued replenishment of the groundwater basins, ~~and~~ removal or treatment of contaminants, and effective management of those basins. RPU is working with regional partners to continue these efforts.

Contingency Planning

If an extended drought or sudden event (like an earthquake) impacted RPU's ability to provide water, the WSCP may need to be implemented. The WSCP defines five stages of shortage and outlines the actions that will be required of customers during each stage. The WSCP also describes the communication protocols to keep customers informed about water use restrictions.

Preparation and Outreach

RPU coordinated with WMWD and other regional partners in developing the UWMP and the WSCP. The draft documents will be available for public review before the RPU Board hearing. If the WSCP

needs to be implemented during a water shortage, RPU will evaluate how well it is working and consider making changes.

1 Introduction

The City of Riverside Public Utilities Department (RPU) has prepared the 2020 Urban Water Management Plan (UWMP) to document its current and future water demands and planned supplies.

Water suppliers in California are required to update their UWMP every five years, in years ending in 5 or 0 by July 1 of the following year. The Urban Water Management Planning Act (UWMP Act) and the California Water Code (CWC) require the preparation of a UWMP by water suppliers who have more than 3,000 service connections or who serve more than 3,000 acre-feet per year (AFY).

IN THIS SECTION

- California Water Code
- UWMP Organization
- Related Efforts

1.1 The California Water Code

The Urban Water Management Plan Act of 1983 ("UWMP Act") describes the required contents of a UWMP. The UWMP Act has been amended over time to include additional requirements. Since the time the 2015 UWMP was completed and submitted to DWR, the Legislature has passed additional requirements that need to be incorporated in 2020 UWMPs. Major new requirements include:

- A Water Reliability Assessment for five consecutive dry years, more than the three consecutive dry years previously required.
- A Drought Risk Assessment (DRA) that assesses the water supply reliability over a five-year period from 2021 to 2025 under a reasonable prediction for five consecutive dry years.
- A Seismic risk assessment and a mitigation plan for a Supplier's infrastructure.
- A Water Shortage Contingency Plan (WSCP) with prescribed elements.
- Coordination on groundwater supply planning with plans being completed to address the Sustainable Groundwater Management Act (SGMA). Most of RPU's groundwater comes from basins that have already been adjudicated, and therefore the SGMA process is not applicable.
- Lay Description to describe the fundamental determinations of the UWMP in lay-person's language.

This 2020 UWMP was developed to incorporate these new requirements under the guidance of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook). RPU used the final March 2021 Guidebook to develop the structure and contents of this UWMP.

The Water Conservation Act of 2009, also known as SB X7-7, required retail urban water suppliers to reduce their water use per capita by 20 percent by the year 2020. ~~This~~ SB X7-7 focused on reducing urban (municipal) water use, mainly through reductions in residential potable water use, throughout California. ~~act was applicable for potable water customers only.~~ The 2015 UWMP reported its Baseline Water Use and calculated its 2020 Urban Water Use Target. In this 2020 UWMP, RPU demonstrates its compliance with SB X7-7 by showing actual 2020 water use below its 2020 Urban Water Use Target.

The UWMP Act is attached as Appendix A, and the legislative text of SB X7-7 is attached as Appendix B.

1.2 UWMP Organization

RPU has structured this document to follow the organization recommended by DWR. This report includes the following chapters:

Lay Description

1. Introduction and Overview
2. Plan Preparation
3. System Description
4. System Water Use
5. Baselines and Targets
6. System Supplies
7. Water Supply Reliability
8. Water Shortage Contingency Planning
9. Demand Management Measures
10. Plan Adoption, Submittal, and Implementation

1.3 UWMPs in Relation to Other Efforts

RPU performs regular planning activities to evaluate its infrastructure and water supply needs. RPU also participates in regional planning efforts with other agencies. Some relevant planning documents that this UWMP is coordinated with include:

- Upper Santa Ana River Integrated Water Resources Management Plan (IRWMP) (Draft as of April 2021)
- Arlington Basin Groundwater Sustainability Plan (RPU is acting as an observer)
- Riverside Basin Groundwater Management Plan
- RPU Integrated Water Management Plan (IWMP) (dated 2015)
- RPU Non-Potable Water Master Plan
- RPU Focused Water Master Plan
- San Bernardino Basin Area Basin Technical Advisory Committee Regional Water Management Plan
- Annual Report of the Western-San Bernardino Watermaster

In August 2020, the City ~~launched~~created ~~a new department titled~~ the Office of Sustainability. The Office of Sustainability is~~will be~~ shepherding collaborative efforts with C~~c~~ity teams to identify policies, programs, and metrics to align strategic priorities~~y~~ and sustainability goals in order to facilitate the integration of these goals across the City organization and to pursue the action items identified in the City Council's 2025 Strategic Plan and the City's forthcoming General Plan u~~U~~pdate. The 2025 Strategic Plan identifies priorities and themes for the City to work towards that will build a sustainable and resilient community. One of the strategic priorities identified in the plan is fostering environmental stewardship throughout the City. The City has identified goals with the intent to support and champion proactive and equitable climate solutions based on science to ensure clean air, safe water, a vibrant natural world, and a resilient green new economy for current and future generations. The Strategic Plan further strives to "maintain and conserve 30 percent of Riverside's natural lands in green space including but not limited to agricultural lands and urban forests in order to protect and restore Riverside's rich biodiversity and accelerate the natural removal of carbon, furthering our community's climate resilience".

RPU will continue to be committed to study the relationship between climate change and water supplies in conjunction with local and state regulations.

This UWMP is intended to meet RPU's reporting requirements under the UWMP Act. It is intended to be consistent with these other plans without unnecessarily duplicating information.

1.4 UWMPs and Grant or Loan Eligibility

Water suppliers must have a current UWMP on file with DWR to be eligible for any water grant or loan administered by DWR. DWR must also determine that the Supplier's UWMP has addressed the requirements of the Water Code. This UWMP, due July 1, 2021, will be submitted to DWR for that review.

As documented in the SB X7-7 description in this plan, RPU has met its 2020 Compliance Water Use Target and is in compliance with the water conservation requirements established by the Water Conservation Act of 2009. ~~This SB X7-7 act was applicable for potable water customers only.~~

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

RPU is a wholesale customer of Western Municipal Water District (WMWD), which is a member agency of the Metropolitan Water District of Southern California (MWD). MWD is a contractor to the State Water Project (SWP) and prepared a demonstration of reduced reliance on the Delta in its 2020 UWMP. WMWD also prepared a demonstration of reduced reliance on the Delta in its 2020 UWMP. MWD and its member agencies (including WMWD) have indicated that this regional demonstration could be applicable to retail agencies such as RPU.

2 Plan Preparation

RPU has prepared its 2020 UWMP in accordance with the UWMP Act, sections 10610 through 10656 of the CWC. The UWMP Act is attached as Appendix A.

This chapter provides information required by the CWC to establish the basis for RPU's plan preparation.

IN THIS SECTION

- Coordination and Outreach
- Cities and Counties Served by RPU
- Basis for Plan

2.1 Plan Preparation

RPU serves more than 3,000 AFY to its retail customers and is therefore required to prepare a UWMP every five years. RPU also sells more than 3,000 AFY to its wholesale customers and has provided information to meet these reporting requirements as well.

2.2 Basis for Preparing a Plan

RPU provides water to a service area that includes most of the City of Riverside. RPU operates a single Public Water System (PWS) as defined by DWR. Relevant statistics about RPU's PWS are presented in Table 2-1~~Table 2-1~~~~Table 2-1~~. The volume of water in Table 2-1~~Table 2-1~~~~Table 2-1~~ reflects the water supplied to RPU's retail customers.

Table 2-1. DWR 2-1R Public Water Systems

PUBLIC WATER SYSTEM NUMBER	PUBLIC WATER SYSTEM NAME	NUMBER OF MUNICIPAL CONNECTIONS 2020	VOLUME OF WATER SUPPLIED 2020 (AFY)
3310031	City of Riverside Public Utilities	66,120	65,806

RPU participates in regional planning efforts, including the Upper Santa Ana Watershed RWMP process and the San Bernardino Basin Area (SBBA) Basin Technical Advisory Committee (BTAC). In preparing this plan, RPU has drawn on previous planning documents, including the RPU IWMP and the Upper Santa Ana River IRWMP. RPU actively participates in regional planning efforts with neighboring agencies to assess regional supplies and demands and develop new sources of supply as needed.

RPU has prepared this plan as an individual agency and is not participating in a Regional UWMP or a Regional Alliance. This information is summarized in Table 2-2~~Table 2-2~~~~Table 2-2~~.

Table 2-2. DWR 2-2 Plan Identification

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE	NAME OF RUWMP OR REGIONAL ALLIANCE
Individual	No	No	None

RPU is primarily a retail agency, but it does sell more than 3,000 AFY to wholesale customers (WMWD and the City of Norco) and therefore has prepared this UWMP to address retail and wholesale requirements. RPU has prepared this report presenting data on a calendar year basis (January 1 through December 31). The report includes data for the entire calendar year 2020. This report uses units of acre-feet (AF) for water volume, and acre-feet per year (AFY) for annual amounts. This information is summarized in Table 2-3~~Table 2-3~~~~Table 2-3~~.

Table 2-3. DWR 2-3 Agency Identification

TYPE OF SUPPLIER	YEAR TYPE	UNIT TYPE
Retail and Wholesale	Calendar	Acre-Feet

2.3 Coordination and Outreach

RPU's service area is centrally located within the Santa Ana River Watershed. RPU shares water resources with several public agencies and private water retailers. This arrangement requires on-going coordination between the water management agencies and local water retailers for sustainable long-term planning of these resources. RPU also coordinates with the Gage Canal Company (GCC) and mutual water companies that serve adjoining areas ~~.~~as well as local environmental organizations.

In addition to collaborating with the water management agencies and surrounding water retailers, RPU values the continued partnership with its community. RPU has developed procedures to inform the general public of current events and provides opportunities by which its constituents can share ideas and provide feedback.

2.3.1 Wholesale and Retail Coordination

Pursuant to the UWMP Act, RPU sent Notice of Preparation letters to the surrounding water management agencies, water retailers, cities and counties, and public agencies to inform them that RPU was in the process of updating its UWMP. Copies of the Notice of Preparation letters are included in **Appendix C**.

RPU coordinated with its wholesale water supplier, WMWD, in the preparation of the demand and supply estimates presented in the report. This information is summarized in Table 2-4~~Table 2-4~~~~Table 2-4~~. RPU also coordinated with its wholesale customers, as summarized in Table 2-5~~Table 2-5~~~~Table 2-5~~.

Table 2-4. DWR 2-R Water Supplier Information Exchange with RPU's Wholesale Supplier

WHOLESALE WATER SUPPLIER NAME
Western Municipal Water District

Table 2-5. DWR 2-4W Water Supplier Information Exchange with RPU's Wholesale Customers

RETAIL WATER SUPPLIER NAME
Western Municipal Water District
City of Norco

2.3.2 Coordination with Other Agencies and the Community

In addition to WMWD, RPU requested input, data, and comments from many neighboring agencies while preparing this plan. These agencies are identified in Table 10-1~~Table 10-1~~~~Table 10-1~~.

RPU communicates water supply information to the community throughout the year. For example, RPU provides water highlights at one of the two monthly Riverside Board of Public Utilities (Board) meetings.

These highlights include information on current water use, total monthly production, annual rolling production, usage in gallons per capita per day (GPCD), residential usage in gallons per capita per day (R-GPCD), daily consumption, peak demand, and temperature and rainfall. In addition, RPU regularly encourages public water awareness and water conservation at the Board meetings and on its website https://www.riversideca.gov/utilities/.

During recent years, RPU has increased its outreach efforts to encourage water conservation. RPU's communications have included the use of newspaper advertisements and bill stuffers. RPU has also reached out to customers through social media messaging related to the importance of efficient water use.

3 System Description

RPU is a municipally-owned utility that provides potable, non-potable, and recycled water to retail customers, primarily within the City of Riverside.

IN THIS SECTION

- Service Area
- Land Uses
- Climate

The water utility can trace its heritage directly back to the founding of the Riverside Colony as an agricultural community in 1870. In that year, a preliminary survey was made for a canal (Riverside Upper Canal) to irrigate groves of mulberry trees, and a notice of water appropriation was posted for diverting water, via gravity, from the Santa Ana River. An additional canal (Riverside Lower Canal) was constructed in 1874 and increased Riverside's capacity of carrying water to 5,000 miner's inches, or approximately 56,100 gallons per minute (gpm).

In 1883, the City of Riverside was incorporated, in part to free up control of water and land sales from the privately held Riverside Land & Irrigating Company. In 1884, a compromise between the Riverside Land & Irrigating Company and local irrigators led to the creation of the Riverside Water Company. The agreement made the Riverside Water Company the default water supplier for most of the Riverside area.

By the late 1880s, surface diversions from the Santa Ana River were inadequate for the Riverside Water Company's needs, so artesian wells were drilled to augment water supply. Wells were constructed throughout Riverside and San Bernardino counties.

In 1913, Riverside voters approved a $1,115,000 bond issue to purchase three water companies and establish its municipal water department. The purchase included the Riverside Water Company, Artesia Water Company, and the Henry P. Kyes water system.

As early as 1956, the City of Riverside started buying stock in the Gage Canal Company (GCC). In 1965, the City of Riverside acquired the GCC and all of its production, transportation, and distribution assets by condemnation, except for a small portion of assets retained by GCC. Under the terms of the judgment entered in the condemnation lawsuit, the City is obligated to deliver non-potable irrigation water to GCC shareholders. The amount is specified in that condemnation judgment. ~~condemnation.~~ Since 1959, the City of Riverside's local water supply has ~~solely~~[WS1]rimarily come from groundwater sources and remains essentially the same to this day. The service area of the original Riverside Upper Canal developed as a highly productive agricultural area specializing in citrus crops. In recent years, urbanization has increasingly reduced agricultural land. As a result, there has been a shift in water use from agricultural irrigation to domestic, municipal, and industrial applications.

3.1 General Description

The RPU service area is located within the Santa Ana River Valley approximately 60 miles east of Los Angeles and 100 miles north of San Diego. The RPU service area is approximately 75 square miles, of which approximately 70 square miles are located in Riverside's City limits. The remaining 5 square miles consist mainly of unincorporated land within the County of Riverside. The area within Riverside's City boundaries is approximately 80 square miles, of which approximately 10 square miles are served by water retailers other than RPU. The other potable water retailers within the City include WMWD (9 square miles), Eastern Municipal Water District (EMWD, 1 square mile), and the Riverside Highland Water Company (RHWC, 0.25 square miles).

3.2 Service Area Boundary Maps

The RPU service area is bounded on the north by the City of Colton; on the east by the RHWC and WMWD; on the south by WMWD; and on the west by Home Gardens County Water District (HGCWD), City of Corona, City of Norco, Rubidoux Community Services District, and the Jurupa Community Services District. A service area map is shown in **Figure 3-1**~~**Figure 3-1**~~**Figure 3-1**~~**Figure 3-1**~~.

The City's Sphere of Influence extends to the south of the City boundary and includes areas where retail water service is currently provided by WMWD. For this UWMP, it was assumed that RPU's water service area would not expand beyond its current boundaries.

The RPU service area overlies portions of several groundwater basins, including Riverside, Arlington, and Chino. The RPU service area is shown relative to groundwater basins in **Figure 3-2**~~**Figure 3-2**~~**Figure 3-2**~~**Figure 3-2**~~.

The surface elevation within the RPU service area ranges from more than 1,900 feet above mean sea level in the northeast to less than 700 feet above mean sea level in the southwest. The Santa Ana River is the main watercourse that drains the RPU service area. Other major tributaries include the Springbrook, Tequesquite , Prenda, Woodcrest, Mockingbird, and Hole Lake drainages.

Figure 3-1. RPU Service Area Boundary

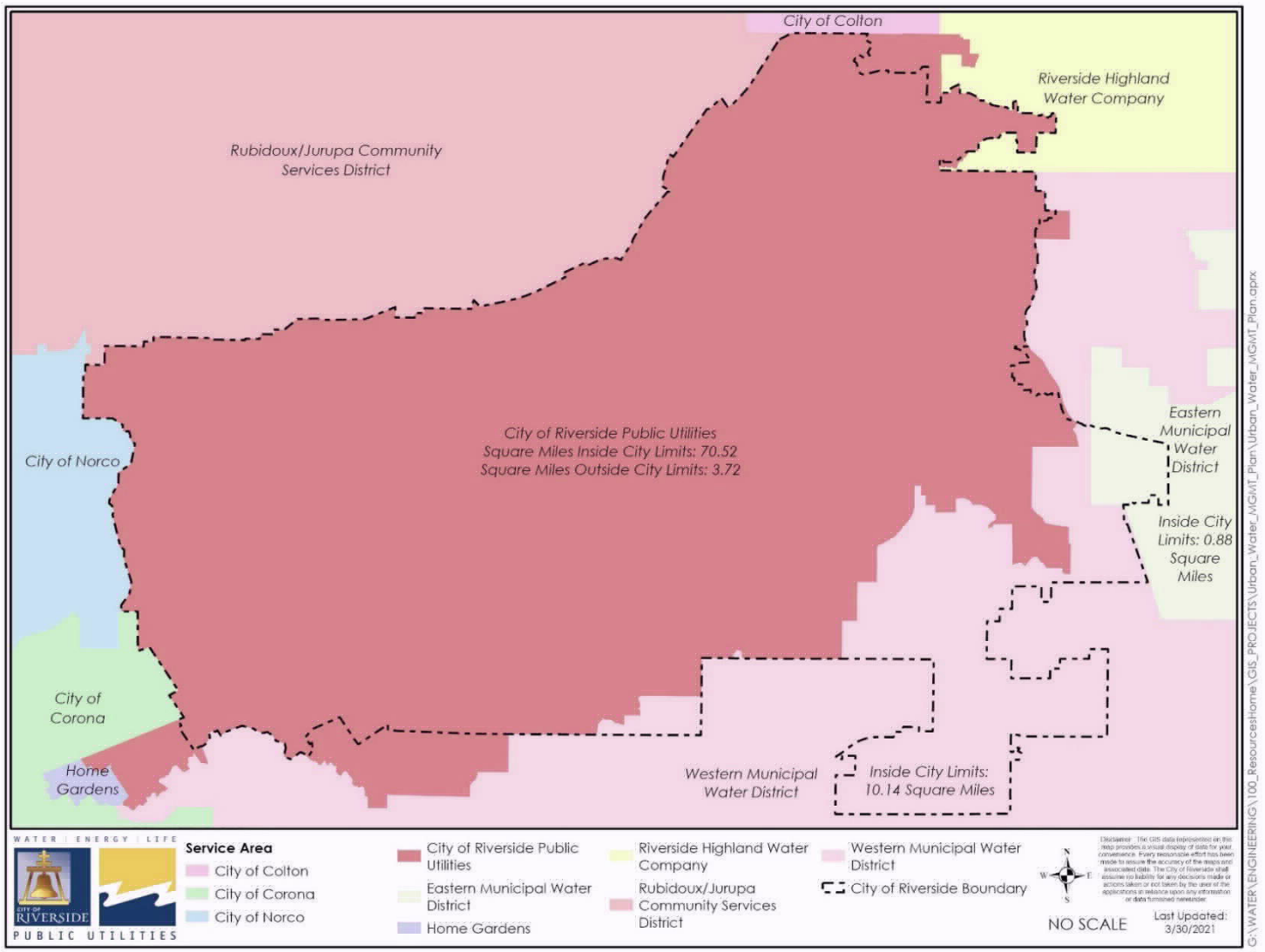
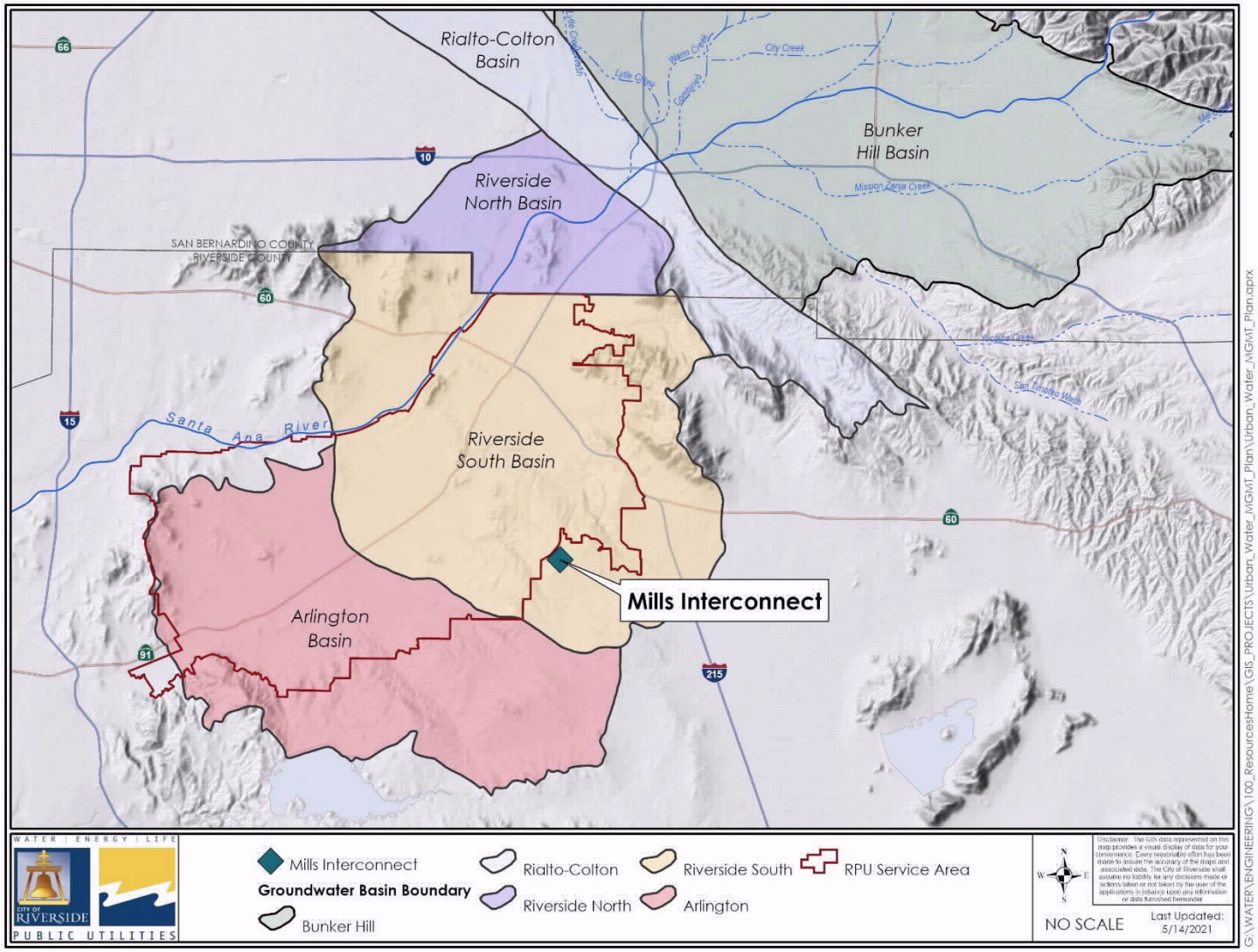


Figure 3-2. Groundwater Basins Underlying Service Area



3.3 Service Area Climate

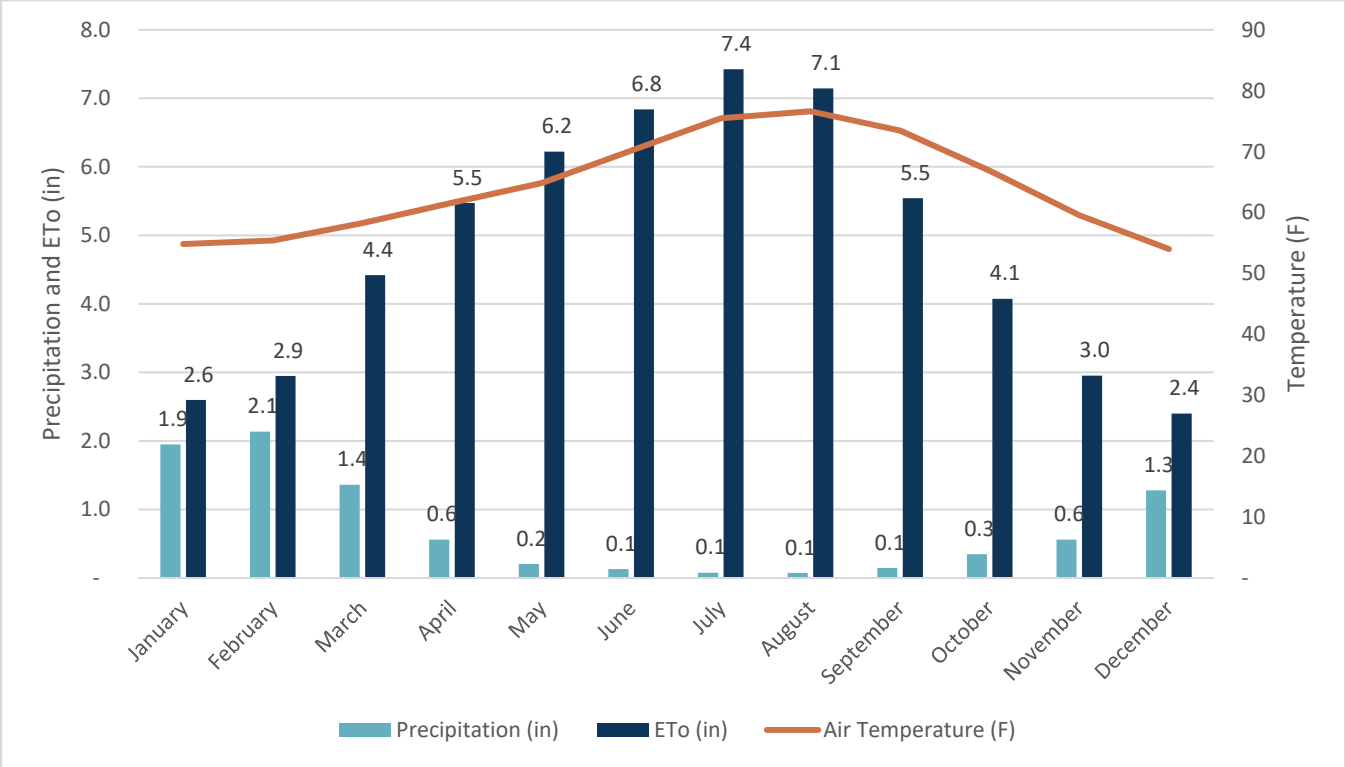
The RPU service area is located in the southwest arid region of the United States. The climate typically exhibits hot, dry summers and mild, wet winters. Climate is a primary factor that influences water demand within the RPU service area. Most rainfall occurs during the months of November through April. The hottest and driest period of the year is from June through September. It is not unusual during the summer months to have several consecutive days that the daily temperature exceeds 100 degrees Fahrenheit.

To represent current conditions, data were obtained from a monitoring station, part of the California Irrigation Management Information System (CIMIS). These data are based on 35 years of record (1986-2020) at Station 044 (University of California Riverside) within CIMIS.

Average temperature, precipitation, and evapotranspiration by month are shown in Figure 3-3~~Figure 3-3~~~~Figure 3-3~~. Evapotranspiration (ET) is the water lost to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity. ET from a standardized grass surface is commonly denoted as ETo.

Based on historical average data, annual precipitation is approximately 9 inches and average annual evapotranspiration is approximately 58 inches. Therefore, approximately 49 inches of supplemental water is required each year to maintain a healthy lawn in the RPU service area.

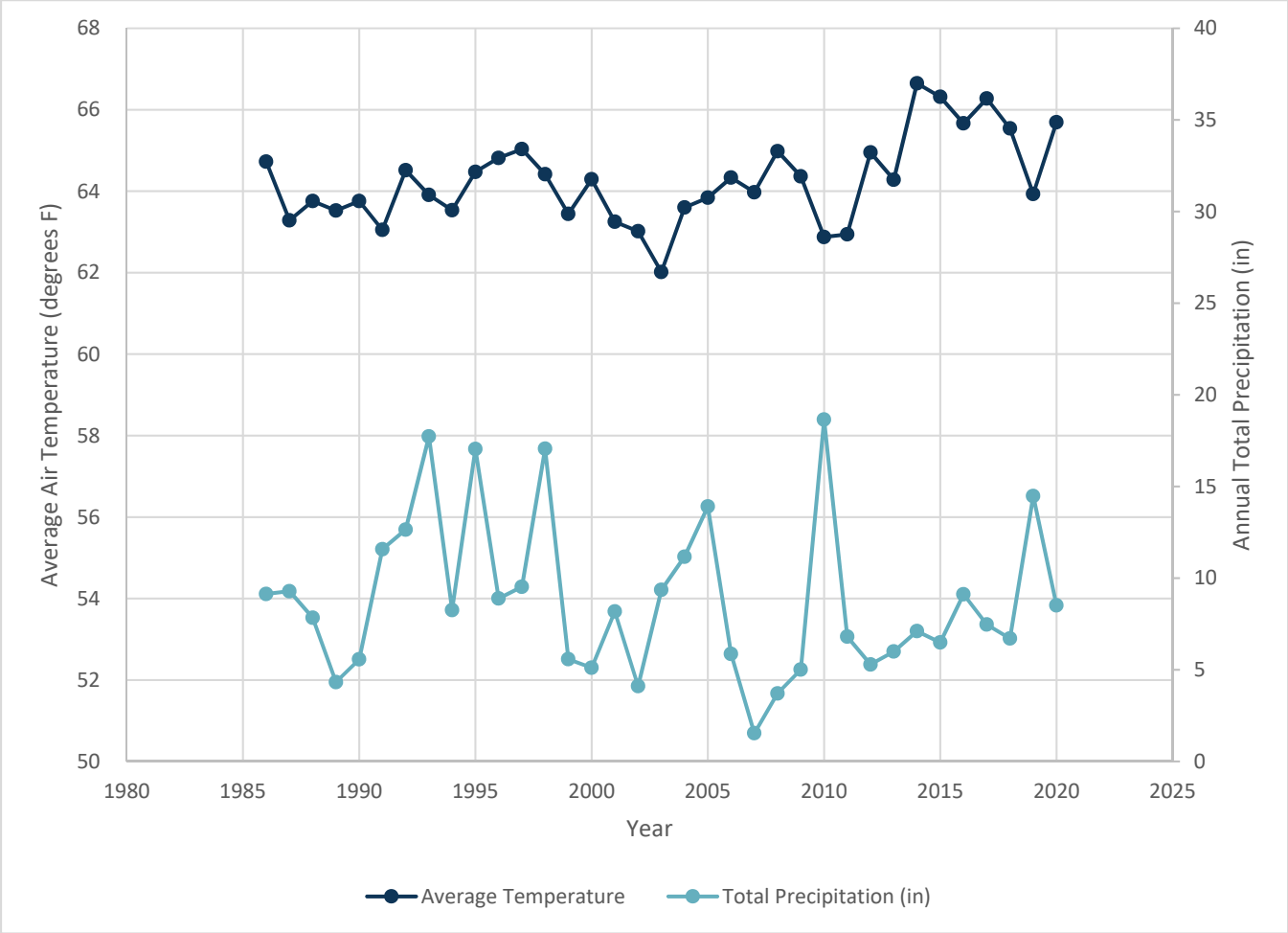
Figure 3-3. Historical Climate Data (CIMIS Station 044)



RPU also monitors trends in temperature and precipitation over time. The available data at Station 044 from CIMIS are plotted over time in Figure 3-4~~Figure 3-4~~~~Figure 3-4~~. Annual precipitation has been

variable, ranging between 5 and 15 inches per year. It appears that average temperatures are displaying an upward trend.

Figure 3-4. Time Series of Historical Climate Data



Climate change has the potential to impact water supplies and demands for RPU. Water demands could increase if summer temperatures rise, or if there are more days with high temperatures. Water supplies could be affected by changes in precipitation and runoff that contribute to groundwater recharge.

RPU participates in regional planning efforts that have considered the potential impacts of climate change. The Upper Santa Ana River Watershed IRWMP included a discussion of climate change and its potential impacts on water demand. The IRWMP included a Climate Change Vulnerability Assessment. The Checklist is included in Appendix D of this document. Some areas identified in the vulnerability assessment include wildfires and potential erosion impacts on water quality, as well as floods and their potential impact on water facilities.

The potential impact of climate change on demands is discussed in **Chapter 4**, and the potential impact on supplies is discussed in **Chapter 6**.

3.4 Service Area Population and Demographics

The RPU service area is approximately 75 square miles, of which approximately 70 square miles are located in Riverside's City boundaries.

3.4.1 Service Area Population

Because the RPU service area does not align exactly with the City of Riverside boundaries, the recommended approach from DWR for estimating service area population is the DWR Population Tool. This GIS-based tool uses census data and a geographic outline of the service area to calculate population in years for which census data are available (1990, 2000, and 2010). The census data for 2020 have not been released. For other years, the Tool uses the number of connections to estimate the population in the service area.

The DWR Population Tool was used to intersect RPU's water service area with compiled census data to estimate historic populations for the RPU water service area. The tool provided service area populations for 1990, 2000, and 2010 using census data. The Tool was used to estimate the 2020 population based on the number of connections in 2010 and 2020.

RPU developed projections of estimated future population through 2045. The projections were based on growth projections prepared by the Southern California Association of Governments (SCAG) as part of their regional transportation plan. SCAG's most recent transportation plan is referred to as Connect SoCal; more detailed information is available at https://scag.ca.gov/connect-socal. SCAG gathered and coordinated input from cities and counties throughout Southern California about expected growth and development for the next 25 years. An overview of the demographic and growth forecast is available at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579.

The SCAG analysis includes estimates of population, households, and employment in each Traffic Analysis Zone (TAZ) in their study area. RPU used GIS software to intersect the TAZ data with the RPU service area boundary and estimate the population, households, and employment within the utility's service area boundary.

> Note: This modeling analysis was performed by RPU and its consultants based upon modeling information originally developed by the Southern California Association of Governments (SCAG). SCAG is not responsible for how the Model is applied or for any changes to the model scripts, model parameters, or model input data. The resulting modeling data does not necessarily reflect the official views or policies of SCAG. SCAG shall not be held responsible for the modeling results and the content of the documentation.

The calculated population within the RPU service area is shown in Table 3-1~~Table 3-1~~~~Table 3-1~~.

Table 3-1. DWR 3-1 Current and Projected Population

POPULATION SERVED	2020	2025	2030	2035	2040	2045
RPU Service Area	310,554	321,896	333,652	345,838	358,468	371,560
TOTAL	**310,554**	**321,896**	**333,652**	**345,838**	**358,468**	**371,560**

Based on SCAG TAZ data developed as part of SoCal Connect 2020

3.4.2 Other Social, Economic, and Demographic Factors

Demographic factors that can influence future water demand include land use, relative proportion of single-family residences to multi-family residences, population density, economic characteristics (e.g., income levels, employment rate), and the composition of customer types.

The RPU service area is approximately 80 percent built out and contains about 15 percent vacant land available for development or conservation. RPU has identified three categories of growth for ultimate build-out:

- development within the remaining vacant land,
- increased density within areas already developed as defined in the City's General Plan, and
- water demand associated with growth and expansion at the University of California Riverside (UCR) and California Baptist University.

3.5 Land Uses within Service Area

SCAG coordinated with local jurisdictions in developing the Connect SoCal plan, which is a long-range planning document for the region that balances future mobility and housing needs with economic, environmental and public health goals. SCAG obtained input from local jurisdictions on their current and projected future land use to validate the growth projections with local plans and available land. RPU also coordinated with City planning staff to validate the expected growth in population.

4 Water Use Characterization

This chapter describes RPU's current and projected future uses of water.

RPU meets the water demands of retail customers within its service area. RPU also provides wholesale supply to WMWD and the City of Norco. By agreement, RPU delivers ~~sells~~ potable water to WMWD and Norco, and it delivers ~~sells~~ non-potable water to WMWD via the Riverside Canal.

IN THIS SECTION

- Water Use by Sector
- Projections of Future Demand

4.1 Non-Potable Versus Potable Water Use

RPU provides wholesale supply to WMWD and the City of Norco. By agreement RPU deliverssells potable water to WMWD and Norco, and it deliverssells non-potable water to WMWD via the Riverside Canal. RPU also meets the water demands of retail customers within its service area. In the following section these retail demands are categorized by customer category.

In addition to these demands, RPU meets other types of demands. These additional water uses include:

- Through an existing agreement, RPU exchanges[MJ2][MJ3] water with the GCC. GCC receives all of its water supply from RPU-owned wells and serves water to its agricultural customers via the Gage Canal. The GCC service area is completely within the RPU service area. The future projections reported by RPU account for the water delivery obligations ed to GCC.the Gage Canal.
- WMWD has extraction rights in the Bunker Hill Basin. Through an existing agreement, RPU extracts "WMWD water" from the Bunker Hill Basin and delivers it to WMWD through the RPU distribution system. This water use is considered to be "wheeled", since RPU does not have the rights to extract it. This wheeled water has been excluded from the demand projections in this UWMP.

RPU's potable distribution system delivers water to RPU retail customers, the City of Norco, and WMWD. RPU's non-potable distribution system delivers water to the GCC and WMWD. RPU's recycled distribution system delivers recycled water to RPU retail customers. All of RPU's retail customers are metered.

4.2 Past, Current, and Projected Water Use by Sector

This section describes water use in the customer sectors identified in the CWC and tracked in RPU's billing system.

4.2.1 Distribution System Water Losses

RPU estimates water losses each year by monitoring total water entering the distribution system and total withdrawals for retail demands, wholesale demands, or other known uses. Losses calculated in this manner include both apparent losses (due to factors such as water that is not registered as consumption because of meter error) and real losses (due to leaks in the distribution system). Based on historic data over the past five years, RPU estimated future losses from the potable system as 8[MJ4] percent of potable water deliveries. For the raw water deliveries, RPU estimates losses as approximately 2 percent ofRPU estimates the average losses in its potable system to be roughly 9%. Reducing the amount of water loss throughout RPU's raw, potable, non-potable, and recycled water systems is important to RPU and the State of California. RPU has existing programs in place to monitor water loss and keep production meters calibrated on an annual basis least once annually that intends to take further steps to better calculate and reduce water loss throughout the system.

as approximately 5.5 percent of raw water deliveries for the raw water deliveries, based on data from recent yearsa 5-year average from 2016 to 2020. Similarly, the 5-year average is estimated to be roughly 9% for the potable water deliveries side.

RPU has performed American Water Works Association (AWWA) water loss audits on the potable water distribution system for the past five years. RPU initially prepared the audits on a fiscal year basis and transitioned to a calendar year basis starting with calendar year 2016. These audits provide an

estimate of apparent water losses, real losses, and unavoidable real losses. The results of these audits are summarized in Table 4-1~~Table 4-1~~~~Table 4-1~~. The loss in Table 4-1~~Table 4-1~~~~Table 4-1~~ is taken from the field "Water Losses" on the AWWA Audit worksheet. RPU's completed audits for these years are included in **Appendix E**.

Table 4-1. DWR 4-4R 12 Month Water Loss Audit Reporting

REPORT PERIOD START DATE		VOLUME OF WATER LOSS (AF)
MM	YYYY	
07	2014	2,755
01	2016	4,090
01	2017	8,063
01	2018	6,591
01	2019	5,597

In addition to RPU's ongoing efforts to reduce water loss within its systems, evaluation of future actions that can be taken to reduce apparent and real losses will be presented to the RPU Board.

4.2.2 Past and Current Water Use

The past and current water use for RPU is shown in Table 4-2.

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Table 4-2. DWR 4-1 Actual Demands for Water (All Values in AF)

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2016	2017	2018	2019	2020
Single Family		Drinking Water	27,412	28,940	29,902	31,386	34,250
Multi-Family		Drinking Water	4,913	5,187	5,360	5,644	6,159
Commercial / Institutional		Drinking Water	17,948	18,976	18,958	12,440	12,067
Landscape 1[PM5][FL6]		Drinking Water	1,768	1,847	2,089	3,681	4,166
Agricultural Irrigation		Drinking Water	1,624	1,622	1,545	1,351	1,394
Other	Fire, Temporary, Special Services	Drinking Water	298	402	3261,653	426	289
Wholesale	WMWD	Drinking Water	2,997	3,967	3305	2,184	3,163
Wholesale	Norco	Drinking Water	0	0	0	0	477
Potable Losses		Drinking Water	5,215	7,181	5,955	5,184	7,382
Subtotal - Potable			62,175	68,122	67,440	62,296	69,347
GCC ~~(Upper)~~		Raw Water	10,5786,679	10,6505,369	10,6104,752	9,1304,996	9,9586,782
~~GCC (Lower)~~		~~Raw Water~~	~~3,899~~	~~5,281~~	~~5,858~~	~~4,134~~	~~3,176~~
Overlying Uses		Raw Water	760	740	945	955	867
WMWD		Raw Water	1,904	684	1,227	415	428
Irrigation Water Losses		Raw Water	1,202	821	594	331	597
Subtotal – Non-Potable			14,444	12,895	13,376	10,831	11,850
TOTAL: POTABLE AND NON-POTABLE			**76,619**	**81,017**	80,816	**73,127**	**81,197**
Recycled Water		Recycled Water	177	187	187	143	141

TOTAL WATER USE	**76,796**	**81,204**	**~~82,330~~81,003**	**73,270**	**81,338**

Footnote [1] - The Landscape Irrigation rate was introduced in 7/1/18 with the updated rate plan, and the majority of these quantities were previously reported under the Commercial /Institutional Use Type. Further, consumption in 2015-16 was significantly lower due to impacts from mandatory State-wide drought restrictions.

~~4.2.4~~4.2.3 Projected Water Use

RPU prepared projections of future demand by using the year 2020 as a starting point, escalating population by an annual growth rate, and assuming demand per customer would stay relatively constant. The annual growth percentage incorporated the expected increase in service area population based on regional growth forecasts. Because of ongoing conservation efforts, RPU's per-capita consumption has remained relatively stable. Achievements in demand reduction have been accomplished through codified plumbing standards and fixtures, and residential use in GPCD has been trending downward. While RPU will continue to emphasize the importance of water conservation, prudent planning requires considering the possibility that consumption will experience some rebound from its current level.

The combination of the population growth rate and the anticipated change in per-capita consumption was used to project increased retail demand through 2045. The non-retail demands were estimated based on current planning activities and coordination with neighboring agencies.

Codes and Other Considerations Used in Projections

RPU is committed to long-range planning to provide a reliable, cost-effective water supply to its customers. RPU completed an IWMP that combined information from previous studies and laid out an approach to developing new sources of supply as they are required. RPU actively monitors water consumption in its service area, in part to prepare required monthly reports for the State Water Resources Control Board.

For this report, RPU has projected that future demands will increase at a percentage growth rate that incorporates two factors: the percentage growth in service area population~~,~~ and potential changes in the per-capita consumption. This approach provides estimates for future system-wide demand that can be used for long-range planning. Furthermore, RPU plans to evaluate climate impacts further with the Office of Sustainability to determine future demand factors to align ~~them~~RPU with the previously referenced 2025 Strategic Plan.

Water suppliers have the option of preparing more detailed demand forecasts by estimating demand factors based on land use categories. For example, RPU could identify typical water use per single family customer and per commercial account. These customer classes can be further sub-divided by lot size, neighborhood, or other variables. The intent is to quantify the estimated water use per customer in different customer classes, and then to forecast how future changes will impact water use within each customer class.

Once this step is complete, these land use-based demand factors can be adjusted to account for future water savings from codes, standards, and ordinances. For example, new single-family construction would be assigned a demand factor that reflects the installation of plumbing fixtures and landscaping that meets the current codes. This demand factor would likely be less than the average demand factor for existing homes.

RPU has developed land use-based demand factors for previous master planning efforts. The increased level of detail allows for more disaggregated analysis of water demands and potential future changes. However, for this document, RPU has elected not to develop land use-based demand factors. Recent and upcoming drought regulations have induced significant changes in water consumption patterns, and there is considerable uncertainty as to how demands will change in the future. Given this uncertainty, RPU elected to apply a percentage growth rate to demands across the service area for this UWMP.

RPU's projected future demands are shown in Table 4-3~~Table 4-3~~~~Table 4-3~~.

Table 4-3. DWR 4-2 Projected Demands for Water (All Values in AF)

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2025	2030	2035	2040	2045
Single Family		Drinking Water	35,069	36,349	37,677	39,053	40,479
Multi-Family		Drinking Water	6,306	6,537	6,775	7,023	7,279
Commercial / Institutional		Drinking Water	12,355	12,807	13,274	13,759	14,262
Landscape		Drinking Water	4,266	4,421	4,583	4,750	4,924
Agricultural Irrigation		Drinking Water	1,427	1,479	1,533	1,589	1,648
Other	Fire, Temporary, Special Service	Drinking Water	296	307	318	330	342
Wholesale	WMWD	Drinking Water	2,000	2,000	2,000	2,000	2,000
Wholesale	Norco	Drinking Water	1,000	1,000	1,000	1,000	1,000
Potable Losses		Drinking Water	5,193	5,383	5,579	5,783	5,994
Subtotal - Potable			67,912	70,283	72,739	75,287	77,928
GCC (Upper and Lower)		Raw Water	~~6,500~~13,500	~~6,500~~13,500	~~6,500~~13,500	~~6,500~~13,500	~~6,500~~13,500
~~GCC (Lower)~~		~~Raw Water~~	~~7,000~~	~~7,000~~	~~7,000~~	~~7,000~~	~~7,000~~
Overlying Uses		Raw Water	1,000	1,000	1,000	1,000	1,000
WMWD		Raw Water	2,000	2,000	2,000	2,000	2,000
Irrigation Water Losses		Raw Water	600	600	600	600	600
Subtotal – Non-Potable			17,100	17,100	17,100	17,100	17,100
TOTAL: POTABLE AND NON-POTABLE			**85,012**	**87,383**	**89,839**	**92,387**	**95,028**

RPU's total projected retail water use, including recycled water demand, is shown in Table 4-4~~Table 4-4~~~~Table 4-4~~. The projection of recycled water demands depends on recycled water infrastructure projects discussed in the Water Supplies chapter.

Table 4-4. DWR 4-3 Total Gross Water Use (All Values in AF)

	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1 and 4-2	81,197	85,012	87,383	89,840	92,387	95,027
Recycled Water Demand From Table 6-4	141	5,700	13,420	13,420	13,420	13,420
TOTAL WATER USE:	**81,338**	**90,712**	**100,803**	**103,260**	**105,807**	**108,447**

4.3 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections in an UWMP include the projected water use for single-family and multi-family residential housing for lower-income households, as identified in the housing element of any city and county in the service area of the supplier.

The City's General Plan 2025 defines a lower-income household as a household that earns 0 to 80 percent of the median family income. The General Plan refers to the median family income for Riverside County, as determined by the California Department of Housing and Community Development (HCD) as the reference point for median family income.

RPU used the percentage of low-income and very-low-income housing identified in the Regional Housing Needs Assessment (RHNA) for 2021 through 2029, approved by the Southern California Association of Governments, to estimate the number of new low-income housing units that may require service within RPU's retail service area. The RHNA data indicated that 43 percent of projected housing units will be for very low-income or low-income households. It is expected that these households will contribute 43 percent of future residential demands. These demands have been included in the demand projections presented in this UWMP.

RPU is incorporating conservation programs into its demand projections, but it is not explicitly quantifying the expected water savings due to codes and standards. This information is summarized in Table 4-5.

Table 4-5. DWR 4-5R Inclusion in Water Use Projections

Are Future Water Savings Included in Projections? Refer to Appendix K of UWMP Guidebook.	Yes
Section or page number where the citations utilized in the demand projects can be found:	Section 4.2
Are Lower Income Residential Demands Included in Projections?	Yes

4.4 Climate Change Considerations

The Upper Santa Ana River Watershed IRWMP included a discussion of climate change and its potential impacts on water demand. This discussion is summarized here.

The IRWM Region's currently consistent climate with hot summers and cool winters with mild precipitation, and rain in low elevations with snow in higher elevations, would change as temperatures increase, resulting in less precipitation as snow which would affect the snowpack. Increased precipitation as rain would make it more difficult to capture storm flows and store them for drier periods. RPU is working with regional partners on projects such as Enhanced Recharge and Active Recharge to capture storm flows when available and store them for groundwater replenishment.

The Intergovernmental Panel on Climate Change has vetted and approved 112 climate models based on projections in greenhouse gas emissions and associated precipitation and temperature changes. These models make use of various greenhouse gas emissions scenarios based on population growth and economic activity. Global climate models used in the study were scaled down to 12-kilometer grids to make them relevant for regional analysis. The down-scaled global climate model projections are produced by internationally recognized climate modeling centers around the world and make use of greenhouse gas emissions scenarios, which include assumptions of projected population growth and economic activity. Projected climate variables, including daily precipitation, minimum temperature, maximum temperature, and wind speed were included, as well as historical model simulations over the period from 1950 to 1999. Final products included data sets at key locations for precipitation, temperature, evapotranspiration, April 1st Snow Water Equivalent, and stream flow.

The models show that in the future the number of days over 95°F will increase in multiple locations. The results for the City of Riverside are shown in Table 4-6~~Table 4-6~~~~Table 4-6~~.

Table 4-6. Estimated Days per Year Exceeding 95 Degrees F

CITY	HISTORICAL	2020	2050	2070
Riverside	43	58	72	82

The numbers of high temperature days in Riverside are expected to double between the historical average and 2070. Similar increases in temperature can be anticipated throughout the inland valleys. These increased temperature levels are expected to increase water demands across the watershed, mainly for agricultural and irrigation purposes.

5 SB X7-7 Baseline, Targets and 2020 Compliance

To meet the requirements of SB X7-7, water agencies are required to calculate their baseline water use in gallons per capita per day (gpcd) for a 10- to 15-year period ending before 2010. The agency then calculates a water use target for 2020, using one of four methodologies defined by DWR. An interim water use target for 2015 is then calculated as the average of the baseline and the 2020 water use target.

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IN THIS SECTION

- Baselines & Targets
- 2020 Compliance

5.1 SB X7-7 Forms and Summary Tables

RPU has completed the standard forms required by DWR to document calculation of the baseline, targets, and 2020 compliance. These forms are included in Appendix F.

5.2 Baseline and Target Calculations for 2020 UWMP

RPU prepared initial calculations of baseline water use and water use targets in its 2010 UWMP. For the 2015 UWMP cycle, DWR made a GIS-based population tool (the DWR Population Tool) available to calculate service area population using census data. DWR required that water agencies use a method at least as accurate as the DWR Population Tool to calculate their service area population for the baseline years and for 2015. RPU used the DWR Population Tool to re-calculate its service area population, baseline per-capita use, and compliance targets in the 2015 UWMP.

For those agencies that met more than 10 percent of their demands in 2008 using recycled water, SB X7-7 provides the option of using a longer baseline period (up to 15 years) to calculate their baseline water use. For other agencies, a 10-year period is used for the baseline. Because recycled water made up less than 10 percent of RPU's retail water deliveries in 2008, the baseline water use was generated for a 10-year period. For the 2015 UWMP, RPU used the same baseline period as the one used in the 2010 UWMP (1999 through 2008). This baseline period was selected because it provided the highest average water use for the baseline period.

For the 2020 UWMP, RPU is not recalculating its baselines or targets. RPU's baselines and targets are summarized in Table 5-1~~Table 5-1~~~~Table 5-1~~.

Table 5-1. DWR 5-1R Baselines and Targets Summary

BASELINE PERIOD	START YEAR	END YEAR	AVERAGE BASELINE GPCD*	CONFIRMED 2020 TARGET *
10-15 Year	1999	2008	266	213
5 Year	2004	2008	269	

*All values are in Gallons per Capita per Day (GPCD)

5.3 Population and Gross Water Use

5.3.1 Service Area Population

RPU's service area population for 2020 was calculated using the DWR Population Tool. The GIS-based tool was used to intersect RPU's service area with Census Bureau data. The tool directly calculated a service area population for 1990, 2000, and 2010. The tool was then used to estimate a 2020 population, based on the change in the number of residential connections from 2010 to 2020.

5.3.2 Gross Water Use

The calculation of gross water use begins with the total amount of water that was put into the potable water distribution system by RPU. Water that was exported to another agency was then subtracted, to leave the amount used by RPU retail customers.

Water delivered to agricultural customers was included in the urban water demand because those customers, although designated as agricultural customers, receive water from RPU's potable system and use that water to meet both potable and irrigation demands.

5.4 2020 Compliance Daily Per-Capita Water Use (GPCD)

The 2020 urban water use target was calculated by multiplying the base daily per capita water use for the 10-year base period by 80 percent (Target Method 1). The urban water use target for the RPU service area for 2020 is 80 percent of 266 GPCD, or 213 GPCD.

RPU did not apply any of the optional adjustments for extraordinary events, economic conditions, or weather in calculating 2020 gross water use. The calculated 2020 water use is 189 GPCD. This value is below the confirmed 2020 target of 213 GPCD.

These values are summarized in Table 5-2~~Table 5-2~~~~Table 5-2~~.

Table 5-2. DWR 5-2R 2020 Compliance

	2020 GPCD			
ACTUAL 2020 GPCD*	2020 TOTAL ADJUSTMENTS	ADJUSTED 2020 GPCD*	2020 CONFIRMED TARGET GPCD	SUPPLIER ACHIEVED TARGETED REDUCTION IN 2020
189	0	189	213	Yes

*All values are in Gallons per Capita per Day (GPCD)

5.5 Regional Alliance

RPU calculated compliance with SB X7-7 as an individual agency and did not participate in a Regional Alliance.

6 Water Supply Characterization

This chapter describes the sources of supply available to RPU to meet water demands. The available sources include local groundwater, recycled water, and imported water.

RPU's primary source of supply is local groundwater. RPU also distributes recycled water for non-potable uses. These two locally controlled supplies have been highly reliable. RPU also has an agreement with WMWD to access imported water when needed. Since 2009, RPU has been ~~imported~~imported-~~mporting~~ water independent~~ly~~ by relaying solely on local water supplies to meet the water demands of its service area. RPU will work to remain imported-water independent through efficient water use of its finite resources and the development of new regional and local water supply projects.

IN THIS SECTION

- Sources of Supply
- Recycled Water Program
- Projected Future Supply Portfolio

6.1 Water Supply Analysis Overview

RPU's primary source of supply is local groundwater. RPU also distributes recycled water for non-potable uses which is supplied from the City of Riverside Regional Water Quality Control Plant. These two locally controlled supplies have been highly reliable. RPU also has an agreement with WMWD to access imported water when needed. This agreement can provide RPU with up to 21,700 AFY of imported water. RPU also has an exchange agreement with the City of Norco for the sale of up to 1,000 AFY and the exchange of water during emergencies.

6.2 UWMP Water Supply Characterization

This section discusses each of the supplies available to RPU.

6.2.1 Purchased or Imported Water

RPU has the ability to purchase SWP water from WMWD through a connection at the MWD Henry J. Mills Water Treatment Plant (WTP). Up to 30 cubic feet per second (cfs) or 19.4 million gallons per day (mgd) of imported water can be purchased from WMD through an existing agreement and conveyed through existing infrastructure. Prior to 2009, ~~Historically,~~ imported water was mainly ~~has only been~~ purchased during the peak demand months, when needed.

A copy of the agreement between WMWD and RPU for SWP water is included in **Appendix H**.

In 2018 RPU and the City of Norco entered into an agreement for the sale of up to 1,000 AFY and the exchange of water during emergencies. A copy of the agreement between Norco and RPU is included in **Appendix N**.

6.2.2 Groundwater

RPU has facilities to extract groundwater from five groundwater basins: Bunker Hill, Rialto-Colton, Riverside North, Riverside South, and Arlington Basins. The Riverside Basin is divided into Riverside North and Riverside South by the San Bernardino County/Riverside County boundary. The Riverside North and South sub-basins are hydrogeologically connected, but separated for administrative purposes.

Groundwater extracted from the Bunker Hill Basin, Rialto-Colton Basin, Riverside North, and Riverside South sub-basins is conveyed to RPU's potable or non-potable distribution system depending on the well location and local water quality. Raw groundwater from many of RPU's wells receives treatment prior to entering the potable distribution system. Riverside anticipates that the need for treatment of raw groundwater will continue or increase in the future.

RPU currently has 53 active wells (46 producing potable water and 7 producing non-potable water). RPU has 20 inactive wells that are being used as monitoring wells and 13 other monitoring wells, for a total of 33 dedicated monitoring wells.

Western San Bernardino Judgement

An important management consideration that affects RPU's groundwater production in several basins is the Western-San Bernardino Judgment (*Western Municipal Water District of Riverside County v. East San Bernardino County Water District*, Case No. 78426). The Western-San Bernardino Judgment addresses groundwater management within the Rialto-Colton Basin, Riverside-Arlington basin, and the

San Bernardino Basin Area (SBBA), which contains the Lytle Basin and the Bunker Hill Basin. The Western-San Bernardino Judgment was established at the same time as the Orange County Judgment (*Orange County Water District v. City of Chino, et al.*, Case No. 117-628) to settle rights within the upper Santa Ana River watershed to ensure resources would be sufficient to meet flow obligations in the lower Santa Ana River set by the Orange County Judgment. The Western-San Bernardino Judgment established the entitlements and groundwater replenishment obligations of the two major water agencies, San Bernardino Valley Municipal Water District (Valley District) and WMWD.

The Western-San Bernardino Judgment provides:

- A determination of the safe yield of the SBBA;
- Establishment of specific amounts of water that can be extracted from the SBBA by plaintiff parties (parties in Riverside County);
- Valley District must provide replenishment for extractions from the SBBA by non-plaintiffs (entities in the Valley District service area) in aggregate exceeding 72.05% of the safe yield, which is 167,228 AFY;
- WMWD must replenish the Rialto-Colton and Riverside-Arlington basins if extractions for use in Riverside County in aggregate exceed certain specific amounts; and
- Valley District must replenish the Rialto-Colton and Riverside-Arlington basins if water levels are lower than certain specific water level elevations in specified wells.

DWR defines these areas as the Bunker Hill Groundwater Basin, Rialto-Colton Groundwater Basin, and the northern portion of the Riverside-Arlington Groundwater Basin. The Riverside Basin is split by the Western-San Bernardino Judgment based on county boundaries into Riverside North (San Bernardino County) and Riverside South (Riverside County).

The adjudication resulted in the naming of the Western-San Bernardino Watermaster (Watermaster) consisting of two persons, one nominated by Valley District and the other by WMWD, appointed by the presiding judge. The Watermaster prepares an annual report documenting the previous year's pumping and export activities. Groundwater elevation, streamflow, and water quality are also documented.

The Western-San Bernardino Judgment also required the Watermaster to establish base extraction rights and export rights based on the average annual extractions and exports over the 5-year period from 1959 through 1963.

A copy of the Western-San Bernardino Judgment is included in **Appendix I**.

RPU has facilities to extract water from five groundwater basins. Each of these basins are discussed below.

Bunker Hill Basin

The Bunker Hill Basin is a valley-fill aquifer comprised of six confined and water-bearing hydrogeologic units. The Bunker Hill Basin lies between the San Andreas and San Jacinto Faults. The primary source of recharge for the Bunker Hill Basin is runoff from precipitation in the San Bernardino Mountains to the north and San Gabriel Mountains to the northwest. Wastewater discharge and imported water contribute to smaller amounts of groundwater recharge.

Valley District, WMWD, and the San Bernardino Valley Water Conservation District (SBVWCD) are active in recharging the Bunker Hill Basin.

RPU's export rights from the SBBA, which include the Bunker Hill Basin, have been revised to reflect new water conservation associated with the operation of the Seven Oaks Dam. The adjusted rights are summarized in Table 6-1~~Table 6-1~~Table 6-1.

Table 6-1. RPU Export Rights from SBBA Reflecting New Conservation (All Values in AFY)

	EXPORT RIGHT	NEW CONSERVATION (195 CFS)	ADJUSTED RIGHT (SUBTOTAL)
City of Riverside (RW Co and Gage Canal Co)	49,542	1,719	51,261
Agua Mansa and Meeks & Daley Water Co – RPU Share	2,908	100	3,008
Riverside Highland Water Co – RPU Share	440	0	440
Regents of the University of California – Agreement	536	18	554
TOTAL	**53,426**	**1,837**	**55,263**

Rialto-Colton Basin

The San Jacinto fault bounds the Rialto-Colton Basin to the northeast, Rialto-Colton fault to the southwest, the San Gabriel Mountains to the northwest, and Badlands to the southeast. The Rialto-Colton Basin consists of four hydrostratigraphic units with the water-bearing units expressing unconfined to partly confined properties.

The basis for the establishment of extraction rights stipulated within the Western-San Bernardino Judgment was groundwater production over the 5-year period from 1959 through 1963 (Base Period). For the Rialto-Colton Basin, the base period extraction is set only for that which is used within Riverside County. Provided that Valley District maintains the minimum groundwater elevations within the Rialto-Colton Basin, extractions from the Rialto-Colton Basin for use within San Bernardino Valley are not limited. The Western-San Bernardino Judgment established 3,381 AF as the base period export right for the use of Rialto-Colton Basin groundwater in Riverside County. Should extractions exceed the base period extraction over a 5-year period, or by more than 20 percent in a single year, WMWD is responsible for replenishment in the following year equal to the excess extractions over a 20-percent peaking allowance, unless credits are available from previous years due to production below the base period extraction or to importing water.

RPU's export rights from the Rialto-Colton Basin include 2,418 AFY for the City of Riverside and 310 AFY for RPU's shares of Agua Mansa and Meeks & Daley Water Company, for a total of 2,728 AFY.

As of the 2020 Watermaster Annual Report, WMWD has total credits of 544,221 AF for the Rialto-Colton and Riverside Basins. A copy of the 2020 Watermaster Annual Report is included in **Appendix J**.

Riverside North Basin

The Riverside Basin is bounded by the Rialto-Colton fault to the north, Arlington Basin to the south, Box Spring Mountains to the east, and Chino Basin to the west. The Riverside basin is an alluvial fill, unconfined basin.

The basis for the establishment of extraction rights stipulated within the Western-San Bernardino Judgment was groundwater production in the Riverside Basin over the 5-year period from 1959 through 1963. The Western-San Bernardino Judgment divides the Riverside Basin into two areas, based on jurisdictional boundaries: the portion of the Riverside Basin in San Bernardino County (Riverside North) and the portion of the Riverside Basin in Riverside County (Riverside South).

For Riverside North, the base period extraction is set only for that which is used within Riverside County. Provided that Valley District maintains the minimum groundwater elevations within Riverside North, extractions from Riverside North for use within San Bernardino Valley are not limited. The Judgment established 21,085 AF as the base period export right for the use of Riverside North groundwater in Riverside County.

In Riverside North for use in Riverside County, should extractions exceed the base period extraction over a 5-year period, or by more than 20 percent in a single year, WMWD is responsible for replenishment in the following year equal to the excess extractions over a 20-percent peaking allowance. WMWD's replenishment obligation can be reduced through credits that are available from previous years due to importing water into the basin or production below the base period extraction.

RPU's export rights from Riverside North are 10,902 AFY.

As of the 2020 Watermaster Annual Report, WMWD has total credits of 544,221 AF for the Rialto-Colton and Riverside Basins. To avoid confusion, the Watermaster no longer allocates this credit among groundwater basins. The Annual Report is included as **Appendix J**.

Riverside South Basin

For Riverside South, the Western-San Bernardino Judgment set a 5-year base period extraction of 29,633 AF for use in Riverside County. In Riverside South, should extractions exceed the base period extraction over a 5-year period, or by more than 20 percent in a single year, WMWD is responsible for replenishment in the following year equal to the excess extractions over a 20 percent peaking allowance, unless credits are available from previous years due to productions below the base period extraction or to importing water.

RPU's extraction rights from Riverside South are 16,880 AFY.

As of the 2020 Watermaster Annual Report, WMWD has total credits of 544,221 AF for the Rialto-Colton and Riverside Basins.

Arlington Basin

The Arlington Basin consists of alluvial deposits and is located between the Riverside South and the Temescal Basin. The Arlington Basin is not currently used by RPU due to the high levels of total dissolved solids and nitrates. The City may use the Arlington Basin as a source of water supply in the future if the costs for alternative new supplies make treatment of water from this source cost-effective.

The Arlington Basin is not adjudicated. A Groundwater Sustainability Plan (GSP) is currently being prepared for the Arlington Basin to meet the requirements of SGMA. RPU is participating as an observer in the development of the GSP.

Groundwater Management

Groundwater management activities are undertaken in cooperation with local agencies including WMWD, Valley District, Santa Ana Watershed Project Authority (SAWPA), and SBVWCD. The court appointed the Western-San Bernardino Watermaster to manage and report on the conditions of the local groundwater basins. Annually, Valley District publishes an engineering report to determine the replenishment requirements for the Bunker Hill Basin in the ensuing water year.

In 2005, the Upper Santa Ana Water Resources Association (USAWRA) formed the Basin Technical Advisory Committee (BTAC) with Valley District as the lead agency to develop an IRWMP for the Upper Santa Ana River Watershed. The IRWMP was completed in 2007, updated in 2015, and is currently being updated for 2020. It focuses on long-term water resources management in the Bunker Hill and Rialto-Colton basins and the reduction of reliance on imported water. Currently, BTAC meets monthly with the primary purpose of managing resources to optimize groundwater recharge and extraction activities.

The IRWMP is available at the website: https://www.sbvmwd.com/reports/reports

Valley District has established target ranges for groundwater level management within Bunker Hill Basin and is obligated under the Western-San Bernardino Judgment to maintain water levels in the Rialto-Colton Basin and Riverside North.

In 2010, SAWPA adopted its One Water One Watershed (OWOW) IRWMP for the entire Santa Ana River watershed. RPU participated in development of the OWOW plan and in the development of the plan updates in 2014 and 2018.

RPU assists in regional groundwater management as a member of both USAWRA and BTAC. RPU, in collaboration with WMWD, the Valley District, and other water retails that produce water from the Riverside Basin, developed a Groundwater Management Plan (GWMP) for Riverside North and Riverside South. The purpose of the plan is to improve sustainability by managing the quantity and quality of groundwater resources.

The Riverside Basin Groundwater Management Plan is available at the website:

https://water.ca.gov/Programs/Groundwater-Management/Non-SGMA-Groundwater-Management

WMWD has developed a GWMP for the Arlington Basin, and is currently leading the development of a GSP for the basin. More information is available at the website:

https://www.wmwd.com/530/Arlington-Basin-Groundwater-Sustainabili

Overdraft Conditions

The basins used by RPU include Bunker Hill (DWR Basin Number 8-2.06), Rialto-Colton (8-2.04), and Riverside-Arlington (8-2.03).

The IRWMP determined that the San Bernardino Basin (which includes Bunker Hill and Lytle) and Rialto-Colton Basins are being over drafted, but there are sufficient supplies to meet replenishment obligations.

The 2011 Riverside GWMP identified that Riverside North is currently over drafted, and both Riverside North and Riverside South are projected to be over drafted. Valley District is obligated per the Western-San Bernardino Judgment to maintain water levels in the Bunker Hill and Rialto-Colton Basins, and in Riverside North. The Judgment also obligates Western to replenish excess extractions above the base period extractions in Rialto-Colton, Riverside North, and Riverside South. In recent years Western's obligation has not been triggered, but Valley District's obligation has.

The Arlington Basin will be managed in accordance with the Arlington Basin GSP currently under development.

RPU contributes to several efforts to monitor and manage the surrounding groundwater basins. RPU participates in independent groundwater level and quality monitoring in Bunker Hill, Riverside, Rialto-Colton, and Arlington basins. In addition, all groundwater production is metered, and extractions are reported to the Western-San Bernardino Watermaster.

Past Five Years

RPU's historical production from each groundwater basin for the past five years is shown in Table 6-2~~Table 6-2~~~~Table 6-2~~. RPU's groundwater production is conveyed through its potable and non-potable distribution systems to retail customers and wholesale customers. It is not feasible to identify which wells produced the water delivered to retail customers and which wells produced the water delivered to wholesale customers. Therefore, RPU is showing all groundwater production in a single table.

Table 6-2. DWR 6-1 Groundwater Volume Pumped (All Values in AF)

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Bunker Hill	55,765	58,297	58,100	50,961	57,946
Alluvial Basin	Riverside North	9,547	8,918	8,930	8,327	8,876
Alluvial Basin	Riverside South	15,677	17,082	18,041	18,564	19,287
Alluvial Basin	Rialto-Colton	1,138	921	1,546	459	2
	TOTAL:	**82,127**	**85,218**	**86,617**	**78,311**	**86,111**
BUNKER HILL – WMWD WHEELING		**5,508**	**4,208**	**4,208**	**4.435**	**4,435**
RPU'S TOTAL GROUNDWATER PRODUCTION (INCLUDING WHOLESALE DELIVERIES)		**76,619**	**81,010**	**82,409**	**73,876**	**81,676**
WHOLESALE TO WMWD		**2,997**	**3,967**	**3,305**	**2,184**	**3,163**
WHOLESALE TO NORCO		**0**	**0**	**0**	**0**	**477**

6.2.3 Surface Water

RPU intends to augment natural recharge in the Bunker Hill and Riverside basins through conjunctive use projects. These projects will provide enhanced groundwater recharge when excess water is available, with the goal of making that water available for groundwater production during dry periods. These projects are summarized in Table 6-8~~Table 6-8~~~~Table 6-8~~. The exact scope and expected yield of these projects is subject to adjustment as the projects move through the planning and implementation process.

6.2.4 Stormwater

In addition to the supply sources currently utilized by RPU to meet demands in its service area, local stormwater is another potential supply that could be used. While the Riverside County Flood Control and Water Conservation District (RCFC&WCD) and the San Bernardino County Flood Control District (SBCFCD) own and operate the existing regional flood control systems in and around RPU's service area, opportunities are available for RPU to capture and recharge additional stormwater.

The IWMP included an assessment of stormwater capture opportunities. The findings of this analysis helped define ~~translated in the definition of~~ several potential water supply projects, which were further developed and described in the IWMP. RPU is continuing to investigate and develop these potential projects; they are summarized in **Table 6-8**~~Table 6-8~~~~Table 6-8~~.

6.2.5 Wastewater and Recycled Water

The City of Riverside Public Works Department operates and maintains the Riverside Regional Water Quality Control Plant (RWQCP). The plant capacity has been expanded to 46 mgd. The service area of the RWQCP extends beyond the RPU service area to include some areas served by Jurupa, Rubidoux, and Edgemont Community Services Districts.

Tertiary-treated effluent from the RWQCP is discharged into the Santa Ana River (SAR). The RWQCP is required to discharge 15,250 AFY, adjusted for quality, to meet downstream obligations to Orange County Water District (OCWD) established through an agreement with WMWD. If Riverside delivers more effluent than is required under this agreement, then Riverside may in any given year reduce its adjusted contribution by the amount of such excess deliveries, but in no event shall Riverside's adjusted contribution be less than 13,420 AFY. However, should the minimum obligation under the Orange County Settlement be lowered to 34,000 AF as a result of excess accumulated credits, then Riverside's discharge obligation of 13,420 AFY shall be reduced to 12,420 AFY, as has been the case since 1986. A separate requirement, to discharge a total of 25,000 AFY, is included in the RWQCP ORDER WR 2008 – 0024 Conditionally Approving Wastewater Change Petition WW-0045.

RPU maintains a recycled water distribution system that provides recycled water for landscape irrigation and commercial purposes.

Recycled Water Coordination

RPU and the City's Public Works Department conjointly manage and plan wastewater and recycled water operations and programs. The Public Works Department operates and maintains the RWQCP. The RWQCP is the only wastewater treatment plant that receives wastewater generated within the RPU service area.

Wastewater Collection, Treatment, and Disposal

All wastewater from the RPU water service area is treated at the RWQCP, a tertiary treatment facility. The tables below summarize the volume collected from the RPU service area and the volume treated at the RWQCP in 2020.

Table 6-3. DWR 6-2 Wastewater Collected within Service Area in 2020

Percentage of 2020 service area covered by wastewater collection system (optional):	100%
Percentage of 2020 service area population covered by wastewater collection system (optional):	100%

WASTEWATER COLLECTION			RECIPIENT OF COLLECTED WASTEWATER			
NAME OF WASTEWATER COLLECTION AGENCY	WASTEWATER VOLUME METERED OR ESTIMATED	WASTEWATER VOLUME COLLECTED FROM UWMP SERVICE AREA IN 2020 (AF)	NAME OF WASTEWATER AGENCY RECEIVING COLLECTED WASTEWATER	WASTEWATER TREATMENT PLANT NAME	WASTEWATER TREATMENT PLANT LOCATED WITHIN UWMP AREA	WWTP OPERATION CONTRACTED TO A THIRD PARTY
City of Riverside	Metered	28,345	City of Riverside	Riverside Water Quality Control Plant	Yes	No

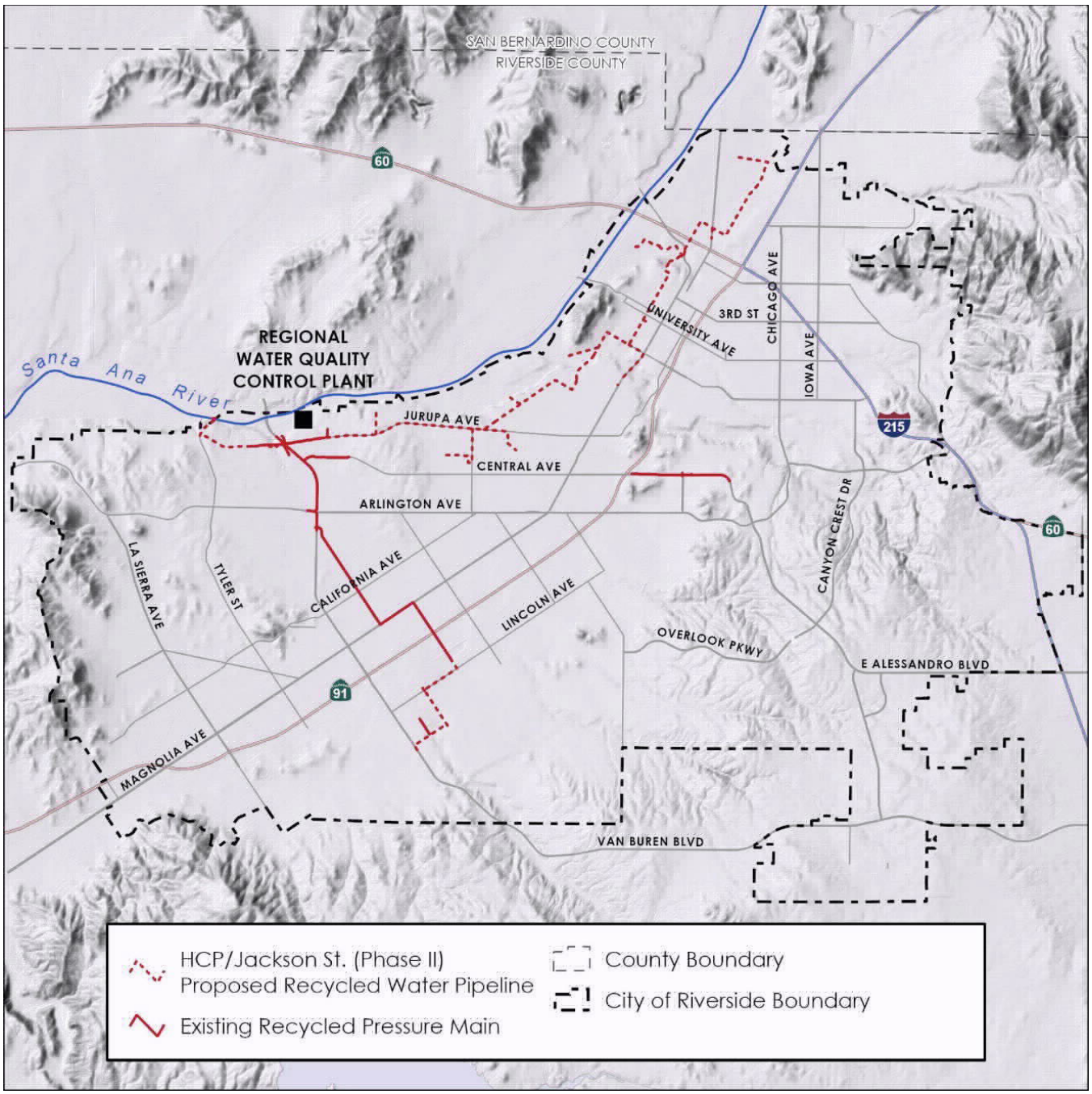
Table 6-4. DWR 6-3 Wastewater Treatment and Discharge within Service Area in 2020

							2020 VOLUMES (AF)				
WASTEWATER TREATMENT PLANT NAME	DISCHARGE LOCATION NAME OR IDENTIFIER	DISCHARGE LOCATION DESCRIPTION	WASTEWATER DISCHARGE ID NUMBER	METHOD OF DISPOSAL	PLANT TREATS WASTEWATER GENERATED OUTSIDE THE SERVICE AREA	TREATMENT LEVEL	WASTEWATER TREATED	DISCHARGED TREATED WASTEWATER	RECYCLED WITHIN SERVICE AREA	RECYCLED OUTSIDE OF SERVICE AREA	INSTREAM FLOW PERMIT REQUIREMENT
Riverside Water Quality Control Plant	001	Santa Ana River	CA0105350-001	River or Creek	Yes	Tertiary	28,435	27,981	213		

Recycled Water System Description

The City currently operates a recycled water distribution system with a combined pipeline length of approximately 5.4 miles. The existing recycled water distribution system is shown in Figure 6-1~~Figure 6-1~~~~Figure 6-1~~.

Figure 6-1. Existing Recycled Water Distribution System



The use of recycled water in 2020 is summarized in Table 6-5~~Table 6-5~~~~Table 6-5~~.

Table 6-5. DWR 6-4 Recycled Water Within Service Area in 2020 (All values in AF)

Name of Supplier Producing (Treating) the Recycled Water:	City of Riverside Public Works Department
Name of Supplier Operating the Recycled Water Distribution System:	City of Riverside Public Utilities Department
Supplemental Volume of Water Added in 2020:	0
Source of 2020 Supplemental Water:	

BENEFICIAL USE TYPE	POTENTIAL BENEFICIAL USES OF RECYCLED WATER	AMOUNT OF POTENTIAL USES OF RECYCLED WATER	GENERAL DESCRIPTION OF 2020 USES	LEVEL OF TREATMENT	2020	2025	2030	2035	2040	2045
Landscape Irrigation (excludes golf courses)										
Golf Course Irrigation										
Commercial Use										
Industrial Use										
Geothermal and Other Energy Production										
Seawater Intrusion Barrier										
Recreational Impoundment										
Wetlands or Wildlife Habitat										
Groundwater Recharge (IPR)*										
Surface Water Augmentation (IPR)*										
Direct Potable Reuse										
Other			Direct use and to WMWD for recharge & non-potable use	Tertiary	141	5,700	13,420	13,420	13,420	13,420
				TOTAL:	**141**	**5,700**	**13,420**	**13,420**	**13,420**	**13,420**
Internal Reuse (Not included in Statewide Recycled Water Volume).										

*IPR - Indirect Potable Reuse

Potential, Current, and Projected Recycled Water Uses

RPU has developed estimates of the future beneficial uses of recycled water from the RWQCP. Achieving these uses will depend on projects to expand the recycled water distribution infrastructure and create new facilities for groundwater recharge. These recycled water infrastructure projects are discussed in **Section 6.8**. The projected values for future beneficial use are dependent on the completion of these infrastructure projects.

In the 2015 UWMP, RPU had anticipated the completion of additional recycled water infrastructure projects when projecting the estimated beneficial use in 2020. However, these projects have not yet been implemented; therefore, the actual recycled water use in 2020 was lower than previously projected. This comparison is shown in Table 6-6~~Table 6-6~~~~Table 6-6~~.

Table 6-6. DWR 6-5 2015 Recycled Water Use Projection Compared to 2020 Actual

USE TYPE	2015 PROJECTION FOR 2020 (AF)	2020 ACTUAL USE (AF)
Agricultural Irrigation		
Landscape Irrigation (excludes golf courses)		
Golf Course Irrigation		
Commercial Use		
Industrial Use		
Geothermal and Other Energy Production		
Seawater Intrusion Barrier		
Recreational Impoundment		
Wetlands or Wildlife Habitat		
Groundwater Recharge (IPR)*		
Surface Water Augmentation (IPR)*		
Direct Potable Reuse		
Direct use and to WMWD for recharge and non-potable use	6,430	141
TOTAL:	**6,430**	**141**

Actions to Encourage and Optimize Future Recycled Water Use

Establishing standards for the use of recycled water is one of the policies included in the City's General Plan 2025. In addition, RPU has adopted an ordinance titled Mandatory Use of Recycled Water that is designed to encourage recycled water use. A copy of this ordinance is attached as **Appendix K**.

RPU's actions to encourage recycled water use are summarized in Table 6-7~~Table 6-7~~~~Table 6-7~~.

Table 6-7. DWR 6-6 Methods to Expand Future Recycled Water Use (All values in AF)

NAME OF ACTION	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	EXPECTED INCREASE OF RECYCLED WATER USE
Expand Recycled Water Infrastructure	Riverside Habitat, Parks, and Water Project		11,000
Expand Recycled Water Infrastructure	Jackson Street Phase 1		820
Expand Recycled Water Infrastructure	Arlington Avenue		1,600
		TOTAL:	**13,420**

6.2.6 Desalinated Water Opportunities

The Arlington Basin provides a local source of groundwater with elevated salt levels. WMWD owns and operates the Arlington Desalter to improve groundwater quality and supply water to the City of Norco using five wells in the western part of the basin. The Arlington Basin is not adjudicated and is downstream of RPU's major water reservoirs. RPU is evaluating the potential for desalting groundwater from Riverside South to meet demands. Because of RPU's distance from the ocean, seawater desalination is expected to be cost-prohibitive.

6.2.7 Water Exchanges and Transfers

RPU maintains interconnections with neighboring agencies to provide water during short-term outages or emergencies. RPU ~~exchanges water with GCC and~~ has an exchange agreement with the City of Norco.

6.2.8 Future Water Projects

In the IWMP, RPU identified a number of future water supply projects. The projects anticipated to move forward during the planning horizon of this UWMP are summarized in Table 6-8~~Table 6-8~~~~Table 6-8~~.

Supplemental information about these projects is provided below.

The Seven Oaks Dam Conservation Project

This project is a cooperative, interagency project among WMWD, Valley District, RPU, and others that allows the agencies to capture up to 200,000 AFY of previously unallocated stormwater from the SAR. This surface supply is obtained from Seven Oaks Dam, a flood control facility owned by the Army Corps of Engineers, and recharged at new, jointly owned spreading basins immediately downstream from the dam. The cooperative project does not involve the extraction of stored groundwater. Participants,

including RPU, would have to use their existing facilities or build new groundwater extraction wells within the Bunker Hill Basin to be able to utilize the allocated water.

The Riverside North ASR Project

This project is located on the east side of the SAR, approximately 1.5 miles southwest of the I-15 and I-10 interchange. The site is located on a tract of land referred to as the "Flume Well Tract." Implementation of this project would benefit the Riverside North Basin with stormwater recharge through in-channel and off-channel recharge facilities. The off-channel facilities are located to the west of the SAR on RPU-owned land. Valley District is currently taking the lead on this project.

The Jackson-Arlington Project

The Project involves the construction of approximately 27,650 linear feet (LF) of 8-inch and 24-inch diameter recycled water pipelines. The Project's ultimate alignment is from the intersection of Jackson St. and Van Buren Blvd., heading southeast along Jackson St. and Monroe St. to Cleveland Ave. where it will tie into the existing 24-inch WMWD non-potable water pipeline, continuing southeasterly and ending at Mockingbird Reservoir.

The Jackson Street Pipeline is estimated to provide approximately 820 AFY to RPU customers of recycled water from the RWQCP.

In addition to the proposed Jackson Street Pipeline project (Phase I and II), a subsequent expansion, the Arlington Avenue Pipeline, has been identified for future consideration. The Arlington Avenue Pipeline would allow for recycled water use to be expanded within a relatively short time frame (less than 5 years) to provide up to 4,970 AFY of recycled water, which is broken down as follows:

- Up to 2,420 AFY (Jackson Street Pipeline: 820 + Arlington Avenue Pipeline: 1,600) to be distributed to adjacent or nearby RPU customers for direct landscape irrigation use.
- The Arlington Avenue Pipeline involves the construction of approximately 20,060 LF of 8-inch, 12-inch, and 16-inch distribution recycled water pipelines. The Arlington Avenue Pipeline is estimated to provide approximately 1,600 AFY to RPU customers not directly adjacent to the Jackson St. alignment.

Riverside Habitat, Parks, and Water Project

This project is a regional project to strengthen the health and prosperity of natural resources within the Upper Santa Ana River Watershed through stream restoration projects within the City of Riverside. The project would also supply recycled water from Riverside's RWQCP to the six SARHCP mitigation sites and to multiple RPU retail customers. The Riverside Habitat, Parks, and Water Project (RHPWP) will have the capacity to provide up to 16,500 gallons per minute or 11,700 AFY of recycled water to the SARHCP and RPU sites. The capacity of the pipeline will be allocated between the SARHCP and RPU demands. A network of existing and new recycled water pipelines ranging in size from 4-inches to 36-inches in diameter will span both west and east of RWQCP.

Table 6-8. DWR 6-7 Expected Future Water Supply Projects or Programs (All values in AF)

NAME OF FUTURE PROJECTS OR PROGRAMS	AGENCY NAME	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	EXPECTED INCREASE IN WATER SUPPLY TO SUPPLIER (AFY)
Jackson Street and Arlington Avenue Pipelines	WMWD	This project would provide new recycled water pipelines to increase the direct use of recycled water in the RPU service area and provide recycled water to WMWD for direct use and groundwater recharge.	2025	2,420
Seven Oaks Dam Phase II Conservation Project (Enhanced)	WMWD, Valley District, and others	Phase II would provide additional groundwater recharge in the Bunker Hill Basin through the Seven Oaks Dam Conservation Project.	2025	1,000
Bunker Hill Basin Active Recharge Project	Valley District, WMWD	This project consists of construction of new facilities or re-operation of facilities already in existence to capture more of the stormwater that flows out of the San Bernardino Basin Area (SBBA) through the tributaries of the Santa Ana River.	2025	1,500
Riverside North Aquifer Storage and Recovery	Valley District	This project would include in-channel and off-channel facilities to recharge water along the Santa Ana River.	2030	2,000
Riverside Habitat, Parks, and Water Project	WMWD, Valley District, and others	This project would provide a recycled water pipeline to allow discharge to the Santa Ana River for habitat benefits. The pipeline would also allow RPU to provide recycled water to additional direct use customers. Through this effort, RPU will pursue a wastewater change of use petition which if successful, would provide RPU with up to 4,750 AFY of recycled water (e.g., lower its discharge minimum from 25,000 down to 20,000). In addition, RPU is seeking to enter into an exchange agreement with Valley to exchange the 5,000 AFY of the recycled water that would be discharged for the HCP with a like amount of raw water that RPU would pump out of Bunker Hill.	2030	11,000
Box Spring Local Stream Recharge and Direct Use	RCFC&WCD	This local stream recharge project would recharge the Riverside Basin through the development of recharge facilities adjacent to or as a part of existing RCFC&WCD facilities. Recharge of stormwater would potentially be augmented with recycled water	2035	2,800
Stormwater Recharge at Columbia, Marlborough, and Kansas Detention Basins	RCFC&WCD	This project would provide groundwater recharge using stormwater. Recharge of stormwater would potentially be augmented with recycled water.	2040	1,500

6.2.9 Summary of Existing and Planned Sources of Water

RPU intends to fully utilize its water rights from the Bunker Hill Basin plus the quantity of water available through conjunctive use. RPU plans to increase the use of recycled water as described above. The balance of RPU's water supply will come from the Rialto-Colton Basin, Riverside North, and Riverside South. RPU's conjunctive use projects in the Riverside Basin will augment the yield of the basin and allow RPU to increase production over historical levels.

Production and recharge associated with RPU's conjunctive use projects will be coordinated with Valley District and WMWD to prevent adverse effects on groundwater levels and quality.

The current and projected supplies available to RPU are shown in Table 6-9~~Table 6-9~~~~Table 6-9~~ and Table 6-10~~Table 6-10~~~~Table 6-10~~.

Table 6-9. DWR 6-8 Actual Water Supply Volumes (All values in AF)

		2020	
WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	ACTUAL VOLUME (AF)	WATER QUALITY
Groundwater	Bunker Hill	50,911	Drinking Water
Groundwater	Bunker Hill	7,035	Raw Water
Groundwater	Riverside North	7,686	Drinking Water
Groundwater	Riverside North	1,190	Raw Water
Groundwater	Riverside South	15,665	Drinking Water
Groundwater	Riverside South	3,622	Raw Water
Groundwater	Rialto-Colton	2	Raw Water
Recycled water	RWQCP	213	Recycled Water
Purchased or Imported Water	From WMWD	0	Drinking Water
	Total Production:	**86,324**	

Table 6-10. DWR 6-9R Projected Water Supply Volumes (All values in AF)

WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	PROJECTED WATER SUPPLY (AFY)				
		2025	2030	2035	2040	2045
Groundwater	Bunker Hill	55,263	55,263	55,263	55,263	55,263
Groundwater	Seven Oaks Enhanced Phase II	1,000	1,000	1,000	1,000	1,000
Groundwater	BH Active Recharge 2025	750	1,000	1,500	1,500	1,500
Groundwater	Riverside North	10,902	10,902	10,902	10,902	10,902
Groundwater	RNASR	-	2,000	2,000	2,000	2,000
Groundwater	Riverside South	16,880	16,880	16,880	16,880	16,880
Groundwater	Box Springs	-	-	2,800	2,800	2,800
Groundwater	Columbia, Etc. Stormwater	-	-	-	1,500	1,500
Groundwater	Rialto-Colton	2,728	2,728	2,728	2,728	2,728
Recycled water	RWQCP	5,700	13,420	13,420	13,420	13,420
Purchased or Imported Water	From WMWD	21,700	21,700	21,700	21,700	21,700
	TOTAL:	**114,923**	**124,893**	**128,193**	**129,693**	**129,693**

6.2.10 Special Conditions

Climate Change Effects

The Upper Santa Ana River Watershed IRWMP included a discussion of climate change and its potential impacts on water resources. That discussion is reproduced here.

The following vulnerabilities were identified for the Upper SAR Basin. The vulnerabilities were listed in rank order by the BTAC subcommittee updating the IRWMP. In all cases, actions identified in the IRWMP address vulnerabilities.

1. Uncertainty around the Sacramento-San Joaquin Bay Delta, especially given dependence on snowpack for water supplies, will make imported supplies less reliable. The Region's ability to capture additional stormwater and store it in the large underlying groundwater basins will provide some ability to offset this vulnerability. In addition, the Region plans to maximize the import of water during wet years and store it in the large underlying groundwater basins which will also help offset this vulnerability.

2. Current groundwater capture facilities are not operationally equipped to capture less frequent, but more intense storm events. As much of the Region's water supply ultimately falls on precipitation, either as rain or snow, in the local mountains, the ability to capture more intense storm flows is crucial. As these flows are often intense and of short duration, further development of additional facilities to capture and recharge the tail end of an intense storm becomes crucial in the Region. Plans for these facilities are discussed elsewhere in the IRWMP. Additionally, through a partnership between SBVWCD and Valley District, capacity to recharge water released from the Seven Oaks Dam will be increased. As the dam serves to attenuate flood flows, this project is well suited to increase the Region's capacity to recharge water.

3. More frequent drought periods will result in more frequent and intense wildfires. Water quality and the ability to capture storm flows will be reduced. Wildfires are already a concern in the region and have historically caused water quality and flood control issues. Should climate change increase drought periods and result in more frequent and intense wildfires, water quality and flood control will be further impacted.

4. Increased surface water temperatures will degrade water quality and negatively impact aquatic life, especially in mountain areas. High gradient stream systems located in the mountainous areas support a number of species that exist in a narrow geographic range limited by altitude. Some of the more sensitive species, such as the mountain yellow-legged frog, are listed by the U.S. Fish and Wildlife Service and active restoration and recovery programs are underway. Increases in surface water temperature will negatively impact aquatic life as already narrow geographic ranges will be further reduced.

5. Uncertainty related to managing intense winter storms to protect downstream life and property will make holding water in the flood system for recharge more difficult. As seasonal storms become less frequent and more intense, flood management may become more complex. However, collection of water for recharge during intense storm events is difficult and most efforts are focused on "scalping" the tail of a storm flow. The high-volume flows move downstream and the tailing, less intense flows can be collected by rubber dams or other structures. These structures are intended to be deflated or moved during high flow events. Planning is underway for a number of these facilities within the watershed.

6. Increased temperatures will result in increased water demand for landscape irrigation. As days with highs over 95 degrees increase in frequency, absent any intervention, landscape irrigation demands would increase. Recent programs by local water retailers, including a popular public-private partnership called Water Saving Garden Friendly, have provided education and resources for homeowners and businesses to reduce irrigation demand through the use of drought tolerant plants in landscaping. A recent partnership with California State University resulted in a drought tolerant demonstration garden where the public can see and better understand the benefits of drought tolerant landscaping. Additionally, like in most parts of California, numerous incentive programs are underway to increase water use efficiency by the homeowner, especially outdoor use. These programs will need to be continued or even expanded to counteract increasing temperatures in the future.

7. Decreased runoff and subsurface flows from the mountain front areas as the result of more frequent and severe droughts. As drought conditions become more frequent, it becomes more important to capture storm flows when they are available. Further development of recharge facilities within the IRWM Region and imports of water during wet years for underground storage allows the Region to store water in the wet years for use during periods of drought. The Bunker Hill Subbasin is a tremendous resource, and the cooperative management of the basin has created the structure where more water could be stored in wet years.

Most of the IRWM Region's vulnerabilities are addressed by work already occurring in the upper watershed. More active stormwater capture and more active recharge of imported water in wet years will help prepare the Region for changed climatic conditions. As mentioned in Section 1.3, RPU is committed to study and develop actions to address the impacts of climate change in the region. Furthermore, RPU will remain actively advocating to protect and enhance recharge facilities to ensure the sustainability of the groundwater basins.

6.3 Energy Intensity

RPU maintains records of energy use at its facilities dedicated to water management. RPU compiled energy consumption data for fiscal year 2019-2020, the most recent 12-month period for which completed data were available. The energy consumption data are summarized in Table 6-11~~Table 6-11~~~~Table 6-11~~, and the estimated energy intensity is shown in Table 6-12~~Table 6-12~~~~Table 6-12~~.

Table 6-11. Energy Consumption for Fiscal Year 2019/2020

WATER MANAGEMENT ACTIVITY	ENERGY CONSUMPTION (KWH)
Extract/Divert	9,122,543
Convey	10,493,004
Treatment	5,776,680
Distribution System	17,621,699
Nontreated	2,205,915
TOTAL	**45,219,841**

Table 6-12. DWR Table O-1: Energy Intensity

TABLE O-1A: RECOMMENDED ENERGY REPORTING - WATER SUPPLY PROCESS APPROACH

Start Date for Reporting Period	7/1/2019
End Date for Reporting Period	6/29/2020
Is upstream embedded in the values reported?	No

URBAN WATER SUPPLIER OPERATIONAL CONTROL

		WATER MANAGEMENT PROCESS						NON-CONSEQUENTIAL HYDROPOWER	
	WATER VOLUME UNITS USED	EXTRACT AND DIVERT	PLACE INTO STORAGE	CONVEYANCE	TREATMENT	DISTRIBUTION	TOTAL UTILITY	HYDRO POWER	NET UTILITY
Volume of Water Entering Process	AF	82,211	0	82,211	82,211	82,211	82,211	0	82,211
Energy Consumed (kWh)	N/A	9,122,543	0	10,493,004	5,776,680	19,827,614	45,219,841		45,219,841
Energy Intensity (kWh/vol.)	N/A	111.0	0.0	127.6	70.3	241.2	550.0	0.0	550.0

QUANTITY OF SELF-GENERATED RENEWABLE ENERGY

0 kWh

DATA QUALITY (ESTIMATE, METERED DATA, COMBINATION OF ESTIMATES AND METERED DATA)

Combination of Estimates and Metered Data

DATA QUALITY NARRATIVE:

RPU has access to high-quality electricity consumption data from meters. RPU's water production volumes are metered.

NARRATIVE:

RPU's primary uses of energy for water management include groundwater wells to extract water, booster pumping stations to raise water to higher-elevation areas, and treatment to meet water quality objectives.

7 Water Service Reliability and Drought Risk Assessment

This chapter includes an assessment of the expected reliability of RPU's water supplies during a dry period.

This discussion focuses on the long-term (one to many years) reliability in response to below-normal precipitation. RPU maintains a number of interconnections with neighboring agencies that could be used to provide supplemental water during a short-term reduction in supply.

IN THIS SECTION

- Water Service Reliability Assessment
- Drought Risk Assessment

7.1 Water Service Reliability Assessment

7.1.1 Constraints on Water Sources

Historically, RPU's source waters have proven reliable~~,~~ even during the multi-year droughts from 1984 to 1990, 1999 to 2002, 2006 to 2009, and 2012 to 2016. To date, RPU has not experienced any major deficiencies in water supply. RPU, water management agencies, and other local water retailers are cooperating to further increase the reliability of groundwater from the Bunker Hill Basin, Rialto-Colton Basin, Riverside North Sub-basin, and Riverside South Sub-basin.

T~~In order t~~o increase groundwater production beyond historical levels and improve water supply reliability of the local groundwater basins, RPU has collaborated with other local water retailers through SAWPA, the USAWRA, and BTAC to address the various groundwater management issues. Typical collaborative efforts include developing groundwater models, sharing groundwater quantity/quality data, partnering on regional projects, and conducting source water assessments.

RPU produces groundwater from wells spatially distributed across the Bunker Hill Basin, Riverside North, and Riverside South. Some treatment occurs at the wellhead or regional facilities prior to delivery to the major transmission mains. Production from wells and/or treatment facilities is blended and chlorinated within the major transmission mains prior to distribution from the Linden Evans Reservoir.

RPU regularly monitors the quality of its water supply. Annually, RPU distributes summary reports on water quality to its customers. RPU's most recent Annual Water Quality Report is attached as **Appendix L**.

RPU continues to monitor water regulations and potential new contaminants of emerging concern (CECs).

Per- and poly-fluoroalkyl substances (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. Two common PFAS, perfluorooctanoic acid (PFOA) and perfluoro octane sulfonic acid (PFOS), are regulated by the California Division of Drinking Water and have notification limits of 5.1 parts per trillion (ppt) and 6.5 ppt, respectively. Both of these compounds have been detected in RPU's water at levels below the notification levels.

Groundwater

Local groundwater supplies account for most of RPU's water supplies, with approximately 60 percent originating from the Bunker Hill Basin, which is adjudicated. RPU's water rights are based on the long-term safe yield from the Bunker Hill Basin, which includes wet, dry, and normal periods. RPU's wells are generally located in the section of the basin with the greatest thickness of water bearing layers. Thus, RPU's water supply from the Bunker Hill Basin is considered reliable, from a supply standpoint, during single and multi-year dry periods. The Western-San Bernardino Judgment also permits producers to increase groundwater production by up to 20 percent in any single year for peaking purposes.

As part of the 2011 Riverside Basin Groundwater Management Plan, the safe yield for the Riverside and Arlington Basins were established based on 43 years of historical production and hydrologic conditions (1965 to 2007). This period includes wet, dry, and normal periods and is considered to be representative of long-term mean climatological conditions. The calibrated numerical groundwater model of the Riverside and Arlington basins determined the safe yield to be 27,200 AF in Riverside North and 35,100 AF in Riverside South. Recharge associated with RPU's planned conjunctive use projects will allow RPU to increase groundwater production from the Riverside Basin without adversely impacting the sustainability of this water resource.

In general, the natural quality of water in local groundwater basins is acceptable and reliable. Regulated contaminants, however, have been detected in all groundwater basins utilized by RPU. RPU has reached agreements with some parties to address these contaminants by the installation of treatment at the wellhead paid for by these parties, and has pursued responsible parties in other instances. RPU continues to monitor potential new regulations for CECs, such as PFOA and PFOS; and will evaluate holding potential responsible parties accountable for the potential hazards that could impact the quality of groundwater from local basins include migrating contaminant plumes, chemical spills, agricultural return flows, leaky underground storage tanks, and septic systems.

Previous improper waste disposal practices and other industrial and agricultural activities created several groundwater plumes that can potentially impact, and have impacted, a number of RPU wells. RPU implemented several measures to address groundwater contamination that affected its source water. Some of the implemented measures include well replacement, wellhead treatment pilot studies, and preparation of a water treatment feasibility study. RPU has also developed a WSCP and a water quality blending optimization model.

RPU was able to improve the quality of its domestic water by successfully implementing a comprehensive strategy that emphasized pollution prevention and source water protection.

Surface Water

The quantity of surface water recharge from RPU's existing and planned conjunctive use projects is dependent on the hydrologic conditions in the Santa Ana River Watershed. Through the use of the groundwater basins for storage, RPU is not reliant on surface water flows to directly meet demands during a dry period. Therefore, RPU's supply reliability is not impacted by short-term fluctuations in local surface water flow.

Recycled Water

The primary source of recycled water is local groundwater that has been used as potable water then reclaimed at the RWQCP. RPU plans to reuse available recycled water from the RWQCP and considers this supply to be 100 percent reliable during single or multi-year dry periods.

The RWQCP treats effluent to tertiary standards and monitors the quality to ensure compliance with the discharge permit from Santa Ana Regional Water Quality Control Board (SARWQCB) and the regulations set by the Division of Drinking Water (DDW).

Imported Supplies

RPU is contracted to receive SWP water from MWD through WMWD. MWD is the largest State Water Contractor, with an annual maximum entitlement of 1,911,500 AF through 2035. However, actual deliveries of SWP water to MWD vary each year based on the amount of precipitation and projected water use within MWD's service area.

Imported water is treated at the Mills WTP in Riverside prior to delivery to RPU by WMWD. SWP water quality is maintained and governed by the standards established by DWR. The salinity as measured by Total Dissolved Solids (TDS) of SWP water delivered to WMWD is usually less than 300 milligrams per liter (mg/L) but was as high as 430 mg/L during the 1977 drought. DWR and/or MWD regularly conduct sanitary surveys and monitor the quality of the water according to the applicable standards and regulations.

DWR prepares a biennial report to assist SWP contractors and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update, the 2019 DWR State Water Project Delivery Capability Report (DCR), in August 2020.

In the DCR, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their UWMPs. The 2019 DCR includes DWR's estimates of SWP water supply availability under both current and future conditions.

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key assumptions and inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and projected contractor demands for SWP water.

7.1.2 Year Type Characterization

RPU has analyzed the reliability of its supplies for the year types required by the CWC.

Types of Years

In general, groundwater and recycled water supplies are less vulnerable to seasonal and climatic changes than surface water (i.e., local and imported) supplies. RPU has been able to increase production from local groundwater basins during previous droughts pursuant to the Western-San Bernardino Judgment. The Western-San Bernardino Watermaster also independently reviews groundwater conditions annually to assess the change in groundwater levels. Historically, the Watermaster permitted additional extraction beyond the specified water rights from the Bunker Hill Basin to decrease higher than optimal groundwater levels in the basin.

The reliability of imported water from MWD is described in the DCR and in MWD's UWMP. The average supply under existing conditions is 58 percent of its SWP Table A amount. For future conditions (beginning in 2040), this percentage is estimated to be 52 percent.

For multiple dry years, the DCR identifies 1987 through 1992 as the six-year dry period. Over the course of the six-year dry period, the average SWP supply available to MWD is estimated to be 28 percent of its Table A amount. MWD has defined 1998 through 1992 as the five-year dry period for reliability planning. MWD has undertaken storage programs and supply diversification programs, and MWD's UWMP shows 100 percent reliability during these conditions.

RPU's groundwater production reliability is limited by current agreements, rather than short-term changes in hydrology. For consistency with imported water reliability, RPU is using the same base years for its groundwater and recycled water supplies as the years used for imported water reliability. The bases for dry water years are summarized in Table 7-1~~Table 7-1~~~~Table 7-1~~.

Table 7-1. DWR 7-1 Basis of Water Year Data (Reliability Assessment)

		AVAILABLE SUPPLY IF YEAR TYPE REPEATS	
YEAR TYPE	BASE YEAR	VOLUME AVAILABLE	PERCENT OF AVERAGE SUPPLY
Average Year	1922 - 2017		100%
Single-Dry Year	1977		100%
Consecutive Dry Years 1st Year	1988		100%
Consecutive Dry Years 2nd Year	1989		100%
Consecutive Dry Years 3rd Year	1990		100%
Consecutive Dry Years 4th Year	1991		100%
Consecutive Dry Years 5th Year	1992		100%

Water Service Reliability

RPU has assumed that 100 percent of its groundwater and recycled water supplies would remain available during a single dry year and multiple dry years. The availability of imported water has been adjusted based on the reliability assessment by MWD and WMWD.

Comparisons of expected supply and demand during a normal year, single dry year, and multiple dry years are shown in the tables below.

Table 7-2. DWR 7-2 Normal Year Supply and Demand Comparison (All values in AF)

	2025	2030	2035	2040	2045
Supply Totals From Table 6-9R	114,923	124,893	128,193	129,693	129,693
Demand Totals From Table 4-3R	90,712	99,933	101,790	104,337	106,977
DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**

Table 7-3. DWR 7-3 Single Dry Year Supply and Demand Comparison (All values in AF)

	2025	2030	2035	2040	2045
Supply Totals	114,923	124,893	128,193	129,693	129,693
Demand Totals	90,712	99,933	101,790	104,337	106,977
DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**

Table 7-4. DWR 7-4 Multiple Dry Years Supply and Demand Comparison (All values in AF)

		2025	2030	2035	2040	2045
First Year	Supply Totals	114,923	124,893	128,193	129,693	129,693
	Demand Totals	90,712	99,933	101,790	104,337	106,977
	DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**
Second Year	Supply Totals	114,923	124,893	128,193	129,693	129,693
	Demand Totals	90,712	99,933	101,790	104,337	106,977
	DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**
Third Year	Supply Totals	114,923	124,893	128,193	129,693	129,693
	Demand Totals	90,712	99,933	101,790	104,337	106,977
	DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**
Fourth Year	Supply Totals	114,923	124,893	128,193	129,693	129,693
	Demand Totals	90,712	99,933	101,790	104,337	106,977
	DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**
Fifth Year	Supply Totals	114,923	124,893	128,193	129,693	129,693
	Demand Totals	90,712	99,933	101,790	104,337	106,977
	DIFFERENCE:	**24,211**	**24,960**	**26,403**	**25,356**	**22,716**

7.1.3 Description of Management Tools and Options

RPU is committed to minimizing the need to import water from other regions. RPU participates in regional supply planning projects to optimize and enhance the use of local groundwater resources. As described in the Demand Management Measures discussion, RPU operates a number of conservation programs to implement various Demand Management Measures. RPU is also evaluating the future use of additional recycled water from the RWQCP, either through direct use or through groundwater recharge.

7.2 Drought Risk Assessment

The California Water Code requires suppliers to prepare a Five-Year Drought Risk Assessment (DRA) to assess their ability to meet demands if the next five years are dry. RPU's supplies are not expected to be reduced if the next five years are dry. RPU's available groundwater supplies are based on current production rights; therefore, the expected groundwater availability is based on current conditions and not historic hydrology. The anticipated increase in recycled water demand and supply is based on distribution infrastructure projects that may not be completed immediately. Therefore, the supply and demand for the next five years for the DRA does not include increased recycled water use. The comparison of supply and demand is shown in Table 7-5~~Table 7-5~~~~Table 7-5~~.

Table 7-5. DWR 7-5 Five-Year Drought Risk Assessment

2021	Gross Water Use	73,231
	Total Supplies	111,223
	Surplus/Shortfall without WSCP Action	37,992
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
2022	Gross Water Use	79,465
	Total Supplies	111,223
	Surplus/Shortfall without WSCP Action	31,758
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
2023	Gross Water Use	85,698
	Total Supplies	111,223
	Surplus/Shortfall without WSCP Action	25,525
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
2024	Gross Water Use	91,932
	Total Supplies	111,223
	Surplus/Shortfall without WSCP Action	19,291
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%
2025	Gross Water Use	98,166
	Total Supplies	111,223
	Surplus/Shortfall without WSCP Action	13,057
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	
	WSCP (Use Reduction Savings Benefit)	
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	0%

8 Water Shortage Contingency Plan

RPU's Water Shortage Contingency Plan (WSCP) is included as Appendix Q of this UWMP.

The WSCP is intended to be adopted as a separate document so that it can be modified as needed without triggering the need to amend the UWMP. This chapter has been retained within the UWMP to maintain consistency with the chapter numbering outline in the DWR Guidebook.

9 Demand Management Measures

RPU has a long-standing commitment to water conservation and efficient water use.

RPU was a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (Urban MOU), a program of the California Urban Water Conservation Council (CUWCC) that was first adopted in December 1991. RPU has continued to implement a broad range of conservation programs. This chapter provides information on these programs and the Demand Management Measures (DMMs) in place.

IN THIS SECTION

9.1 Demand Management Measures for Wholesale Suppliers

This section highlights programs that RPU has in place to assist its wholesale customers.

9.1.1 Metering

All of RPU's wholesale customers are fully metered and billed volumetrically each month. The wholesale customers have their own meter, and records are periodically reviewed for accuracy.

RPU has a program for the periodic inspection and calibration of these meters.

9.1.2 Public Education and Outreach

RPU has a comprehensive program for outreach and public education. RPU's outreach and education programs are directed mostly to retail customers and are described in section 9.2.4 as part of RPU's retail DMMs.

9.1.3 Water Conservation Program Coordination and Staffing

RPU has full-time water conservation staff to plan and implement water use efficiency programs. RPU's conservation programs are directed toward retail customers, and the coordination and staffing are discussed in section 9.2.6 as part of RPU's retail DMMs.

9.1.4 Other Demand Management Measures

RPU's wholesale customers are WMWD and the City of Norco, both of whom have DMMs for their retail customers. RPU coordinates with these agencies and other regional suppliers to effectively plan and implement DMMs.

9.1.5 Asset Management

RPU maintains and implements upgrades to its distribution system, including facilities, equipment, and infrastructure, through regular operation and maintenance activities.

9.1.6 Wholesale Supplier Assistance Programs

RPU continues to promote conservation only throughout its entire service area and supports the conservation programs of its wholesale customers. RPU does not provide assistance programs to customers that are served by WMWD or the City of Norco.

9.2 Existing Demand Management Measures for Retail

This section is organized to describe the DMMs in the order presented in the DWR Guidebook.

9.2.1 Water Waste Prevention Ordinances

RPU has a Water Conservation Ordinance that is included in Appendix 1 of this WSCP. The Water Conservation Ordinance includes a prohibition on the unreasonable use of water. The Ordinance states:

No person shall waste water or use it unreasonably. Unreasonable use of water includes, but is not limited to, the following:

- Irrigation runoff;
- Use of hose to wash a motor vehicle, unless fitted with a shut-off nozzle;
- Use of potable water on driveways and sidewalks;
- Use of potable water in a fountain or decorative water feature, except where water is part of a recirculating system;
- Watering landscapes during and within 48 hours after measurable rainfall;
- Serving of drinking water other than upon request in eating or drinking establishments;
- Irrigation with potable water of ornamental turf on public street medians
- Irrigation with potable water of landscapes outside newly constructed homes and buildings in a manner inconsistent with California regulations
- Hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily

9.2.2 Metering

All connections in RPU's service area are currently metered. RPU also has a meter testing and replacement policy for small and large distribution and large production meters. Small meters are replaced at the 20-year mark and 10% of those removed and replaced are tested following the American Water Works Association (AWWA) practices set forth in the M6 manual. All large distribution meters are scheduled to be tested and verified by RPU personnel for their accuracy. RPU uses manual reads from distribution meters installed in the field for billing and reporting purposes and utilizes SCADA data for monitoring and operational needs only. All large production meters are scheduled to be tested and verified by a third party for their accuracy at least once annually~~twice per year. on a bi-annual basis.~~ The testing cycle for large meters (3" and above) is built into RPU's asset management program, and meters are tested every 6, 12, or 24 months depending on the volume of water used by the customer. The largest users are tested every 6 months. Under RPU's large distribution and production meter testing policy, corrective measures are taken for meters found out of compliance. This can include full or partial calibration of the water meter, repairing or replacing the water meter, or adjustment or maintenance of the water meter. After any corrective measure, the water meter will be retested to ensure accuracy.

RPU is currently investigating a transition to the use of Advanced Metering Infrastructure (AMI), or "smart meters," that would capture and transmit water use data electronically. The use of these meters would allow RPU to monitor consumption on a shorter time frame than the current monthly meter reads. This technology can also be used to provide reporting capability to customers so they can monitor their

water use and see how their water use compares to similar households. This transition will require a significant investment of resources and will likely be phased in over time in the next few years.

9.2.3 Conservation Pricing

In the RPU service area, 100 percent of service connections are metered and residential customers are billed on an increasing block rate structure with seasonal rates to promote water conservation. The current rate structure, which is in effect from 2018 through 2022, includes ~~four~~ three tiers of quantity-based rates for single-family residential customers and two tiers of quantity-based rates for multi-family residential customers (with 2 to 4 units). The rate structure includes seasonal rates for residential and commercial customers to promote water conservation and is based upon the varying costs of RPU's sources of supply. Future pricing structures will be evaluated by the Board of Public Utilities and the City Council after the current rate plan expires to further support conservation pricing. More information about RPU's current rate structure is on the RPU ~~website at~~website at http://www.riversideca.gov/utilities/.

9.2.4 Public Education and Outreach

RPU's public education and outreach efforts include marketing of rebates, communicating water use efficiency via water bills, providing school education programs, information booths at fairs and public events, newsletters, press releases, informative websites, online tools, and social media.

Since the early 2000s, RPU has had an active education program for 3rd and 5th grade students. RPU education staff visits approximately 2,500 children per year, providing water science lessons. Lessons for third grade classrooms focus on watershed pollution and fifth graders learn about RPU's water supply source to tap.

In 2017, RPU dedicated the Janet Goeske Water Wise Garden, which is projected to save approximately 1.5 million gallons of water per year. The Water Wise Garden was dedicated for conservation education and contains California-native and drought-tolerant plants demonstrating various methods of landscaping. The project also featured an education station that provides the public with an opportunity to interact with the garden and illustrate best practices for high-efficiency irrigation and more. To enhance learning opportunities, RPU promotes free landscape training workshop series called "Less Water, More Color" in partnership with Riverside-Corona Resource Conservation District and the Janet Goeske Center. The series offers RPU customers information on landscaping best practices and troubleshooting, including how to manage their soil, program irrigation controllers properly, fix common irrigation problems, and removing and replacing lawns with a ~~water~~ water-wise garden.

RPU has embarked on an outreach program that is currently in development to expand opportunities to receive input for future policies and projects.

9.2.5 Programs to Assess and Manage Distribution System Real Losses

RPU has performed water loss audits per the AWWA M-36 manual. The results of these audits have been used to focus efforts to reduce water losses. RPU has used the water audit results to:

- Refine data collection practices and establish routine business practices
- Refine, enhance, and expand ongoing programs based on economic justification
- Conduct detailed planning, budgeting, and launch of comprehensive improvements for metering, billing, and infrastructure management
- Establish mid-range (5-year horizon) apparent and real loss reduction goals
- Perform benchmarking

RPU has an active program to repair leaks as they are detected. RPU has a proactive water main replacement program that identifies high risk pipelines based on age, leak history, and pipe material. RPU's annual budget for the main replacement program varies from year to year and will range approximately from $4.6 million to $10.3 million for the next few years. RPU has four construction crews dedicated to main replacement and four maintenance crews dedicated to leak repairs for a total of 38 personnel with their associated equipment and support staff. In addition, about 5 members of the engineering staff dedicate a majority of their time to planning and developing pipeline replacement projects.

RPU has developed a non-revenue water team to analyze all system aspects from billing to system modeling. The team reviews data to identify areas of the system where leaks or water loss appear

evident. The results of the system analysis are used to aid RPU in its infrastructure and Capital Improvement Plan (CIP) planning to best control losses.

9.2.6 Water Conservation Program Coordination and Staffing Support

RPU has had a conservation coordinator since 1999. The conservation program currently has an approximate staffing level of 1.5 full-time equivalents (FTEs) and an approximate annual funding level of $1,070,000. The DMMs described in this chapter are coordinated through the conservation program.

9.2.7 Other Demand Management Measures

Prior to 2018, RPU ran its own rebate and water use efficiency programs. In 2018, RPU sunset its own water rebates and began participating in MWD's SoCalWater$mart rebate program, which offers rebates on conservation measures, including high-efficiency toilets, clothes washers, turf replacement, and weather-based irrigation controllers. Additionally, RPU continues to offer many water use efficiency programs and services to its customers. Below is a description of the rebate and programs available to customers.

Residential and CII Water Surveys

RPU has been providing indoor and outdoor water surveys to single-family residential and multi-family residential accounts since 1989, as well as commercial, industrial, and institutional customers.

High-Efficiency Clothes Washers (HECW) Rebate Program

This program ended in 2018. The High-Efficiency Clothes Washer Rebate was an energy and water conservation incentive program that offers RPU's residential customers a chance to replace their existing high-energy and water use clothes washers with high-efficiency clothes washers (HECW).

Smart Irrigation Program

In 2011, RPU launched a Smart Irrigation Program targeting customers with the most outdoor water savings potential in RPU's service area. The program provides a certified water audit and offers qualified customers free installation of smart irrigation controllers and high efficiency sprinkler nozzles to achieve additional water savings. Since its inception, the Smart Irrigation Program has installed 1,600 WBICs and 89,000 high-efficiency sprinkler nozzles at customers' sites, saving an estimated 151,000,000 gallons over the devices' lifetime.

WaterWise Landscape Rebate Program

This program ended in 2018. The WaterWise Landscape Rebate Program provided incentives for RPU residential and commercial water customers who replaced existing lawn areas with water-efficient, California-friendly plants. By replacing large turf areas with drought-tolerant, California-friendly landscaping and using efficient irrigation, outdoor water use can be reduced by up to 50 percent.

High-Efficiency Toilet (HET) Incentive Program

This program ended in 2018. The High-Efficiency Toilet (HET) Incentive Program was a water conservation rebate program that offered RPU's customers a chance to replace high water-use toilets, or upgrade Ultra Low Flush Toilet models with water-saving HET models. HETs are the new standard in water-efficient toilets and use only 1.28 gallons of water per flush (gpf) or less. There are also Dual

Flush HETs that offer a separate, low water use flush for liquids that only use between 0.8 and 1.1 gpf. This can mean up to 4,000 gallons of water saved each year.

Weather-Based Irrigation Control (WBIC) Rebate Program

This program ended in 2018. A Weather-Based Irrigation Controller (WBIC) is a sprinkler control device that automatically adjusts irrigation schedules according to changing weather or environmental conditions. The WBIC rebate program provided rebates for residential customers who install these systems. Studies have shown that by using a WBIC a household can reduce their outdoor water use by about 20 percent. That translates into savings of about 40 gallons per day, or 14,600 gallons per year.

Residential Plumbing Retrofits

RPU has been installing low-flow showerheads since 1981 as part of a "Weatherization" program servicing income-qualified residents and senior citizens.

Free Sprinkler Nozzles

This program ended in 2018. This program was coordinated by WMWD. It served customers of 28 different water agencies. It allowed residential customers to obtain free water-efficient sprinkler nozzles through vouchers.

High-Efficiency Sprinkler Nozzles Rebate Program

This program ended in 2018. The High-Efficiency Sprinkler Nozzles Rebate Program provided incentives for RPU's residential water customers who replaced standard, pop-up sprinkler head spray nozzles with newer water-efficient sprinkler head spray nozzles. Using pop-up sprinkler spray heads with new water efficient nozzles can save more than 6,600 gallons of water per nozzle over a 5-year period. Water-efficient sprinkler nozzles apply water more evenly than conventional spray nozzles, thus saving water and reducing the amount of run-off. The level of incentive was $3 per qualified nozzle.

Commercial Water Efficiency Rebates

This program is coordinated with MWD. It includes a number of rebate programs focused on commercial customers, including:

- High-Efficiency, Ultra Low-Flush and Zero Water Urinals
- Connectionless Food Steamers
- Weather-Based “Smart” Irrigation Controllers
- Central Computer Irrigation Controllers. These sophisticated systems are designed for larger irrigated areas such as golf courses, parks, schools, and large commercial complexes. Central computer irrigation controllers consist of a master controller (often a personal computer) which tells the valves in remote locations to open and close.
- High-Efficiency Nozzles for Pop-Up Spray Heads
- High-Efficiency Nozzles for Large Rotary Heads
- In-Stem Flow Regulators - The in-stem regulator controls water flow in irrigation systems at the head.
- Laminar Flow Restrictors - Laminar flow devices avoid drawing air into the water stream, allowing them to produce a non-aerated clear stream of water while inhibiting bacterial growth and transmission.

- Conductivity Controllers - Conductivity controllers can lower the cost of operating a cooling tower by providing greater control over the tower's blow down and subsequent makeup water.
- Dry Vacuum Pumps - Liquid ring vacuum pumps use large quantities of water to create a liquid seal and enable suction. Dry vacuum pumps, on the other hand, use machined parts with extremely close tolerances to create suction. Both types of vacuum pumps are used in manufacturing facilities, including medical and dental manufacturing, among other uses.
- Air-Cooled Ice Machines - Air-cooled ice machines use less water and energy than conventional ice machines and make ice more quickly and efficiently.

9.3 Implementation over the Past Five Years

RPU maintains records of each of the programs described above, including the extent of each program, the expenditures, and the anticipated water savings. This information has been summarized for the past five years in Table 9-1 and Table 9-2.

9.4 Implementation to Achieve Water Use Targets

RPU's current per-capita consumption is below its 2020 compliance target. RPU expects to continue implementing its current conservation programs to encourage conservation and maintain per-capita consumption below the compliance target.

9.5 Water Use Objectives (Future Requirements)

The final water use objectives for RPU have not yet been determined.

Table 9-1. DMM Implementation from 2016 through 2017

	2016				2017			
PROGRAM DESCRIPTION	EXPENDITURE	PARTICIPATION	VOLUME	CCF SAVINGS	EXPENDITURE	PARTICIPATION	VOLUME	CCF SAVINGS
Education Support - School	$6,627.52	0.0	0.0	0.0	$5,004.99	0.0	0.0	0.0
Community Support	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
High Efficiency Clothes Washer (HECW)	$73,360.00	417.0	417.0	4617.3	$75,200.00	470.0	470.0	6716.3
Weather based Irrigation Controller (WBIC)	$4,068.93	18.0	205.0	1756.3	$11,035.66	59.0	723.0	6084.0
WMS Tech Asst. - Water Audit	$18,648.54	7.0	7.0	0.0	$25,775.00	5.0	5.0	0.0
WaterWise Landscape	$32,432.00	2.0	17716.0	10481.2	$39,456.00	27.0	39654.0	2595.1
Rotating Nozzle	$609.00	5.0	203.0	256.6	$2,397.84	8.0	832.0	956.8
High Efficiency Toilet (HET)	$74,212.97	553.0	755.0	7664.8	$47,504.92	357.0	484.0	5188.5
Artificial Turf	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Project - WaterWise Landscape	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Free Sprinkler Nozzle Program	$6,177.60	304.0	15741.0	22707.5	$15,417.60	8311.0	13339.0	15339.9
R-Whole House Water Measures	$11,811.01	46.0	34.0	1617.6	$12,956.27	48.0	24.0	2042.5
R-Direct Install - HET	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
R-Direct Install Smart Irrigation Program (SIP)	$146,236.75	6180.0	10524.0	16786.4	$130,351.39	118.0	9629.0	19327.4
NR-WaterWise Landscape	$1,415.00	1.0	1415.0	84.9	$31,552.00	2.0	31552.0	1893.1
NR-Direct Install - Small Business HET's	$0.00	15.0	0.0	27.0	$0.00	0.0	0.0	0.0
NR-Direct Install - Small Business Water Audits	$0.00	21.0	0.0	0.0	$0.00	0.0	0.0	0.0
Online Water Audit Tool	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Commercial Landscape Demonstration Program	$110.00	1.0	1.0	0.0	$299,787.51	1.0	44500.0	2670.0
15/16 Commercial WaterWise Landscape	$104,069.03	10.0	106339.0	12683.7	$56,402.00	3.0	57612.0	3456.7
15/16 Residential WaterWise Landscape	$88,052.50	52.0	93066.4	13058.5	$39,696.40	24.0	40409.0	2424.5
Water Innovation Grant Program	$20,000.00	0.0	0.0	0.0	$30,000.00	0.0	0.0	0.0

Table 9-2. DMM Implementation from 2018 through 2020

	2018				2019				2020			
PROGRAM DESCRIPTION	EXPENDITURE	PARTICIPATION	VOLUME	CCF SAVINGS	EXPENDITURE	PARTICIPATION	VOLUME	CCF SAVINGS	EXPENDITURE	PARTICIPATION	VOLUME	CCF SAVINGS
Education Support - School	$3,335.77	0.0	0.0	0.0	$6,599.30	0.0	0.0	0.0	$4,084.53	0.0	0.0	0.0
Community Support	$3,660.00	0.0	0.0	0.0	$2,500.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
High Efficiency Clothes Washer (HECW)	$32,480.00	232.0	232.0	3315.3	$0.00	149.0	149.0	2129.2	$0.00	178.0	178.0	2543.6
Weather based Irrigation Controller (WBIC)	$10,750.90	98.0	809.0	6076.2	$0.00	133.0	343.0	2675.4	$0.00	217.0	2128.0	16598.4
WMS Tech Asst. - Water Audit	$0.00	0.0	0.0	0.0	$11,200.00	3.0	3.0	0.0	$8,000.00	0.0	0.0	0.0
WaterWise Landscape	$60,279.81	27.0	65766.8	3946.0	$28,501.94	16.0	46543.8	2792.6	$42,642.00	10.0	42642.0	2558.5
Rotating Nozzle	$89.15	37.0	509.0	585.4	$0.00	44.0	3674.0	4225.1	$0.00	1793.0	3614.0	4156.1
High Efficiency Toilet (HET)	$19,782.57	157.0	202.0	2024.1	$0.00	160.0	1129.0	12102.9	$0.00	6.0	6.0	64.3
Artificial Turf	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Project - WaterWise Landscape	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Free Sprinkler Nozzle Program	$13,982.40	5173.0	11379.0	13085.9	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
R-Whole House Water Measures	$10,452.44	39.0	0.0	2137.9	$1,149.99	4.0	0.0	60.5	$0.00	0.0	0.0	0.0
R-Direct Install - HET	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
R-Direct Install Smart Irrigation Program (SIP)	$186,901.08	92.0	8870.0	21308.4	$171,458.73	464.0	11204.0	42062.3	$128,372.62	377.0	7741.0	11793.4
NR-WaterWise Landscape	$67,785.00	3.0	42785.0	2567.1	$0.00	1.0	0.0	0.0	$0.00	0.0	0.0	0.0
NR-Direct Install - Small Business HET's	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
NR-Direct Install - Small Business Water Audits	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Online Water Audit Tool	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	19.0	0.0
Commercial Landscape Demonstration Program	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
15/16 Commercial WaterWise Landscape	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
15/16 Residential WaterWise Landscape	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0	$0.00	0.0	0.0	0.0
Water Innovation Grant Program												

10 Plan Adoption, Submittal, and Implementation

This chapter describes RPU's process for holding a public hearing, adopting the UWMP, and submitting the adopted UWMP and WSCP.

RPU has coordinated with neighboring agencies to solicit input and feedback during preparation of this UWMP.

IN THIS SECTION

- Public Hearing Notices
- Adoption by RPU Board of Directors
- Future Amendments

10.1 Inclusion of All 2020 Data

RPU has developed the UWMP presenting data on a calendar year basis. This report includes data through December 31, 2020.

10.2 Notice of Public Hearing

RPU held a public hearing to present the Draft UWMP and Draft WSCP for public comment on June 14, 2021.

In March of 2021, RPU provided notice of the public hearing to the cities and counties to which RPU provides water. As required by the CWC, these agencies are identified in Table 10-1~~Table 10-1~~~~Table 10-1~~. These notices were provided more than 60 days before RPU's hearing to consider adoption. RPU provided similar notice to surrounding water management agencies and water retailers, as discussed in **Chapter 3**.

Legal public notices for the public hearing were published in the local newspapers and posted at City of Riverside's offices and on the City and RPU website. Because of the COVID-19 pandemic, copies of the draft UWMP and WSCP were made available for public review prior to the public hearing on RPU's web site: http://www.riversidepublicutilities.com/.

The notice that was published in advance of the public hearing is attached in **Appendix C**.

Table 10-1. DWR 10-1 Notification to Cities and Counties

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
City of Riverside Planning Department	X	X
City of San Bernardino Municipal Water Department	X	X
City of Rialto Water and Wastewater Utilities	X	X
City of Colton	X	X
City of Loma Linda Public Works	X	X
City of Redlands Municipal Utilities and Engineering	X	X
City of Corona Department of Water and Power	X	X
City of Norco Public Works	X	X
City of Jurupa Valley	X	X
COUNTY	**60 DAY NOTICE**	**NOTICE OF PUBLIC HEARING**
Riverside County Planning Department	X	X
Riverside County Flood Control and Water Conservation District	X	X
OTHER	**60 DAY NOTICE**	**NOTICE OF PUBLIC HEARING**
San Bernardino Valley Municipal Water District	X	X
San Bernardino Valley Water Conservation District	X	X
Western Municipal Water District	X	X
Eastern Municipal Water District	X	X
West Valley Water District	X	X
East Valley Water District	X	X
Rubidoux Community Services District	X	X
Jurupa Community Services District	X	X
Home Gardens County Water District	X	X
Gage Canal Company	X	X
Riverside Highland Water Company	X	X
Elsinore Valley Municipal Water District	X	X
(Meeks & Daley Water Company)	X	X
Fontana Water Company	X	X
University of California, Riverside	X	X

10.3 Public Hearing and Adoption

The UWMP and WSCP were presented to the Board at a public hearing on June 14, 2021. The UWMP and WSCP were presented to the City Council for adoption on June 22, 2021. Both meetings included a presentation of the baseline values, water use targets and compliance, and implementation plan required in the Water Conservation Act of 2009 and key report contents and economic impacts of implementation of the plans.

Copies of the resolutions adopting the UWMP and WSCP are attached as **Appendix O**.

10.4 Plan Submittal

After adoption by the RPU Board of Public Utilities, this UWMP and the WSCP were submitted to DWR using the online submittal tool. The data tables and copies of the complete reports were submitted using the WUE data online submittal tool.

Within 30 days after adoption, a CD with copies of the UWMP and the WSCP was submitted to the California State Library. In addition, electronic copies of the UWMP and the WSCP were submitted to the cities and counties to which RPU provides water.

10.5 Public Availability

The adopted UWMP and WSCP will be available for review on the RPU website at http://www.riversidepublicutilities.com/.

10.6 Notification to Public Utilities Commission

RPU is not regulated by the California Public Utilities Commission (CPUC), and therefore this requirement does not apply to RPU.

10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan

If RPU identifies the need to amend the WSCP or the UWMP, the same procedures will be followed as were followed for the initial development and adoption of the plans. Public notice will be provided, a public hearing will be held, and copies of amendments or changes will be submitted to DWR, the California State Library, and the cities and counties to which RPU provides water.