2020
URBAN WATER MANAGEMENT PLAN
CRESCENTA VALLEY WATER DISTRICT

MAY 2021
PUBLIC DRAFT

2020

URBAN WATER MANAGEMENT PLAN

Crescenta Valley Water District

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MAY 2021 PUBLIC DRAFT

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ACRONYMS

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
Basin	Verdugo Groundwater Basin
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
Board	Metropolitan Water District of Southern California's Board of Directors
cfs	cubic feet per second
CII	Commercial/Industrial/Institutional
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Crescenta Valley Water District
CWC	California Water Code
DDW	State Water Resources Control Board Division of Drinking Water
DMM	Demand Management Measure
DWR	Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ETo	Evapotranspiration
FMWD	Foothill Municipal Water District
GPCD	gallons per capita per day
gpf	gallons per flush
GW	Groundwater
GWP	Glendale Water and Power
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
HR	Hydrologic Region
IRP	Integrated Resource Plan
IWA	International Water Association
JWPCP	Joint Water Pollution Control Plant
LACSD	Sanitation Districts of Los Angeles County
LADWP	Los Angeles Department of Water and Power

LAGWRP	Los Angeles/Glendale Water Reclamation Plant
LCID	La Cañada Irrigation District
LRWSP	Local, Reliable Water Supply Program
MAF	million acre-feet
MCL	Maximum Contaminant Level
MGD	million gallons per day
MOU	Memorandum of Understanding
MTBE	Methyl tertiary butyl ether
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NDMA	N-nitrosodimethylamine
PCE	Tetrachloroethylene
PPCPs	Pharmaceuticals and Personal Care Products
PHETs	Premium HETs
QSA	Quantification Settlement Agreement
RHNA	Regional Housing Needs Assessment
SBx7-7	Senate Bill x7-7
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SDP	Seawater Desalination Program
SMSS	Soil Moisture Sensor System
SWP	State Water Project
TDS	Total Dissolved Solid
ULARA	Upper Los Angeles River Area
ULFT	Ultra-Low-Flow Toilet
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compound
WARN	Water Agency Response Network
WBIC	Weather-Base Irrigation Controller
WRP	Water Reclamation Plant
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM	Water Surplus and Drought Management Plan

EXECUTIVE SUMMARY & LAY DESCRIPTION

INTRODUCTION

This report serves as the 2020 update of the Crescenta Valley Water District's (CVWD) Urban Water Management Plan (UWMP). This UWMP has been prepared consistent with the requirements under Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act) and its amendments. The Act requires that "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan." These plans must be filed with the California Department of Water Resources (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. 2020 UWMP updates are to be adopted by July 1, 2021.

The Act has been amended on several occasions since its initial passage in 1983. New requirements of the Act due to SBx7-7 state that per capita water use within an urban water supplier's service area must decrease by 20 percent by the year 2020 in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Each urban retail water supplier developed water use targets by July 1, 2016. Effective 2021, urban retail water suppliers who do not meet the 2020 water conservation requirements established by this bill are not eligible for state water grants or loans.

Section 1.4.3 offers of summary of each section of this 2020 UWMP.

SERVICE AREA AND FACILITIES

CVWD provides water to a population of approximately 32,462 throughout its service area. CVWD receives its water from two main sources, the Verdugo Groundwater Basin (Basin), and imported water from Metropolitan Water District of Southern California (MWD) through the Foothill Municipal Water District (FMWD). CVWD provides potable drinking water to its customers via 12 local groundwater wells, and imported water supply through 3 MWD connections and an emergency inter-tie system with the City of Glendale.

WATER DEMAND

The total water demand for the 32,462 people served by CVWD is over 4,200 acre-feet of potable water for the 2020 calendar year.

CVWD has selected to comply with **Method 3**, 95 percent of the State Hydrologic Region Target, of the SBx7-7 compliance options; however, the minimum required target applies and CVWD's 2015 interim water use target was 151 GPCD, and the 2020 final water use target is **142 GPCD**. A description of the compliance options is discussed in **Section 2.4**.

In 2015, CVWD had a per capita water use of 100.5 GPCD. In 2020, CVWD has a per capita water use of 116 GPCD. Despite the COVID-19 pandemic requiring majority of individuals to work from home, CVWD was able to achieve their 2020 Target Goals by having a GPCD of 116 (2020 Target was 142).

WATER SOURCES AND SUPPLIES

On average over the last five years, 48 percent of CVWD's source water is local ground water supply in the Basin. The majority of CVWD's ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. The remaining 52 percent of CVWD's source water is imported water supplied by FMWD, which is a member agency to MWD. The sources of imported water supplies include the Colorado River and the State Water Project.

FUTURE WATER SUPPLY PROJECTS

CVWD is working towards the development of the Crescenta Valley County Park Stormwater Recharge Multiuse Project. This Project will allow CVWD to increase groundwater storage in the Basin by the installation and maintenance of underground infiltration galleries underneath portions of the existing park. This will be accomplished by utilizing the existing Los Angeles County Flood Control channels (Verdugo Wash and Dunsmuir Channel), and surface flow within the Crescenta Valley County Park to divert storm water during the rainy season into underground infiltration basins within the recreational area. The project will potentially increase the local ground water supply by an annual average of 500 acre-feet per year, thus enhancing CVWD's groundwater resource and reducing dependence on imported supplies. Also, through the process of capture, treatment, and reuse of storm water and dry weather flow, the project could potentially reduce the pollutant load from contaminating the Los Angeles River.

As funding permits, CVWD plans to rehabilitate its older groundwater wells with new technologies over the 10-year period that started in 2020. The existing wells are between 70 to 90 years old and have reached the end of their useful life. CVWD's current program is to perform at

least two well rehabilitations a year, which include cleaning the well casing with chemical treatment and installation of a liner to extend the life of the well.

In Fall 2020, CVWD began the rehabilitation of the Rosemont Reservoir. The 500,000-gallon reservoir rehabilitation project is midway through its construction phase, with most of its heavy construction completed. Construction is currently in Phase II of the rehabilitative process, including sandblasting, stripping, and adding primer coats to both the inside and outside of the tank. The project is estimated to be completed by March 2021. The reservoir structure has not been rehabilitated in over 20 years, and though the tank is starting to show signs of aging, its structural integrity has not been compromised over the years. This reservoir project is part of CVWD's Reservoir Rehabilitation Program for the next 12-years where CVWD plans to rehabilitated one reservoir per year.

WATER SERVICE RELIABILITY

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years.

Groundwater supplies within the Raymond Basin have remained stable throughout the recent drought during 2012 – 2016. As a result, groundwater production rights within the basin will continue to remains the same into the future until otherwise mandated for reduction by the Raymond Basin Management Board.

The completion of MWD's 2020 Integrated Water Resources Plan will be completed after the submission of CVWD's 2020 UWMP. Information on MWD's 2015 Integrated Water Resources Plan is still relevant to this day. The plan describes the core water resource strategy, which will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2025 through 2045. Furthermore, MWD's 2020 UWMP finds that MWD is able to meet full service demands of its member agencies with existing supplies from 2025 through 2045 during normal years, single dry year, and multiple dry years.

CVWD is therefore capable of meeting the water demands of its customers in normal, single dry, and multiple dry years between 2025 and 2045, as illustrated in **Table 3.13** to **Table 3.19**. CVWD has also conducted a Drought Risk Assessment as part of a new requirement for the 2020 UWMP which mandates water purveyors to assess their water demand and supplies within the next five years under drought situations. Based on the assessment, CVWD is able to meet their demands under drought situations from 2021 – 2025 without the need of the Water Shortage Contingency Plan's water supply augmentation or demand reductions as shown **Table 5.4** in **Section 5**; however, CVWD continues to promote water saving measures to its consumers to ensure reliability

of its supplies.

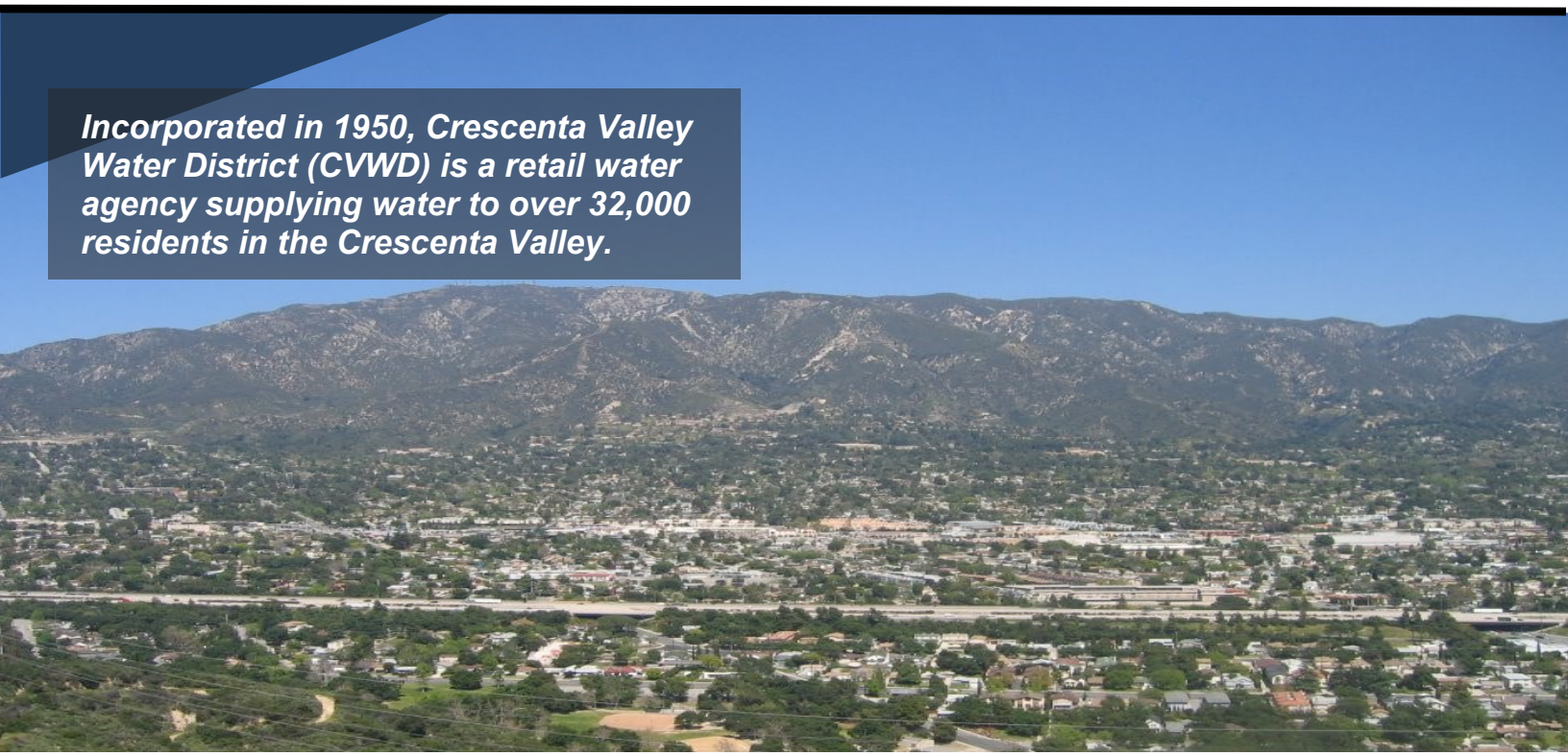
CHALLENGES AHEAD & STRATEGIES FOR MANAGING RELIABILITY RISKS

CVWD faces challenges in the near future regarding water supply include:

- Over the last decade, drastic changes in annual hydrologic conditions statewide have negatively affected water supplies available from the State Water Project (SWP) and the Colorado River Aqueduct (CRA).
- The declining ecosystem of the Bay-Delta has resulted in a reduction in water supply deliveries to State Water Contractors, including MWD.

CVWD's strategies for managing these reliability risks include:

- Continuing a progressive and effective water conservation program.
- Utilizing supplemental water through transfers and exchanges.
- Replacing deteriorating water infrastructure through a proactive capital improvement program, which will reduce water main leaks and conserve water.
- Implementing shortage response actions, as needed, under the Water Shortage Contingency Plan.
- Reactivating ground water wells impacted by water quality contaminants with the addition of treatment systems.



SECTION 1: INTRODUCTION

2020 URBAN WATER MANAGEMENT PLAN

SECTION 1 INTRODUCTION

1.1 UWMP PURPOSE & SUMMARY

This is the 2020 Urban Water Management Plan (UWMP) for Crescenta Valley Water District (CVWD). This plan has been prepared in compliance with the Urban Water Management Planning Act (Act), which has been codified as California Water Code (CWC) sections 10610 through 10657.

As part of the Act, the legislature declared that waters of the state are a limited and renewable resource subject to ever increasing demands; that the conservation and efficient use of urban water supplies are of statewide concern; that successful implementation of plans is best accomplished at the local level; that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources; that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

Figure 1.1: UWMPs Comply with State Water Code

The UWMP Act requires "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan." These plans must be filed with the California Department of Water Resources (DWR) every five years and evaluate reasonable and practical efficient water uses, reclamation, and conservation activities (see generally Water Code § 10631).

1.2 PAST UPDATES TO THE UWMP ACT

The Act has been amended on several occasions since its initial passage in 1983. Of all the amendments, the most significant came in 2009 as a result of the requirements of Senate Bill 7 / Seventh Extraordinary Session. This is better known as the Water Conservation Act of 2009 (SBx7-7). The requirements of this bill state that per capita water use within an urban water supplier's service area must decrease by 20 percent by the year 2020 (20x2020) in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. The state was required to make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. In addition, each urban retail water supplier was required to develop water use targets by July 1, 2016. Effective 2021, urban retail water suppliers who do not meet the 2020 water conservation requirements established by this bill are not eligible for state water grants or loans. SBx7-7 substantially expanded the role of the UWMPs by requiring all urban retail water suppliers to develop baseline daily per capita water use data, urban water use targets, and other technical information, and to report all of the information in their 2010 UWMPs.

1.3 UPDATES TO THE UWMP ACT FOR 2020 UWMPS

There have not been any significant changes affecting the 2020 UWMPs on the level of SBx7-7; however, there are numerous minor to major updates to the UWMP Act affecting the 2020 UWMPs as follows:

- **Water Loss:** Quantify distribution system water loss for each of the five years preceding the plan update (CWC § 10631 (d) (3) (A), SB 1414, 2019)
- **Drought Risk Assessment:** Assess water supply reliability over a 5-year period examining water supplies, water uses, and the reasonable predicted water supply reliability for five consecutive dry years (CWC § 10635 (b), SB 606, 2018)
- **Reporting of Energy Intensity:** Provide information that the water supplier can readily obtain on the energy used to process water (CWC § 10631.2 (a), SB 606, 2018)
- **Lay Description:** Include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks (CWC § 10630.5, SB 606, 2018)
- **Climate Change Impacts and Considerations:** Provide details on the impacts of climate change and consider them into projections (CWC § 10630, SB 606, 2018)

- **Water Shortage Contingency Plan (WSCP):** The water shortage contingency analysis required in previous UWMPs by former law has been replaced by a WSCP mandate with new elements, which include new six standard water shortage levels (CWC § 10632, SB 606, 2018, AB 1414, 2019)
- **Seismic Risk Assessment and Mitigation Plan:** As part of the WSCP, water suppliers are required to assess seismic risks to their water system facilities and measures to mitigate those risks (CWC § 10632.5, SB 664, 2015)

Of the above, the inclusion of the WSCP (including the seismic risk assessment and mitigation plan as part of the WSCP) as a separate document with revised elements is the most significant update affecting the 2020 UWMPs. AB 1414, SB 606, and SB 664, which amended the WSCP, mark a continued focus on water shortage preparedness and pre-planned strategies for mitigating catastrophic service disruptions.

1.4 2020 UWMP SCOPE & FORMAT

1.4.1 SCOPE & TOPICS OF DISCUSSION

This UWMP provides DWR with information on the present and future water resources and demands and provides an assessment of the water resource needs of CVWD. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments and effectively revises CVWD's 2015 UWMP. This plan will identify water supplies for existing and future demands, quantify water demands during normal year, single-dry year, and multiple-dry years, and identify supply reliability under the three hydrologic conditions. CVWD's 2020 UWMP update revises the 2015 UWMP. This document has been prepared in compliance with the requirements of the Act as amended in 2009, and includes the following topics:

- *Water Service Area and Facilities*
- *Water Sources and Supplies*
- *Water Use by Customer Type*
- *Energy Intensity*
- *Climate Change Impacts*
- *Demand Management Measures*
- *Water Supply Reliability*
- *Planned Water Supply Projects and Programs*
- *Water Shortage Contingency Plan*
- *Recycled Water*

With the passage of SBx7-7 in 2009, Demand Management Measures (DMMs) have become a critical component of an agency's UWMP.

The topics listed on the previous page are consistent with the 2015 UWMP with the additions of Climate Change Impacts and Energy Intensity. Furthermore, updates also include narratives related to the above topics reflecting current (2020) conditions. In addition, the incorporation of visual format changes, expansions of existing text, and addition of new sub-categories and/or new data enhance this 2020 UWMP and provide more benefit for CVWD.

1.4.2 SBX7-7 CONSERVATION UPDATES

As required in the 2015 UWMP, each urban retail water supplier must include in its 2020 UWMP the following information from its target-setting process:

- *Baseline daily per capita water use*
- *2020 Urban water use target*
- *2015 Interim water use target*
- *Compliance method being used along with calculation method and support data*
- *Updates on interim (2015) target*

Since the above information was already contained in the 2015 UWMP, an agency has the option of re-stating this information if it is the same from the 2015 UWMP or revising it if different for the 2020 UWMP.

Wholesale water suppliers, including CVWD's imported water supplier, Foothill Municipal Water District (FMWD), are required to include an assessment of present and proposed future measures, programs, and policies that would help CVWD achieve the 20x2020 goal.

Figure 1.2: SBx7-7 Aims to Protect Water Sources

1.4.3 FORMAT OF THE REPORT

The sections in this Plan correspond to the UWMP Act (Article 2, Contents of Plans, Sections 10631, 10632, and 10633). The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of CVWD. The sections are shown on the following page.

Section 1 - Introduction	This section describes the UWMP Act, CVWD's planning and coordination process, the history of CVWD's water supply system, and a description of its service area.
Section 2 – Water Demands	This section describes past, current, and projected future water demands within CVWD's service area, as well as factors that affect demand, including climate and population demographics. This chapter also discusses the requirements of the Water Conservation Act of 2009 (SBx7-7). This section also looks at climate change impacts to water demands and projections.
Section 3 – Water Sources & Supplies	This section describes CVWD's water supplies, including imported water from MWD, and how CVWD handles those supplies. This section also discusses the quality of CVWD's water sources, including a discussion on the treatment and testing of water.
Section 4 – Demand Management Measures	This section addresses CVWD's compliance with the current Best Management Practices (BMPs), otherwise known as Demand Management Measures (DMMs).
Section 5 – Water Shortage Contingency Plan	This section describes CVWD's contingency planning in the event of a water supply interruption, such as a drought or catastrophe. This section also discusses CVWD's Board adopted Conservation Plan (adopted in 2009) and MWD's latest version of the Water Surplus and Drought Management Plan (WSDM).
Section 6 – Recycled Water	This chapter describes past, current, and projected recycled water use, along with a description of wastewater collection and treatment facilities.
Section 7 – Future Water Supply Projects & Programs	This section discusses planned and potential future water supplies and programs, including new supply sources, transfers and exchanges, and the feasibility of such supplies and programs.
Section 8 – Plan Adoption Process	This Section describes CVWD's planning and coordination process for the 2020 UWMP, including public and outside agency participation, and Board adoption.
Appendices	The appendices contain references, supplemental information, and specific documents relating to CVWD, used to prepare this 2020 UWMP.

1.5 AGENCY OVERVIEW

The Crescenta Valley Water District was formed as the Crescenta Valley County Water District on December 14, 1950 by the vote of local residents. Organized under the provisions of Division 12 of the CWC, CVWD operates as a political subdivision of the state. The term "County" was officially deleted from CVWD's name in 1996.

In the early 1950's, the newly-formed CVWD purchased the assets and consolidated the infrastructure of several small private water companies then in existence. By 1953, with rapid growth in the Crescenta Valley and surrounding foothill communities, it became

apparent that the local groundwater supply was not going to be sufficient to meet the increasing demand. Residents from La Crescenta to Altadena voted to form the Foothill Municipal Water District (FMWD) to purchase and distribute imported water from the Metropolitan Water District of Southern California (MWD). By 1955, CVWD was augmenting its local well water with MWD water from the Colorado River. In the 1960's, MWD increased it supply by also contracting for Northern California water with the completion of the State Water Project.

The Verdugo Basin is one of four groundwater subbasins within the Upper Los Angeles River Area (ULARA), with the San Fernando Basin being the largest. The ground water rights of CVWD are defined by the Judgement in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants" and the final Judgment was signed on January 26, 1979. The judgement also established a court-appointed position of Watermaster, which oversees parties' extraction and parties' rights to native groundwater, imported return water, and stored waters in the ULARA groundwater basins.

The Judgement states that Glendale and CVWD have appropriative and prescriptive rights to extract 3,856 and 3,294 acre-feet of groundwater per year, respectively, from Verdugo Basin and there are no provisions in the Judgment to allow for stored water credits in the Verdugo Basin.

CVWD has a 5-member Board of Directors who are elected at-large and participate in the management of CVWD. The current members of the Board of Directors are listed below with their Committees:

- **Sharon Raghavachary – President**
  Chair of Engineering Committee and Finance Committee
- **James Bodnar – Vice President**
  Chair of Employee Relations Committee
- **Kerry Erickson – Board Director**
  Chair of Community Relations & Water Conservation Committee & Technology Committee
- **Ken Putnam – Board Director**
  Chair of Policy Committee
- **Judy Tejeda – Board Director**
  Chair of Emergency Planning Committee

1.5.1 CVWD VALUES

CVWD is dedicated to providing high quality water and wastewater services in partnership with the family of Southern California water agencies. CVWD values:

- *Excellent Customer Service*
- *Fiscal Responsibility*
- *Dedicated Employees*
- *Reliable Water and Sewer Facilities*
- *Community Involvement*
- *Water Conservation*
- *Technology and Innovation*
- *Environmental Sensitivity*

1.6 SERVICE AREA AND FACILITIES

1.6.1 SERVICE AREA DESCRIPTION

CVWD's service area is located in the Crescenta Valley area of Los Angeles County in the foothills of the San Gabriel Mountains, between the San Fernando and San Gabriel valleys. CVWD provides water distribution and sewage collection within its four-square mile service area boundaries to the unincorporated communities of La Crescenta, Montrose, and Verdugo City as well as a small portion of the City of Glendale and City of La Cañada-Flintridge. The service area ranges in elevation from approximately 1,200 feet to almost 3,000 feet above sea level due to its location next to the San Gabriel Mountains and sloping terrain. **Figure 1.3** on the following page shows CVWD's service boundaries.

CVWD currently provides water to over 8,200 accounts representing a population of 32,462. Customer growth is low as the Crescenta Valley area is nearly built-out. Residential growth is occurring through increased housing density in the multiple-unit zoned areas (primarily Montrose) as well as limited in-fill housing developments on random parcels in La Crescenta.

1.6.2 CVWD'S WATER FACILITIES

CVWD's water sources are 12 local groundwater wells, with an average depth of 200 feet, one mountain tunnel (gravity fed), and imported water supply through three separate FMWD connections and emergency inter-tie system with the City of Glendale. On a long-term basis, approximately 48 percent of CVWD's annual water demand is met by the local groundwater supply and 52 percent by imported water. This ratio does change depending on the water supply conditions, weather, and demand. CVWD operates 11 separate water pressure zones served by 14 pumping stations and 17 storage reservoirs totaling 17.5 million gallons.

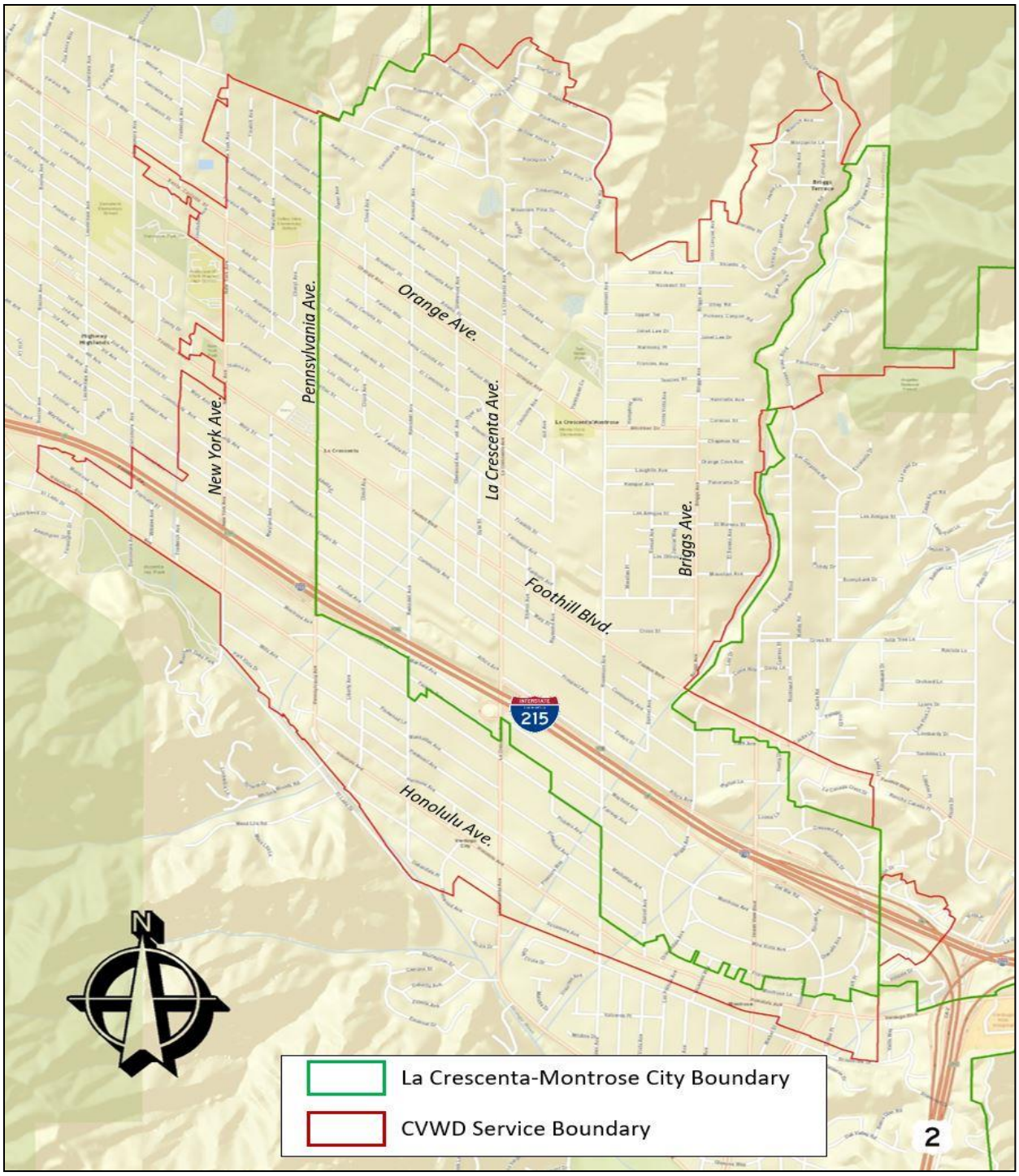


Figure 1.3: CVWD's Service Boundaries

Approximately 79 percent of CVWD's water demand is residential; only 6 percent of the demand is attributed to the Commercial/Industrial/Institutional category.

SECTION 2: WATER DEMANDS

2020 URBAN WATER MANAGEMENT PLAN

SECTION 2 WATER DEMAND

2.1 OVERVIEW

Water use within CVWD's service area includes residential potable use, landscape irrigation use, commercial and institutional uses, and of course water losses. Water use is variable and depends on a number of factors which include seasonal climate changes, demographic shifts, changes in land use or redevelopment, and of course legislation. Since CVWD's service area is largely residential, changes in residential plumbing fixtures and customer usage habits can significantly affect water usage. CVWD is able to meet its demands with a blend of groundwater and imported water.

This section explores the water usage trends within CVWD's service area and quantifies total usage per customer class. In addition, the provisions of SBx7-7 are explored in detail.

2.2 FACTORS AFFECTING DEMAND

Water consumption is influenced by many factors including climate characteristics of the hydrologic region, demographics (including social and economic demographics), land use characteristics, and economics. The key factors affecting water demand in CVWD's service area are discussed in the following sub-sections.

2.2.1 CLIMATE

CVWD has a Mediterranean climate, with a "foothill" characteristic. Summers are warm to hot, and dry while winters are cool and have an annual historical average precipitation of approximately 22.9 inches. Another feature of this foothill Mediterranean climate is the frequency of high-velocity, low-humidity, northeasterly winds in the fall and early winter. Therefore, CVWD is highly prone to wildfire danger during these periods. Adequate storage of reservoir water supply is deemed critical by the local fire jurisdictions. **Figure 2.1** shows the historical average rainfall for CVWD from 1963 to 2020.

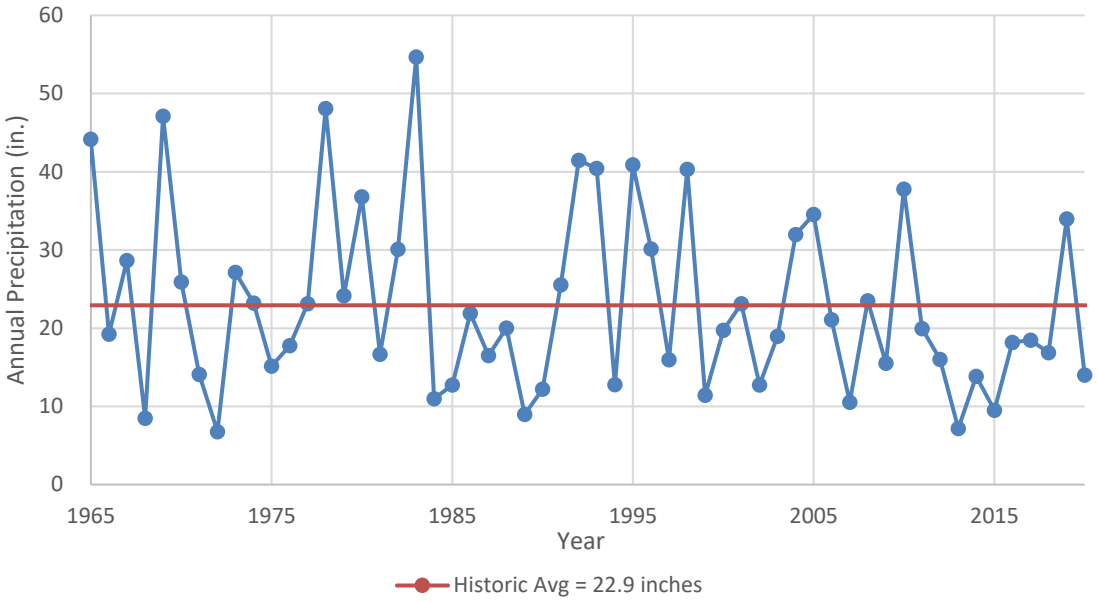


Figure 2.1: Historic Rainfall for CVWD

The sources of CVWD's imported water supplies, the State Water Project (SWP) and Colorado River Aqueduct (CRA), are influenced by weather conditions in Northern California and along the Colorado River Basin region. Both regions have recently been suffering from multi-year drought conditions and record low rainfalls which directly impact demands and supplies to CVWD and Southern California.

Climate fluctuations not only can increase or decrease demand, but can also directly affect CVWD's ratio of groundwater to imported water, since reduced precipitation and snowfall means less groundwater replenishment. When groundwater supplies are reduced, CVWD purchases more imported water.

Figure 2.2: Snowfall on San Gabriel Mountains

CLIMATE CHANGE

The rise of anthropogenic activities producing carbon dioxide in the world has changed the earth's climate by emitting greenhouse gasses responsible for global warming. This has resulted in extreme weather events occurring more frequently. The severity and frequency of climate change impacts on temperature and precipitation patterns can be difficult to forecast due to dramatic shifts in weather patterns as a result of increased concentrations

of carbon dioxide in the atmosphere. While the precise timing, severity, and regional impacts of these temperature and precipitation changes are uncertain, climate researchers have identified several important issues of concern for water planners in California. The climate change impacts of concern are as follows:

Temperature Increases	• More winter precipitation falling as rain rather than snow, leading to reduced snowpack water storage, reduced long term soil humidity, reduced groundwater and downstream flows, and reduced imported water deliveries • Higher irrigation demands as temperatures alter evapotranspiration rates, and growing seasons become longer • Exacerbated water quality issues associated with dissolved oxygen levels, increased algal blooms, and increased concentrations of salinity and other constituents • Impacted habitats for temperature-sensitive fish and other life forms, and increased susceptibility of aquatic habitats to eutrophication
Precipitation Pattern Changes	• Increased flooding (both coastal and inland) caused by more intense storms • Changes to growth and life cycle patterns caused by shifting weather patterns • Threats to soil permeability, adding to increased flood threat and decreased water availability • Reduced water supply caused by the inability to capture precipitation from more intense storms, and a projected progressive reduction in average annual runoff (though some models suggest that there may be some offset from tropical moisture patterns increasingly moving northward) • Increased turbidity caused by more extreme storm events, leading to increased water treatment needs and impacts to habitat • Increased wildfires with less frequent, but more intense rainfall, and possibly differently timed rainfall through the year, potentially resulting in vegetation cover changes • Reduction in hydropower generation potential
Sea Level Rise	• Inundation and erosion of coastal areas (coastal bluffs in particular), including coastal infrastructure • Saline intrusion of coastal aquifers • Increased risk of storm surges and coastal flooding and erosion during and after storms • Changes in near-shore protective biogeography such as loss of sand, tide pools, wetlands, and kelp beds

Although the extent of these changes is uncertain, CVWD is already planning ahead to ensure long lasting reliability of its source for their customers.

2.2.2 DEMOGRAPHICS

The population within CVWD's service area is expected to increase by 8 percent in the next 25 years, or 0.3 percent annually. **Table 2.1** shows the current and projected population for the next 25 years.

Table 2.1: Population – Current and Projected (DWR Table 3-1 Retail)

Year	2020	2025	2030	2035	2040	2045
Service Area Population	32,462	32,974	33,494	34,022	34,558	35,103

The service area populations for CVWD was determined using the DWR Population Tool ("WUE"), which uses the service boundaries, US Census data, and number of residential service connections. The tool calculates population by using past US Census data and service connections to obtain persons per connection. Using the persons per connection and current count on service connections would provide the current service population. Future service population can be projected based on the average growth factor.

There is no industry in CVWD's service area and there are less than 5 percent commercial or institutional accounts. CVWD does not anticipate any significant increases in employment for the area based on the land availability and the zoning. Densification will occur as single-family lots are converted to multi-family dwellings where it is allowed by zoning classification and the governing agency.

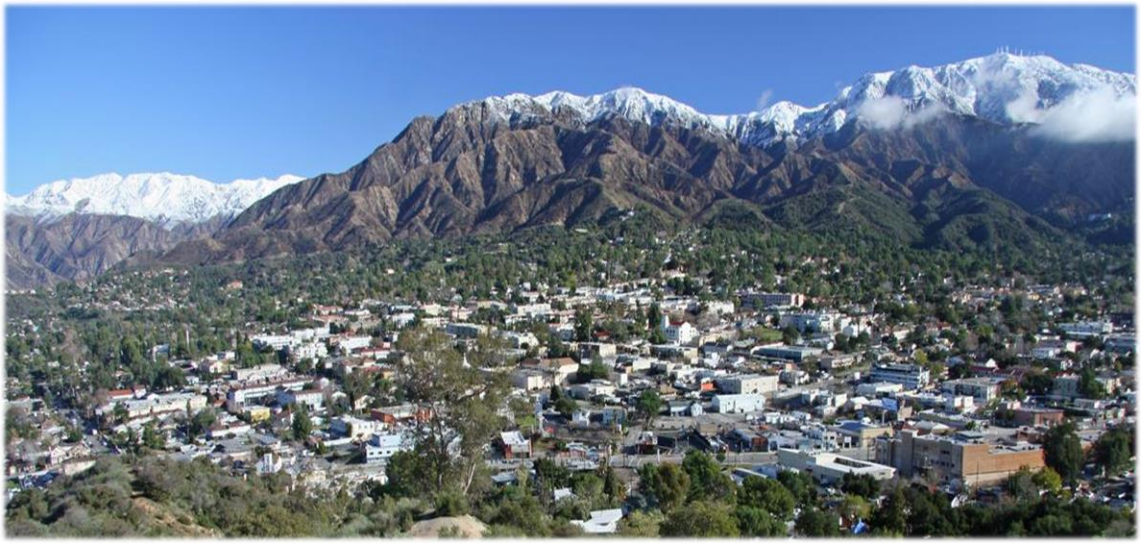


Figure 2.3: Land Use within CVWD's Service Area

2.2.3 LAND USE

Land use in the service area is primarily residential with two commercial/business corridors along Foothill Boulevard and Honolulu Avenue. Of the residential service, some of the area south of Foothill Boulevard continues to be converted over time to multi-family units as zoning permits. There are no industrial or agricultural water users within CVWD, and institutional users are limited to schools, churches, parks, and freeway landscaping.

CVWD currently provides water service to over 8,000 accounts and wastewater collection service to over 6,000 accounts. CVWD's service area is for the most part built-out with densification accomplished through single-family lot splits and conversion of single-family to multi-family dwelling units.

2.2.4 LEGISLATION

The passage of SBx7-7, discussed in **Section 2.4**, has increased efforts to reduce the use of potable supplies in the future. As a retailer, CVWD has provided an assessment of its present and proposed future measures, programs, and policies to help its service area achieve the water use reductions.

Substantial water reductions can be gained by proper landscape design, installation, and maintenance. To improve water savings in this sector, DWR has updated the State Model Water Efficient Landscape Ordinance (MWELO) for cities and counties per Governor Brown's Executive Order B-29-15. MWELO promotes efficient landscapes in new developments and retrofitted landscapes.

The revised MWELO increases water use efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes which can be covered in turf. It also required reporting by cities and counties on the implementation and enforcement of local ordinances, with required annual implementation reports due by January 31 for the previous year.

2.3 WATER USE WITHIN CVWD'S SERVICE AREA

The knowledge of an agency's water consumption by type of use or by customer class is key to developing that agency's water use profile which identifies when, where, and how much water is used, and by whom within the agency's service area. A comprehensive water

use profile is critical to the assessment of impacts of prior water conservation efforts as well as to the development of future conservation programs.

This section provides an overview of CVWD's water consumption by customer class from 2016 to 2020. The customer classes are categorized as follows: single-family residential, multi-family residential, commercial/industrial/institutional (CII), and dedicated landscape, and fire services. Non-revenue water is discussed later in this section.

2.3.1 HISTORIC WATER DEMAND

Water demands within the CVWD's service area over the past six years were met by groundwater from the Verdugo Groundwater Basin (Basin) and imported water from FMWD. Annual water use since 2015 has ranged from about 3,647 AF to 4,174 AF (average 3,843 acre-feet per year (AFY)) as shown below in **Table 2.2**. As indicated by the table, annual water use fluctuates each year.

Table 2.2: Six-Year Historic Total Water Demand (AF)

Year	2015	2016	2017	2018	2019	2020
Demand	3,647	3,775	3,917	3,884	3,7774	4,216

2.3.2 WATER USE STATISTICS

CVWD maintains records of water consumption and bills its customers on a bi-monthly basis for water and sewer service. Approximately 80 percent of CVWD's water demand is residential. CII sectors account for approximately under 7 percent of CVWD's potable water supply. The remaining portion of CVWD's demand pertains to fire service and irrigation purposes. CVWD does not provide any sales to agriculture, nor other agencies, saline water intrusion barriers, groundwater recharge, or conjunctive use. Unaccounted for water consists of water losses due to leakage or inaccurate water meters. Water loss calculation was done in accordance with CWC 10631(e)(3)(B). The total number of service connections and water consumption is shown in **Tables 2.3** and **2.4**, respectively.

Table 2.3: 2015 & 2020 Service Accounts by Sector

Sector	2015	2020
Single-Family Residential	6,777	6,955
Multi-Family Residential	695	688
Commercial/Institutional	408	413
Landscape Irrigation	68	81
Fire	102	107
Total Connections:	**8,050**	**8,244**

Table 2.4: 2020 Water Demand by Sector (AF) (DWR Table 4-1 Retail)

Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	2,490
Multi-Family		Drinking Water	836
Commercial	w/ Institutional	Drinking Water	279
Landscape		Drinking Water	234
Losses		Drinking Water	376
		TOTAL	4,216

2.4 WATER CONSERVATION ACT

2.4.1 SBX7-7 BACKGROUND

Due to the limited amount of water allowed to be pumped in the San Joaquin Delta, the CA Legislature drafted the Water Conservation Act of 2009 (SBx7-7) to protect statewide water sources. The legislation called for a 20 percent reduction in water use in California by the year 2020. The legislation amended the Water Code to call for 2015 and 2020 water use targets in the 2010 UWMPs, updates or revisions to these targets in the 2015 and 2020 UWMPs, and allows DWR to enforce compliance to the new water use standards. In essence, the bill requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020 and an interim 10 percent goal by 2015.

The bill establishes methods for urban retail water suppliers to determine their targets to help achieve statewide water reduction targets, which may or may not be a strict 20 percent level. The retail water supplier must select one of the four target-setting methods as described in **Section 2.4.3**. The retail agency may also choose to comply with SBx7-7 as an individual or as a region in collaboration with other water suppliers. Under the regional compliance option, the retail water supplier is mandated to report the water use target for its individual service area. The bill also includes reporting requirements in the 2010, 2015, and 2020 UWMPs. Beginning in 2016, failure to comply with interim and final targets makes a retail agency ineligible for grants and loans from the state needed to attain water self-sufficiency by 2020; however, if an agency which is not in compliance documents a plan and obtains funding approval to come into compliance, it could then become eligible for grants or loans.

Wholesale water suppliers, including FMWD, are not required to determine baseline daily per capita water use, urban water use target, interim urban water use target, or compliance daily per capita water use. Instead, wholesale water suppliers are required to include in their UWMPs discussions of programs they intend to implement to support the retail water suppliers, such as CVWD, in attaining their reduction goals and targets.

Figure 2.4: CVWD's Water Conservation Efforts Include Drought Tolerant Landscape

2.4.2 SBX7-7 PROVISIONS

In addition to an overall statewide 20 percent water use reduction, the objective of SBx7-7 is to reduce water use within each hydrologic region in accordance with the agricultural and urban water needs of each region. Currently, DWR recognizes 10 separate hydrologic regions in California as shown in **Figure 2.5.** Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. CVWD is located in the South Coast Hydrologic Region (HR), which includes all of Orange County, most of San Diego and Los Angeles Counties, parts of Riverside, San Bernardino, and Ventura counties, and a small amount of Kern and Santa Barbara Counties. The South Coast HR is shown in **Figure 2.6**.

Per capita water use, measured in gallons per capita per day (GPCD), in the South Coast HR varies between different water agencies, depending on the geographic and economic conditions of the agency's service area. The South Coast HR has an overall baseline per capita water use of 180 GPCD and DWR has established a regional target of 149 GPCD for the region as a compliance target to satisfy SBx7-7 legislation.

Figure 2.5: California's 2020 Water Conservation Goals

Figure 2.6: South Coast Hydrologic Region

2.4.3 SBX7-7 COMPLIANCE OPTIONS

DWR has established four compliance methods for urban retail water suppliers to choose from. Each supplier is required to adopt one of the four methods to comply with SBx7-7 requirements. The four options are shown in **Table 2.5** to the right.

These options were established in order to avoid placing any undue hardship on water agencies that have already been implementing water conservation measures. The basic procedure for determining the applicable water reduction target is illustrated by **Figure 2.7**. If an agency's 10-year baseline is slightly higher than the Hydrologic Region's target, that agency still must achieve a five percent reduction from its 5-year baseline. If an agency has a per capita water use of 100 GPCD or less, that agency will not have to adhere to any reduction targets as that agency is already considered water efficient.

Table 2.5: DWR Compliance Methods

Methods	Description
Method 1	A strict 20 percent reduction from the baseline by 2020 and 10 percent by 2015
Method 2	A budget-based approach by requiring an agency to achieve a performance standard based on three metrics: ○ Residential indoor water use of 55 GPCD ○ Landscape water use commiserate with a Model Landscape Ordinance ○ 10 percent reduction in baseline CII water
Method 3	Requires achievement of 95 percent of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan
Method 4	Requires the subtraction of Total Savings from the Base GPCD: ○ Total Savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings

2.4.4 CVWD'S COMPLIANCE OPTION SELECTION

To satisfy the provisions of SBx7-7, CVWD previously established a per capita water use target for the year 2020 as well as an interim target (2015). DWR provided guidelines for determining these targets in its *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (released 2010; revised 2011 and 2016) and also in the 2015 and 2020 UWMP Guidebooks. The *Methodologies* guidebook made provisions that allowed a water supplier to meet the target requirements by achieving any one of a number

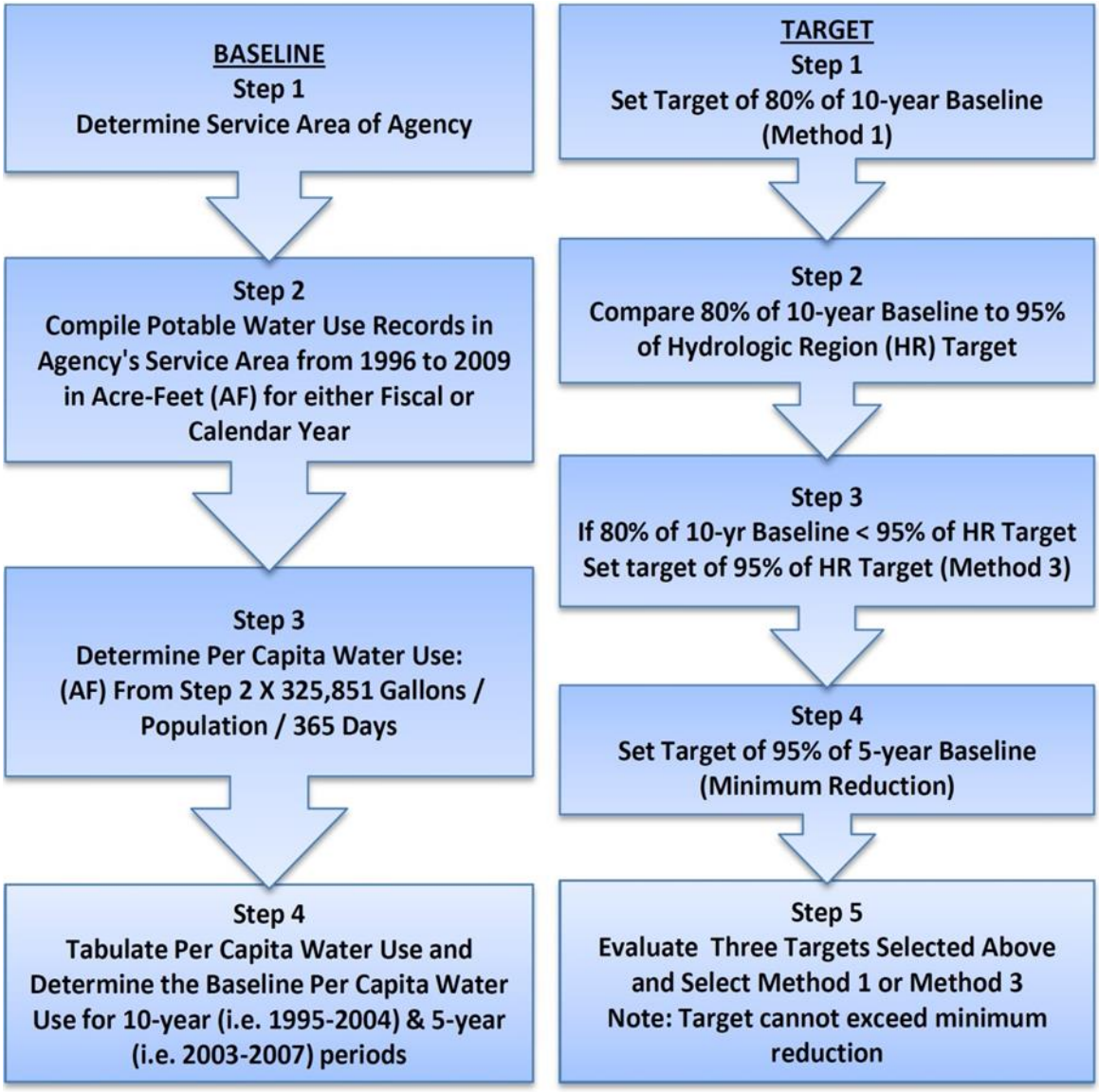


Figure 2.7: Procedures for Determining Baseline & Targets

of target requirements, provided that the water supplier's per capita water use is low enough relative to the region within which it supplies water. The basic options included a minimum reduction requirement of 5 percent (Water Code § 10620), a 5 percent reduction from the Regional (South Coast HR) target (Water Code § 10608.20 (b) (3)), or a strict 20 percent reduction.

While each retail agency was required to choose a compliance option in 2010, DWR allowed for the agency to change its compliance option in 2015, and again in 2020. This will allow CVWD to determine its water use targets for Compliance Options 2 and 4 since CVWD anticipates more data to be available for target calculation in the future.

The first step to calculating an agency's water use target is to determine its base daily-per-capita water use (baseline water use). This baseline water use is essentially the agency's gross water use divided by its service area population, reported in GPCD. Gross water use is defined as volume into the distribution system while deducting any recycled water for direct use during a 10-year period. The baseline water use is calculated as a continuous 10-year average during a period which ends no earlier than December 31, 2004 and no later than December 31, 2010. Agencies for which recycled water made up 10 percent or more of 2008 retail water delivery can use up to a 15-year average for the calculation. The base period must end no earlier than December 31, 2007, and no later than December 31, 2010.

2.4.5 BASELINE WATER USE

Since CVWD does not use recycled water, a 10-year instead of a 15-year rolling average was calculated. CVWD's baseline water use is **160.1 GPCD**, which was obtained from the 10-year period January 1, 1996 to December 31, 2005.

Table 2.6 provides the base period ranges used to calculate the baseline water use for CVWD as well as the service area population and annual water use data from the base daily per capita water use. The data was used to calculate the continuous 10-year and 5-year average baseline. Moreover, regardless of the compliance method adopted by CVWD, it will need to meet the minimum water use target of 5 percent reduction from a five-year baseline as calculated. Values for 1996 to 2007 are from the 2010 UWMP.

Table 2.6: Past GPCD Water Use

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
1996	30,390	5,277	155.0
1997	30,475	5,497	161.0
1998	30,560	5,076	148.3
1999	30,645	5,608	163.4
2000	30,731	5,717	166.0
2001	30,817	5,635	163.0
2002	30,903	5,792	167.0
2003	30,989	5,724	164.7
2004	31,075	5,726	165.2
2005	31,162	5,327	152.6
2006	31,249	5,463	156.8
2007	31,336	5,525	155.2
10-Year Average (1996-2005) Base Daily per Capita Water Use:			**160.1**
5-Year Average (2003-2007) Base Daily per Capita Water Use:			**159.1**

2.4.6 SBX7-7 WATER USE TARGETS

In its 2010 UWMP, CVWD selected compliance **Option 3**. Under Compliance Option 3, CVWD chose to achieve 95 percent of the State's hydrologic region target of 141.6 GPCD by 2020; however, the minimum required calendar year target calculated from the five-year base daily GPCD found in **Table 2.7** comes to 151.1 GPCD in 2020. Therefore, under Option 3, CVWD's 2015 interim water use target is 151 GPCD, and the 2020 final water use target is **142 GPCD** as summarized in **Table 2.7**.

Table 2.7: Preferred Compliance Option & Water Use Targets

Option 3	Baseline	2015 Target	2020 Target
95% of State Hydrologic Region Targets	160	151	142

Table 2.8 below shows the CVWD's GPCD since 2015. As shown, CVWD's 2015 GPCD was **100.5** which is well below their 2015 and 2020 Targets. Furthermore, CVWD met their 2020 Target by achieving a GPCD of **115.9**.

Table 2.8: CVWD's Recent GPCD (2015 - 2020)

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
2015	32,385	3,647	100.5
2016	32,400	3,775	104.0
2017	32,416	3,917	107.9
2018	32,431	3,884	106.9
2019	32,447	3,774	103.8
2020	32,462	4,216	115.9

2.4.7 WATER DEMAND IMPACTS FROM COVID-19 PANDEMIC & 2020 SBx7-7 COMPLIANCE

DWR recognizes that extraordinary events may have an impact towards water demands. On March 4, 2020, Governor Newsom proclaimed a state of emergency for the entire state due to the spread of COVID-19. Following Governor Newsom's statement, Los Angeles County also declared a state of emergency the same day. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. As a result, on March 19, 2020, an Executive Order and Public Health Order directed all Californians to stay home except to go to an essential job or to shop for essential needs. This also required most Californians to work remotely from home.

This event resulted in a significant increase to water demands for various water agencies, including CVWD. As shown in Table 2.7, the gross water use in 2020 is significantly higher than the past years averages. In 2020, the water usage was 4,216 AF and the average from 2015 to 2019 was 3,800 AF.

DWR allows water purveyors to make adjustments to their 2020 Gross Water Use in the event of usual events considered as Extraordinary Events, Economic Adjustment, or Weather Normalization; however, according to Section 5.5.1.4 of 2020 UWMP Guidebook, adjustments for COVID-19 are not allowed. This impact resulted in no issues for CVWD to achieve their 2020 targets as shown in **Table 2.9**.

Table 2.9: CVWD 2020 Compliance (DWR Table 5-2 Retail)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD		
116	*0*	*0*	*142*	*Yes*

2.5 WATER USE REDUCTION PLAN

2.5.1 ON-GOING WATER CONSERVATION EFFORTS

In order to remain below the SBx7-7 targets, CVWD will continue to implement the water use efficiency measures described in **Section 4** of this UWMP and continue to participate in water use efficiency programs offered by MWD rebate programs for its retail agencies. Because residential homes are the largest water use sector in the region, the focus of water conservation efforts will continue to be residential rebate programs and public outreach programs. Single family residential homes and some large landscapes are common in the CVWD area.

In addition to the SBx7-7 provisions, agencies also sought to manage the provisions of Governor Brown's Executive Order B-29-2015. Governor Brown granted this Executive Order in April 2015 that mandated a statewide 25 percent reduction in water use through February 28, 2016, as compared to the amount used in 2013. This executive order helped to further the goals of SBx7-7. Even after the strict 25 percent reduction was lifted, Californians continued to save water, with cumulative water use savings of about 22 percent between June 2015 and January 2017. As Governor Brown ended the drought state

Figure 2.8: SBx7-7 Seeks to Preserve the Waters of the Bay-Delta

of emergency in most of California in April 2017 with Executive Order B-40-17, state agencies released a long-term plan that advanced measures to better prepare the state for future droughts and make conservation a California way of life.

Through financial incentive programs and various public outreach campaigns and events, CVWD has met its SBx7-7 target as shown previously on **Table 2.9**.

2.5.2 FUTURE MWD PROGRAMS

OVERVIEW

In 2016, MWD, in collaboration with its member agencies, released the 2015 Update to the Integrated Water Resources Plan (IRP). The inaugural IRP was adopted in 1996, with previous updates in 2004 and 2010. The 2015 Update continues to assess and address how MWD plans to adapt to the changing conditions facing Southern California. The goals of the 2015 IRP include:

- **Maintain Colorado River Aqueduct Supplies:** Develop programs to ensure that a minimum of 900,000 AF is available when needed, with access to 1.2 million acre-feet (MAF) in dry years.

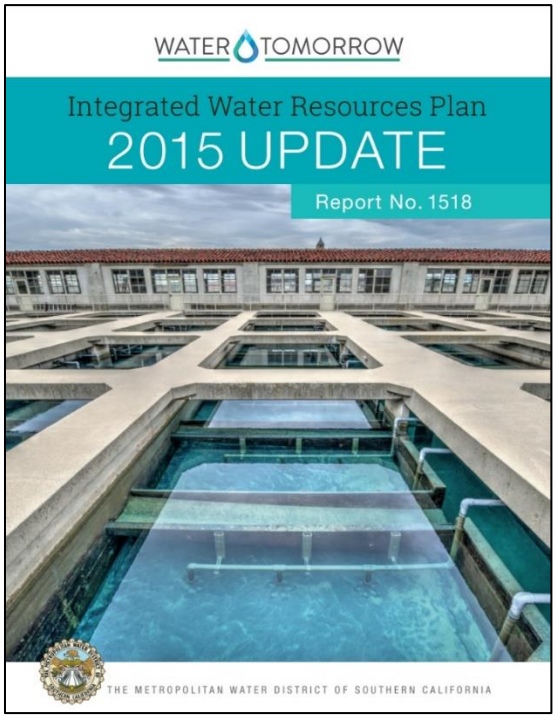


Figure 2.9: MWD's 2015 Integrated Water Resources Plan

- **Stabilize State Water Project Supplies:** Manage SWP supplies in compliance with regulatory restrictions in the near-term for an average of 980,000 AF of SWP supplies. Pursue a successful outcome in the Delta Conveyance Plan and California EcoRestore efforts for long-term average supplies of about 1.2 MAF.
- **Achieve Additional Conservation Savings:** Pursue further water conservation savings of 485,000 AF annually by 2040 through increased emphasis on outdoor water-use efficiency using incentives, outreach/education and other programs.
- **Develop Additional Local Water Supplies:** Develop 230,000 AF of additional local supplies produced by existing and future projects. The region would reach a target of 2.4 MAF by 2040, a key to providing water supply reliability into the future.
- **Maximize the Effectiveness of Storage & Transfer:** Develop a comprehensive strategy to pursue transfers and exchanges to hedge against shorter-term water demands and supplies imbalances until long-term solutions are in place.
- **Encourage Innovation:** Facilitate innovation in recycled water, desalination, stormwater capture and groundwater cleanup through a growing portfolio of initiatives, technologies and new ideas.

MWD is in the process of updating its IRP once again but that process will not be completed until after this UWMP is submitted.

2.6 DEMAND PROJECTIONS

2.6.1 25 YEAR PROJECTIONS

One of the main objectives of this UWMP is to provide CVWD's future water demand outlook. **Tables 2.10** and **2.11** project future demands based on water sector over the next 25 years. Demand projections were determined using 107.7 GPCD, based on the past five-year average and projection population growth. Per capita consumption rates should be expected to remain under 107.7 GPCD and trend further below that rate to continue water conservation efforts to combat climate change. It is important to note that CVWD does not utilize recycled water within its service boundaries. This is further discussed in **Section 6**.

Table 2.10: CVWD's Demand Projections by Sector (AF) (DWR Table 4-2 Retail)

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		2,350	2,387	2,425	2,463	2,502
Multi-Family		789	802	814	827	840
Commercial	w/ Institutional	263	267	271	276	280
Landscape		221	225	228	232	235
Losses		355	361	366	372	378
TOTAL		**3,979**	**4,041**	**4,105**	**4,170**	**4,236**

Table 2.11: CVWD Total Water Demands (AF) (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	4,216	3,979	4,041	4,105	4,170	4,236
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage						
TOTAL WATER USE	4,216	3,979	4,041	4,105	4,170	4,236

2.6.2 LOW-INCOME HOUSEHOLD PROJECTIONS

One significant change to the UWMP Act since 2005 is the requirement for retail water suppliers to develop water use projections for "low-income" households at the single-family and multi-family level. These projections assist retail suppliers with compliance with Section 65589.7 of the Government Code, which requires suppliers to grant a priority for the provision of service to low-income households. Consistent with this Code section, a low-income household is defined as a household earning 80 percent or less of the area's median income.

The 2010 UWMP utilized the Regional Housing Needs Assessment (RHNA) or Regional Housing Needs Plan information to obtain a percentage of low-income households within an area. The information was developed by the Local Council of Governments, in

coordination with the California Department of Housing and Community Development. The RHNA plan lists every city within the Southern California region and provides percentages of very low- and low-income households. The area CVWD main serves is La Crescenta-Montrose, an unincorporated area and a census-designated place.

Existing and projected housing needs for Los Angeles County were incorporated into the most recent RHNA Subcommittee's report titled 6th Cycle Final RHNA Allocation Plan of the Southern California Association of Governments (SCAG). This plan covers the planning period from October 2021 to October 2029. Based on the RHNA plan, the percentage of very low- and low-income households combined was 43.7 percent within unincorporated areas. This value is not a valid representation and will not be used.

Instead, a percentage was obtained from records from the US Census Bureau. It provides information regarding the breakdown of households per income range and the percentages for each range. Based on their latest records (2019), approximately 6.7 percent of households is considered in poverty.

Therefore, from inference, it is estimated that approximately 6.7 percent of the projected water demands within the CVWD service area will be for housing needed for low-income households. **Table 2.12** provides the projected water needs for low-income household. The projected water demands shown here represent 6.7 percent of the projected residential water demand.

Table 2.12: Projected Water Demands for Low-Income Households

Water use Sector		2025	2030	2035	2040	2045
Single Family	Normal Demand	2,350	2,387	2,425	2,463	2,502
	Low-Income Demand	157	160	162	165	168
Multi-Family	Normal Demand	789	802	814	827	840
	Low-Income Demand	53	54	55	55	56
Total	Normal Demand	3,139	3,189	3,239	3,290	3,342
	Low-Income Demand	210	214	217	220	224

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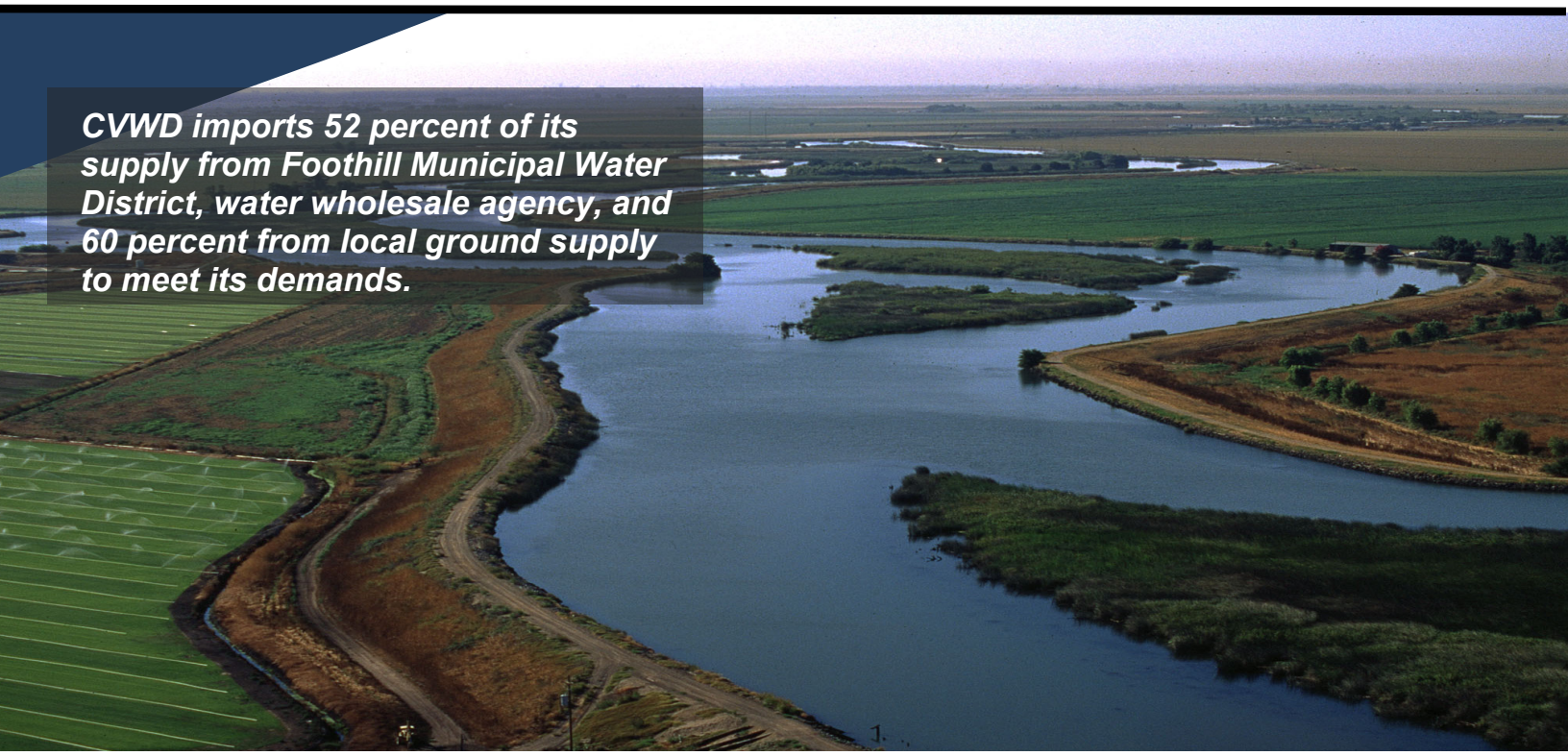


SECTION 3: WATER SOURCES & SUPPLY RELIABILITY

2020 URBAN WATER MANAGEMENT PLAN

SECTION 3 WATER SOURCES & SUPPLY RELIABILITY

3.1 OVERVIEW

CVWD's water supplies consist of groundwater produced from the Verdugo Basin and imported water purchased from FMWD. Approximately 52 percent of CVWD's water consists of groundwater, while the remaining 48 percent consists of imported water. The majority of CVWD's ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. Local groundwater is disinfected with chlorine before blending with MWD's surface water. The sources of imported water supplies include the Colorado River Aqueduct (CRA) and the State Water Project (SWP). The most dominant feature of CVWD's water supply operations is the intensive pumping required for delivering water to the residents in the communities located in the foothills of the San Gabriel Mountains. In some cases, this water must be lifted over 1,000 feet in order to deliver it to the elevations of some water users in the service area. This section discusses water supply, quality, and water reliability under all foreseeable hydrologic conditions from 2025 through 2045.

3.2 IMPORTED WATER

3.2.1 WATER SOURCES (MWD)

MWD has access to imported water from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. These two water systems provide Southern California with over 2 million acre-feet (MAF) of water annually for urban uses.

COLORADO RIVER

The Colorado River supplies California with 4.4 MAF annually for agricultural and urban uses with approximately 3.85 MAF used for agriculture in Imperial and Riverside Counties. The remaining unused portion (600,000 to 800,000 AF) is used for urban purposes in MWD's service area.

Figure 3.1: Parker Dam at Colorado River

BAY DELTA

In addition to the Colorado River, the Sacramento-San Joaquin River Delta has historically provided a significant amount of supply annually to Southern California. The Delta is located at the confluence of the Sacramento and San Joaquin Rivers east of the San Francisco Bay and is the West Coast's largest estuary. The Delta supplies Southern California with over 1 MAF of water annually which has been significantly reduced in recent years.

The use of water from the Sacramento-San Joaquin Delta continues to be a critical issue as it competes between uses for water supply and ecological habitat that jeopardizes the Delta's ability to meet either need and may threaten the estuary's ecosystem.

An ongoing planning effort to increase long-term supply reliability for both the State Water Project (SWP) and Central Valley Project (CVP) is taking place. This plan, formerly known as the Bay Delta Conservation Plan (BDCP), includes co-equal goals to improve water supply reliability and restore the Delta ecosystem. In April 2015, state and federal agencies announced a new sub-alternative, California WaterFix and California EcoRestore, which replaced the proposed BDCP as the state's preferred project. The new alternative reflects the state's proposal to separate the conveyance facility and habitat restoration measures into two separate efforts: California WaterFix and California EcoRestore. These two efforts are a

direct reflection of public comments and fulfill the requirement of the 2009 Delta Reform Act to meet co-equal goals. Preparation of the BDCP and now California WaterFix is through a collaboration of state, federal, and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties. Several "isolated conveyance system" alternatives considered in the plan would divert water from the north Delta to the south Delta where pumped water travels into the south-of-Delta stretches of the SWP and CVP. The new conveyance facilities would allow for greater flexibility in balancing the needs of the estuary with the reliability of water supplies. The plan also provides other benefits, such as reducing the risk of long-term outages from Delta levee failures.

However, plans for the California WaterFix did not fall through as it did not gain support from Governor Newsom. In his speech to the state addressed in February 2019, Newsom announced that he did not "support WaterFix as currently configured," but does "support a single tunnel". As a result, on April of 2019, Governor Newsom issued Executive Order N-10-19, which announced a new single tunnel project known as the Delta Conveyance Project (DCP). Later that year, DWR initiated planning and environmental review for the DCP to protect the reliability of SWP supplies from the effects of climate change and seismic events, among other risks. DWR's current schedule for the DCP environmental planning and permitting extends to the end of 2024. DCP will potentially be operational in 2040 following extensive planning, permitting, and construction.

AQUEDUCT SYSTEMS

In order to provide Southern California with imported water, MWD utilizes two separate aqueduct systems (one for each source of supply) to obtain its supplies. These two aqueduct systems convey water from each source into two separate reservoirs whereupon MWD pumps the water to one of its five treatment facilities. One of these aqueduct systems, known as the Colorado River Aqueduct (CRA), serves as MWD's primary water delivery system and first constructed shortly after MWD's incorporation in 1928. The CRA, which is owned and operated by MWD, spans 242 miles and conveys water from the Colorado River to Lake Mathews.

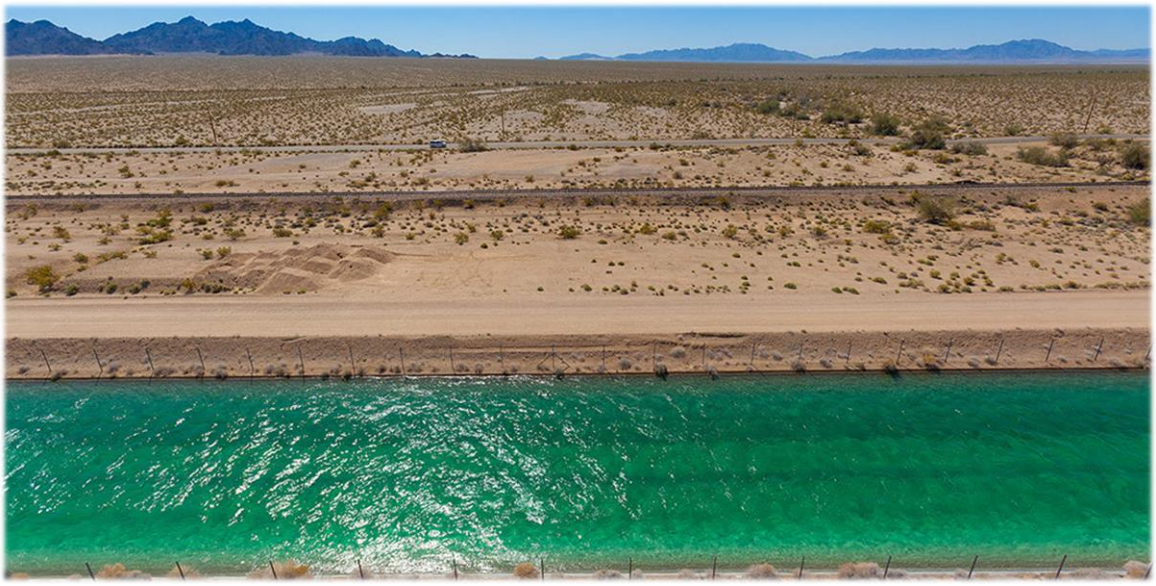


Figure 3.2: Colorado River Aqueduct

In addition to the CRA, MWD receives water from northern California via the California Aqueduct. Also known as the State Water Project (SWP), the California Aqueduct is 444 miles long and carries Delta water to Southern California and is operated by DWR.

Figure 3.3: California Aqueduct or "SWP"

The previously mentioned aqueducts supply Southern California with a significant amount of its water and are crucial to its sustainability. In addition to these two water systems, there are also several other aqueducts vital to the State. The major aqueducts in California are shown in **Figure 3.4**.

Figure 3.4: Aqueduct Systems in California

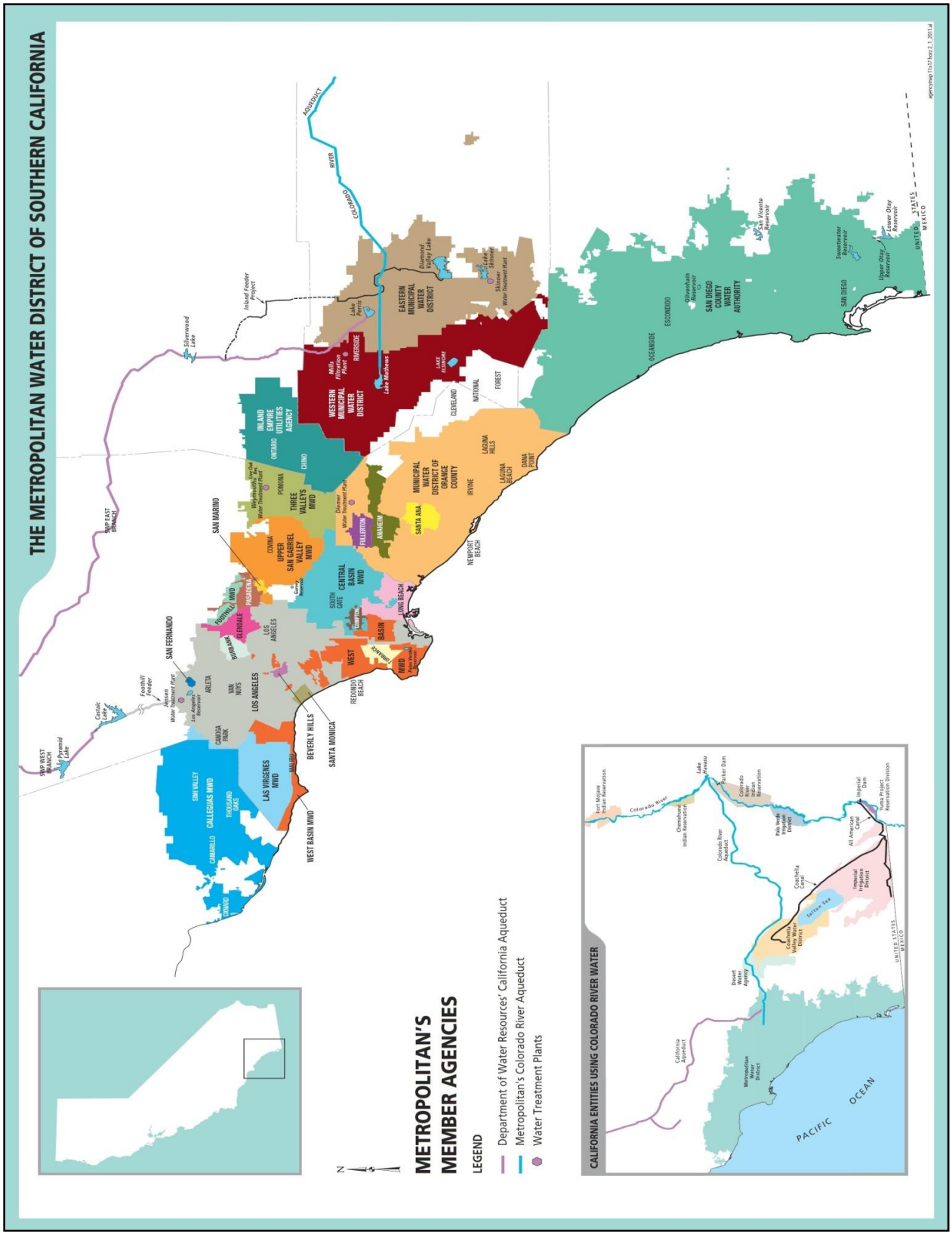


Figure 3.5: MWD Service Area Map

3.3 GROUNDWATER

CVWD owns and operates 12 production wells in the Verdugo Groundwater Basin (Basin). The Basin, shown in **Figure 3.6**, north and east of the Verdugo Mountains, consists of 4,400 acres and comprises 3.6 percent of the total valley fill. It is bounded on the north by the San Gabriel Mountains; on the northwest by a groundwater divide, which separates it from the San Fernando Basin; on the east by a groundwater divide separating it from the Monk Hill Subarea of the Raymond Basin; on the southeast by the San Rafael Hills; and on the south and southwest by the Verdugo Mountains.

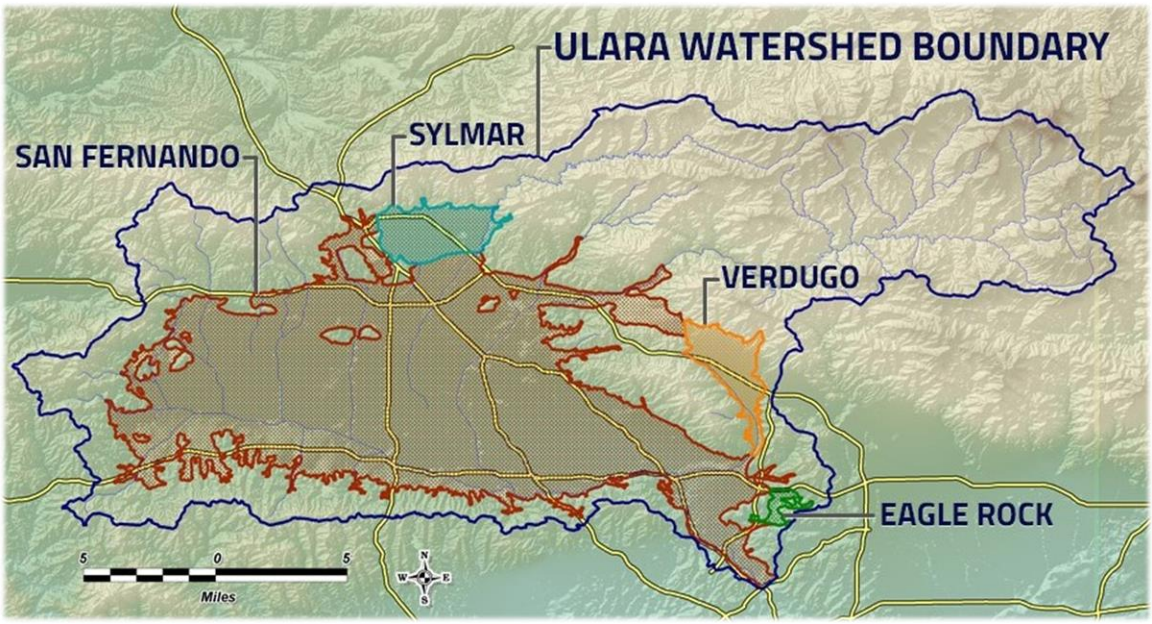


Figure 3.6: Local Groundwater Basins within the Upper Los Angeles River Area

The Basin is an adjudicated basin within the Upper Los Angeles River Area (ULARA). The Basin has an adjudicated "safe yield" of 7,150 AFY. CVWD shares groundwater rights in this basin with the City of Glendale. As the only two water-rights holders in the Basin, CVWD has an annual entitlement of 3,294 AFY and the City of Glendale has an annual entitlement of 3,856 AFY.

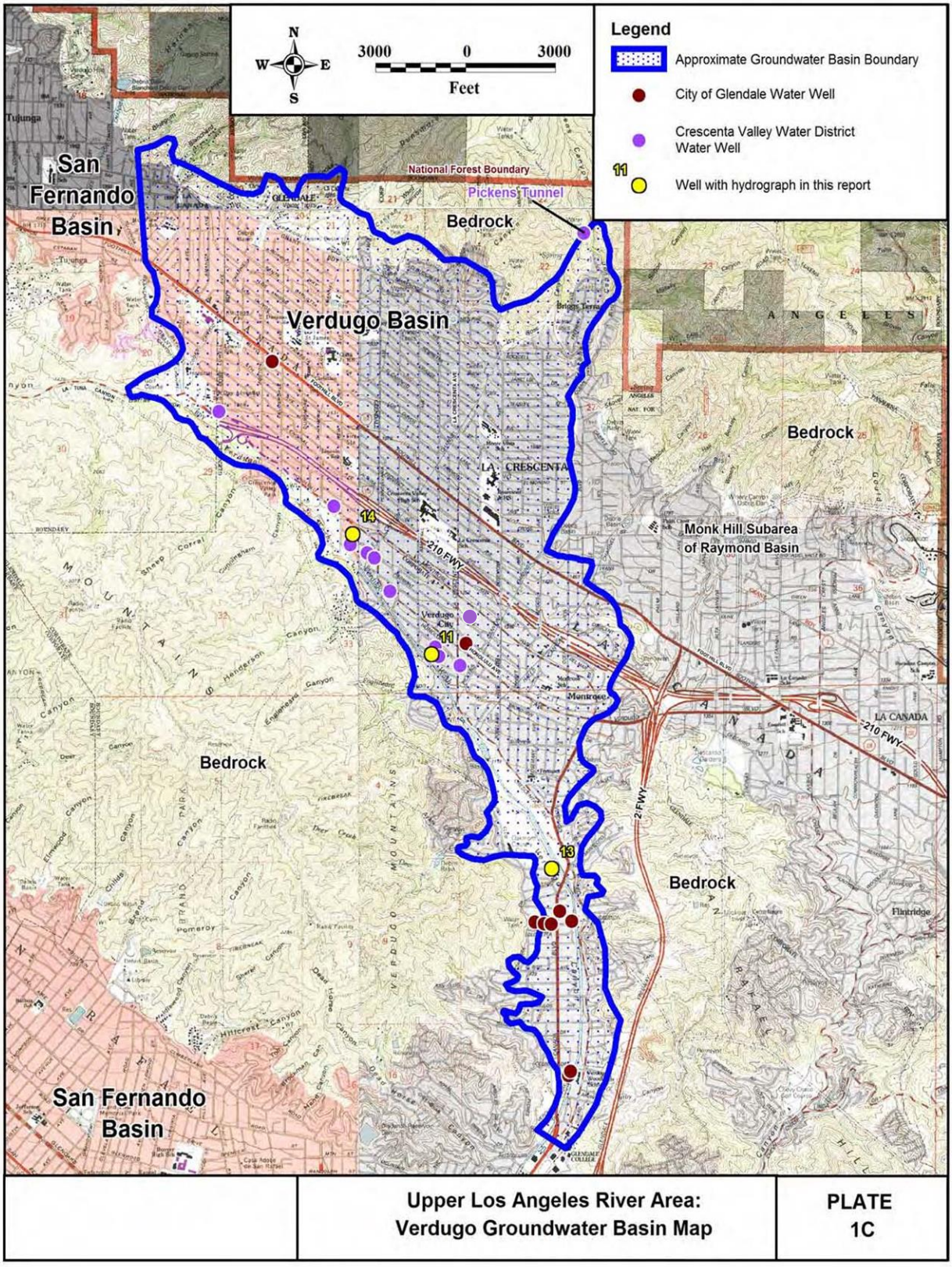


Figure 3.7: Verdugo Groundwater Basin

3.4 WATER QUALITY

In 1974, Congress passed the Safe Drinking Water Act in order to protect public health by regulating the nation's drinking water supply. As required by the Safe Drinking Water Act, CVWD provides annual Water Quality Reports to its customers.

Figure 3.8: Health Standards Project Drinking Water

To ensure quality of its water, CVWD considers risks to drinking water, including: turbidity, microbiological content, organic and inorganic chemical concentration, radionuclide content, and disinfection by-product concentration.

Adverse health effects from these contaminants include not only acute effects but also chronic effects, which may occur if contaminants are ingested at unsafe levels over many years.

The two main sources of CVWD's water supply are imported water from FMWD (MWD water) and groundwater from the Verdugo Basin. Since MWD draws the majority of its water from the CRA and the SWP, the quality of CVWD's imported water supply is closely related to the quality of these two sources.

3.4.1 IMPORTED WATER QUALITY

MWD is responsible for providing water of a high quality throughout its service area. The water delivered by MWD is tested both for currently regulated contaminants and for additional contaminants of concern. Over 300,000 water quality tests are conducted each year to regulate the safety of its water. MWD's supplies originate primarily from the CRA

and from the SWP. The two sources, proportional to each year's availability of the source, is then treated and delivered throughout MWD's service area.

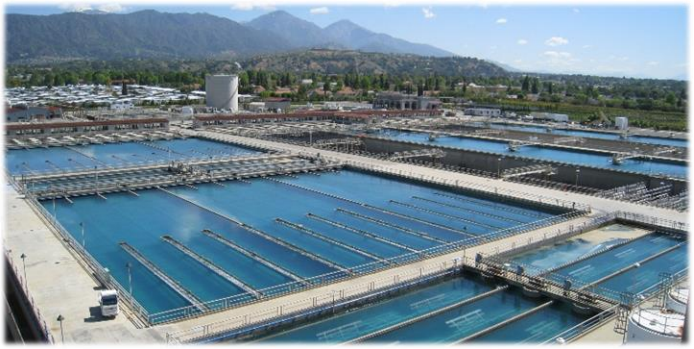


Figure 3.9: MWD's Weymouth Treatment Plant Provides a Safe Supply of Water

MWD's primary sources face individual water quality issues of concern. The CRA water source contains a higher level of total dissolved solids (TDS) and a lower level of organic material, while the SWP contains a lower TDS level while its level of organic materials is much higher, lending to the formation of disinfection byproducts. To remediate the CRA's high level of salinity and the SWP's high level of organic materials, MWD has been blending CRA water with SWP supplies as well as implementing updated treatment processes to decrease the disinfection byproducts. In addition, MWD engages in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of emerging contaminants, N-nitrosodimethylamine (NDMA) and pharmaceuticals and personal care products (PPCPs). MWD has assured its ability to overcome the above mentioned water quality concerns through its protection of source waters, implementation of renovated treatment processes, and blending of its two sources.

Figure 3.10: Native Rock adds to the Salinity of the Colorado River Water Supplies

While unforeseeable water quality issues could alter reliability, MWD's current strategies ensure the deliverability of high-quality water.

3.4.2 GROUNDWATER QUALITY

The water quality of the Basin is high in nitrates and selected wells show the presence of Volatile Organic Compounds (VOCs), particularly tetrachloroethylene (PCE), above the State Water Resources Control Board's Division of Drinking Water (DDW) maximum contaminant levels (MCLs). In addition, CVWD experienced Methyl tertiary butyl ether (MTBE) levels above the public health goal and removed a well from service in 2006. That well was placed back into service in May 2008; however, another well was taken out of service in September 2008 due to high levels of MTBE. That well was placed back into service in March 2011. While MTBE levels remain below detectable concentrations, CVWD continues to monitor all sources on a quarterly basis.

3.4.3 WATER QUALITY IMPACTS

As a result of MWD's efforts, MWD's 2020 UWMP indicates that none of the water quality challenges described below will impact the reliability of its supplies during the next 25 years. CVWD's water system is and has been in compliance with all DDW water quality standards. Groundwater quality does not impact water supply at this time due to CVWD's two (2) Nitrate treatment plant and the ability to blend waters below the MCL for PCE, and Nitrate.

Groundwater containing nitrate is either blended with imported water and/or treated at CVWD's Glenwood Nitrate Reclamation Facility and AroNite Nitrate removal Treatment Plant for Well 2 to meet drinking water standards. Blending with other well water or imported water is sufficient to supply water at less than the MCL for PCE as approved by DDW. MTBE is not present in any of CVWD's wells above the secondary DDW standard. MTBE levels are monitored quarterly throughout CVWD.

In the case that MTBE should reappear at levels above the secondary MCL, CVWD has plans to utilize MWD water to blend down MTBE levels or the groundwater well will be shutdown.

The installation of an ARoNite biological nitrate removal treatment facility to reactivate CVWD's Well No. 2 at the Ordunio Reservoir was put into service in June 2019. This treatment facility will increase CVWD's ability to pump its adjudicated rights within the Verdugo Basin, utilize a local water source and as a result reducing CVWD's dependence on imported water from MWD purchased through FMWD.

CVWD was approved in April 2020 for an amended permit to convert the existing disinfection systems from free chlorine to chloramine by adding chlorine and ammonia to the groundwater supply at four locations (Mills, Glenwood, Well 2 and Pickens Canyon

Tunnel) in order to form chloramine before it is blended with chloraminated MWD water. This popular disinfection method is now being used because of the buildup of byproducts from the chlorine treatment process. CVWD plans to convert to chloramines in the October 2021. At the same time, CVWD has converted the disinfection system at Pickens Canyon Tunnel from calcium hypochlorite to sodium hypochlorite.

3.5 CURRENT WATER SUPPLY

3.5.1 IMPORTED WATER PURCHASES

In 2020, CVWD relies on 2,141 AF of imported water wholesaled by MWD through FMWD to supplement local groundwater. Imported water represents approximately 52 percent of CVWD's total water supply. MWD's principal sources of water originate from two sources - the Colorado River via the Colorado Aqueduct and the Lake Oroville watershed in Northern California through the SWP. This water is treated at MWD's Weymouth Treatment Plant. Because of SWP's lower salinity level, MWD blends SWP water with CRA to reduce the salinity of the delivered water.

MWD's Upper Feeder is tapped by FMWD in the vicinity of Seco Street and Rosemont Avenue in the City of Pasadena. Water flows from MWD's system into FMWD's Arroyo Seco Gravity Main, which traverses in a northerly direction in the vicinity of Rosemont Avenue and terminates at FMWD's Main Pumping Plant located near Rosemont Avenue and Washington Boulevard in the City of Pasadena.

Table 3.1 shows the recent imported water from MWD via FMWD in the past six years from 2015 to 2020.

Table 3.1: Amount of Imported Water Between 2015 - 2020 (AF)

Wholesaler Source	2015	2016	2017	2018	2019	2020
FMWD	1,745	1,807	2,218	2,229	1,810	2,141
% of Total Water Supply	**49%**	**49%**	**57%**	**57%**	**48%**	**51%**

3.5.2 GROUNDWATER PRODUCTION

From 2015 to 2020, CVWD has pumped groundwater ranging from 1,892 to more than 2,065 AF. The Basin was adjudicated in a court decision in 1979 and is administered by the ULARA Watermaster. A copy of the ULARA judgment is included in this UWMP as **Appendix A**. CVWD's prescriptive rights in the Basin are 3,294 AFY. To date, the

neighboring City of Glendale, as the only other Basin rights holder, has not pumped its full adjudication (3,856 AFY) in the Basin.

It is CVWD's goal to maintain full groundwater pumping capabilities in the Basin to pump its adjudicated right of 3,294 AF every year. Since the 2005 UWMP, CVWD implemented a long-term capital improvement program to continue rehabilitating its original 12 wells. In addition, CVWD has installed a new well (Well 16), which came online in 2016 and re-active Well 2, which came back online in 2019.

CVWD has a contract to lease water rights from GWP. The agreement, contained in **Appendix B,** allows CVWD to pump and purchase groundwater through the operation of GWP's Rockhaven Well (Well 16) and its existing infrastructure. CVWD began purchasing groundwater pumped from GWP's well in March 2016. Well 16 increased CVWD pumping rights up to 500 AFY.

Table 3.2 shows CVWD's recent groundwater production from the Basin in the past six years from 2015 to 2020.

Table 3.2: Amount of Groundwater Pumped Between 2015 - 2020 (AF)

Basin Name(s)	2015	2016	2017	2018	2019	2020
Verdugo Basin	1,844	1,624	1,351	1,376	1,824	1,933
GWP Well #16	0	344	347	279	141	142
Total Groundwater	1,844	1,968	1,699	1,655	1,964	2,075
% of Total Water Supply	**51%**	**52%**	**43%**	**43%**	**52%**	**49%**

3.5.3 2020 SUMMARY OF CVWD WATER SUPPLIES

Table 3.3 shows CVWD's water supplies and max total right / safe yield in 2020. As shown, CVWD does not utilize 100 percent of their full supply capabilities to meet their demands.

Table 3.3: CVWD Water Supplies in 2020 (AF) (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	from FMWD	2,141	Drinking Water	2,154
Groundwater (not desalinated)	CVWD Wells	1,933	Drinking Water	3,294
Groundwater (not desalinated)	Well #16 (GWP)	142	Drinking Water	500
Total		4,216		5,948

3.6 PROJECTED CLIMATE CHANGE IMPACTS TO SUPPLIES

Extensive research has been done on the future impacts due to climate change on the State of California. The state released its latest research on climate, called the California's Fourth Climate Change Assessment, detailing the potential impacts of climate change that affects California such as temperature, sea level rise, droughts, and wildfires. The assessment utilizes historic data and the latest computer models to analyze these potential impacts. Furthermore, the state provided public access to downscaled data, along with mapping and other visualization tools, found at Cal-Adapt. In respect to water resources, research shows that California has a highly variable climate and is susceptible to dry spells. Additionally, extended drought periods could become more pervasive in future decades. Utilizing the extended drought scenario tool on Cal-Adapt provided projections on impacts on CVWD caused by an early 21st century drought (2023–2042). These impacts include increased temperatures and decreases in precipitation, which are key components to take into consideration for water resources planning.

3.6.1 TEMPERATURE

Under an extended drought period scenario from 2023 to 2042, maximum and minimum temperatures are anticipated to increase as shown in **Figures 3.11** and **3.12**, respectively. As a result, average temperature increases range from 3.7°F to 4.7°F for minimum and maximum temperatures, respectively, as shown in **Table 3.4**.

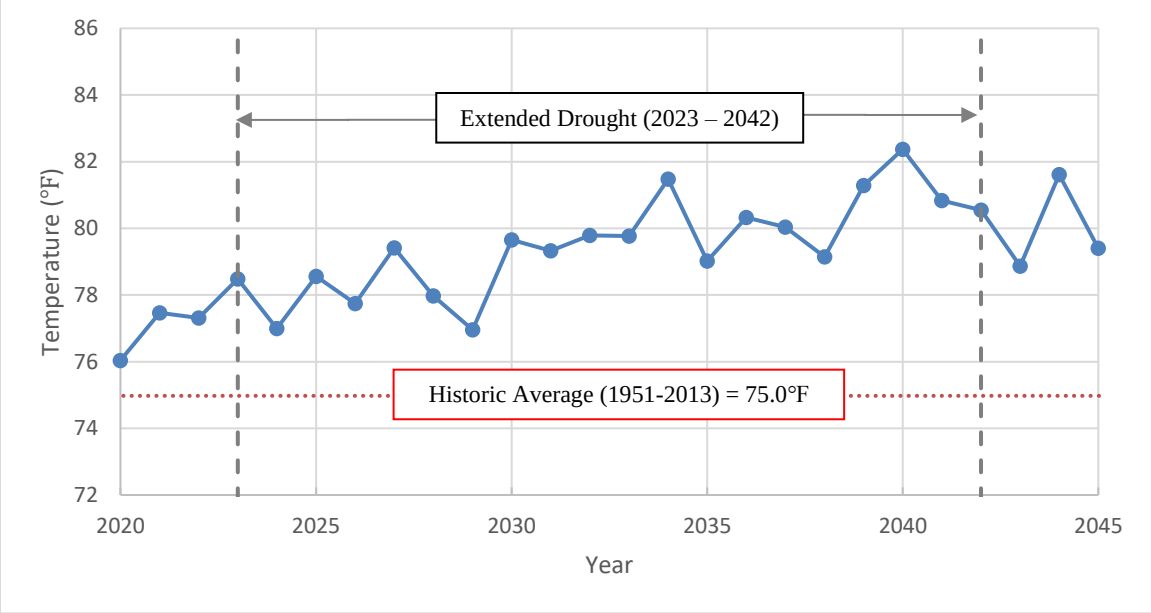


Figure 3.11: Extended Drought Scenario - Maximum Daily Average Temperatures

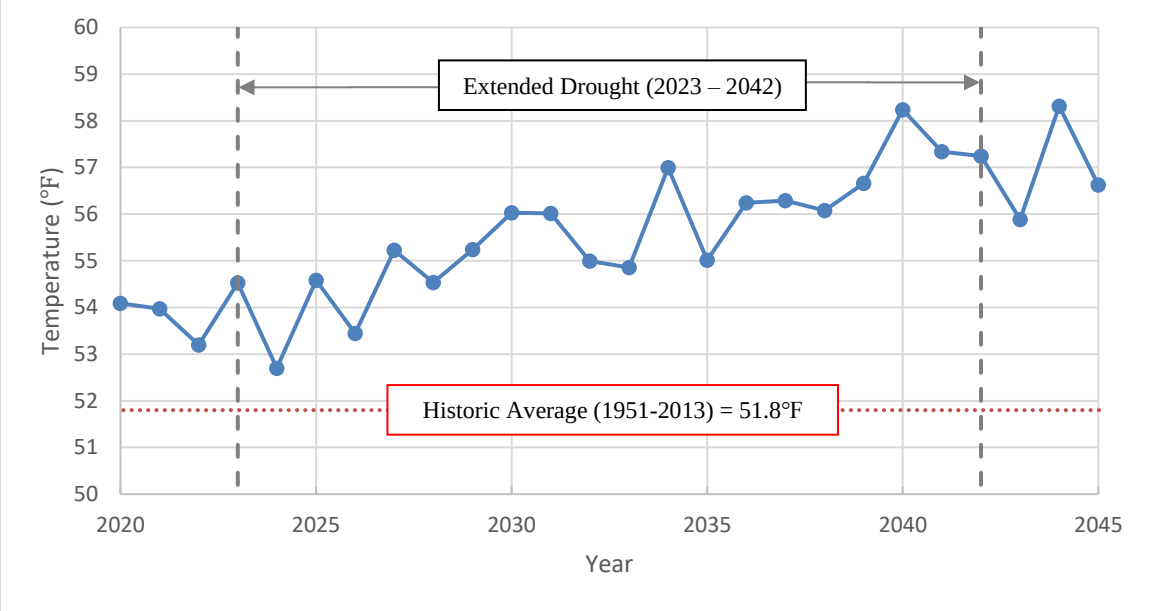


Figure 3.12: Extended Drought Scenario - Minimum Daily Average Temperatures

Table 3.4: Comparison Between Historic and Projected Min/Max Temperatures Under Extended Drought Scenario (2023 – 2042)

	Temperatures (°F)	
	Minimum	Maximum
Historic (1951-2013)	51.8	75.0
Projected (2023-2042)	55.5	79.2
Difference	+3.7	+4.2

3.6.2 PRECIPITATION & STORMWATER RUNOFF

Under an extended drought period scenario from 2023 to 2042, predicted precipitation shows multiple periods of below average annual precipitation as shown in **Figure 3.13**. This is also relating to reduced stormwater runoffs in a similar trend to precipitation as shown in **Figure 3.14**; however, the scenario projected several periods of significantly above average rainfall and runoff volume. **Table 3.5** compares the historical averages with the projected averages under the extended drought period scenario. Although it shows that there is an increase in runoff volume (ideal for stormwater collection), the average increase is driven by the isolated periods of intense storm events.

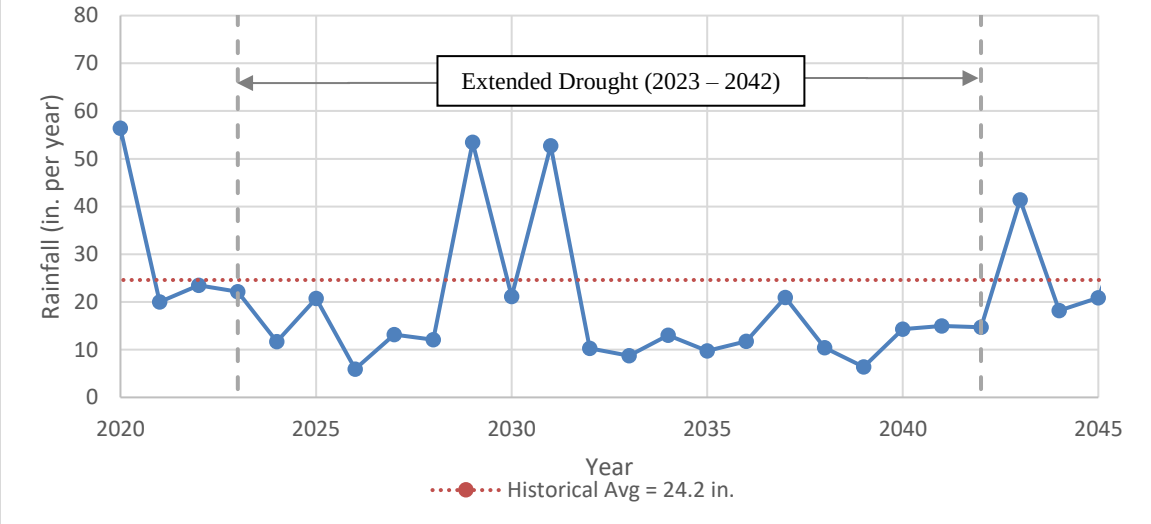


Figure 3.13: Extended Drought Scenario – Projected Annual Rainfall

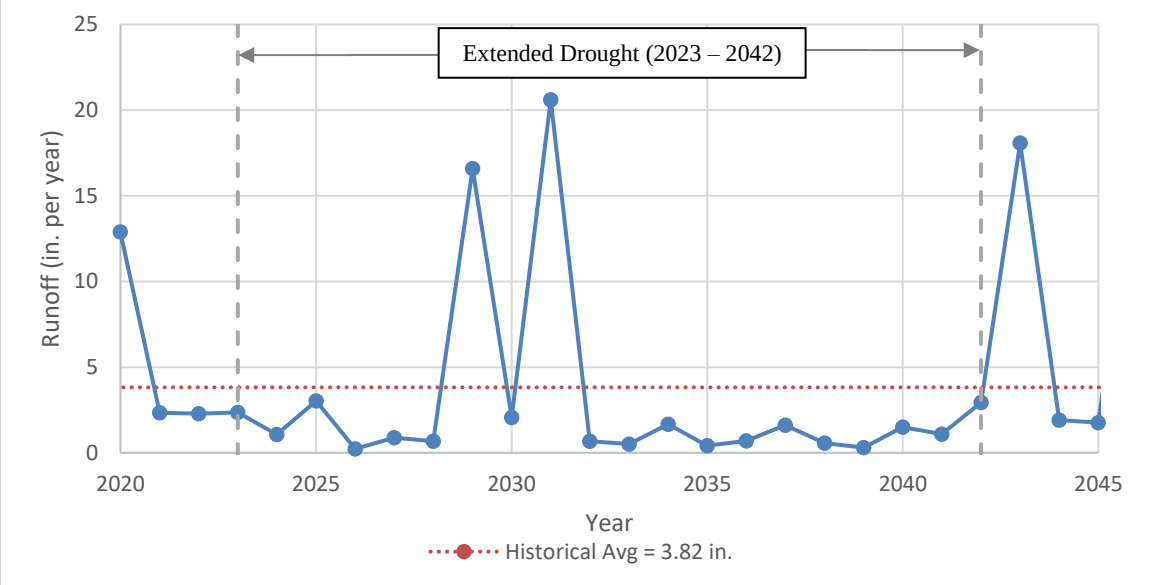


Figure 3.14: Extended Drought Scenario – Projected Annual Runoff

Table 3.5: Comparison Between Historic and Projected Rainfall & Runoff Under Extended Drought Scenario (2023 – 2042)

	Rainfall (in/yr)	Runoff (in/yr)
Historic (1951-2013)	24.2	3.82
Projected (2023-2042)	20.7	4.17
Difference	-3.5	+0.35

3.6.3 CLIMATE CHANGE IMPACTS TO CVWD'S WATER SUPPLIES

Climate data has been recorded in California since 1858. Since then, California has experienced several periods of severe drought: 1928-34, 1976-77, 1987-91, 2007-09, and most recently in 2012-15. California has also experienced several periods of less severe drought. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the Delta and are the source of water for the SWP. Southern California sustained few adverse impacts from the 1976-77 drought, but the 1987-91 drought created considerably more concern.

The drought of 2007-09 resulted in significant impacts on the state's water supplies. SBx7-7 was signed into law by Governor Schwarzenegger that requires mandatory water conservation up to 20 percent by 2020. The recent drought in 2012-15 brought a significant hit to the state's water supplies. The drought strained reservoir levels all across the state. **Table 3.6** compares the reservoir levels in October 2013 during the drought and in present day (February 2021). As shown, the majority of the state's reservoirs were all below average levels. To this day, California is still in a recovery stage from the recent droughts.

Table 3.6: California Reservoirs Level During Drought (2013) and Current (2021)

Reservoir	Drought Period (Oct. 30, 2013)	Current Levels (Feb. 9, 2021)	Historic Average
Trinity Lake	50%	51%	72%
Lake Shasta	38%	48%	70%
Lake Oroville	43%	36%	54%
New Melones Lake	43%	65%	108%
San Luis Reservoir	21%	54%	67%
Millerton Lake	54%	30%	47%
Perris Lake	45%	93%	114%
Castaic Lake	85%	77%	92%
Pine Flat Reservoir	16%	23%	47%
Lake McClure	25%	38%	77%
Don Pedro Reservoir	50%	68%	98%
Folsom Lake	30%	30%	57%

In January of 2014, Governor Brown declared a state of emergency and directed state officials to take all necessary actions to prepare for water shortages. As the drought prolonged into 2015, to help cope with the drought mitigation, Governor Brown issued an Executive Order in April 2015 that mandated a statewide 25 percent reduction in potable water use from a baseline year of 2013.

The effects of the drought was observed in CVWD's supplies as shown in **Figure 3.15**. Since 2011, CVWD's reliance on groundwater has decreased from 3,126 AF at the peak in 2012 to 2,033 AF in 2020 (a decrease of 1,092 AF). This is due to the significantly decreased groundwater elevations caused by the recent droughts. **Figures 3.16**, **3.17**, and **3.18** shows the groundwater elevation levels from ULARA's Hydrograph Wells 11, 13, and 14, respectively, obtained from the recent ULARA Annual Report (FY 17-18). The location of the hydrograph wells are shown previously on **Figure 3.7**. As shows, groundwater elevations have been an all time low compared to historic averages. As for supplies from FMWD, volumes maintained average around 1,900 AF. Imported supplies maintained to supplement for the reduced groundwater volumes to meet CVWD's demands.

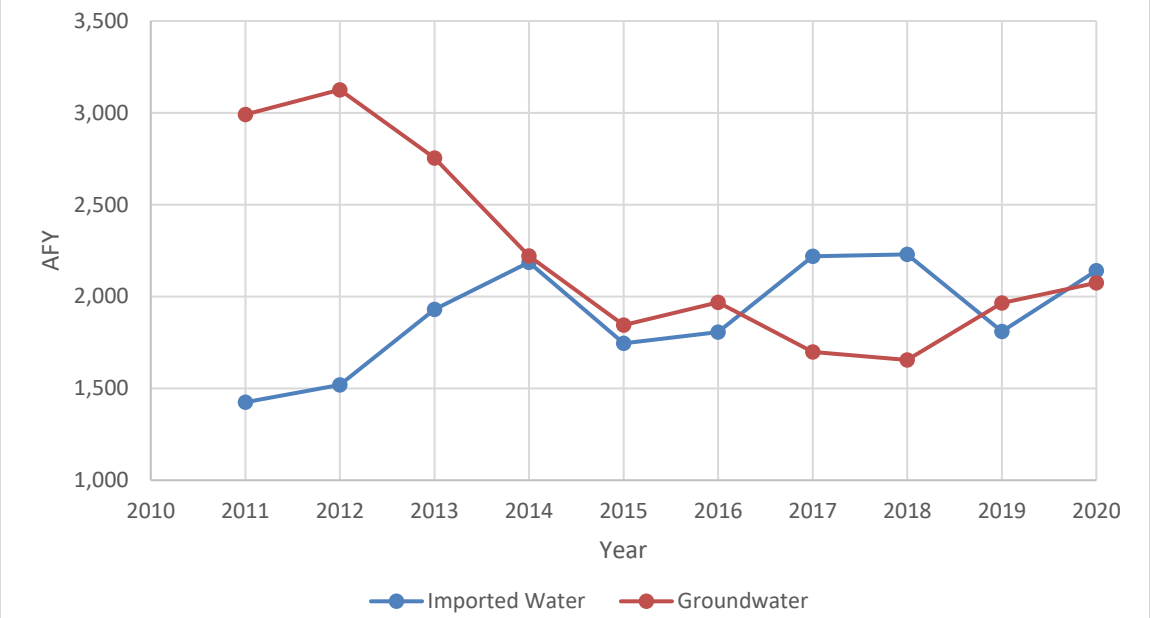


Figure 3.15: CVWD Imported and Groundwater Supplies (2011 - 2020)

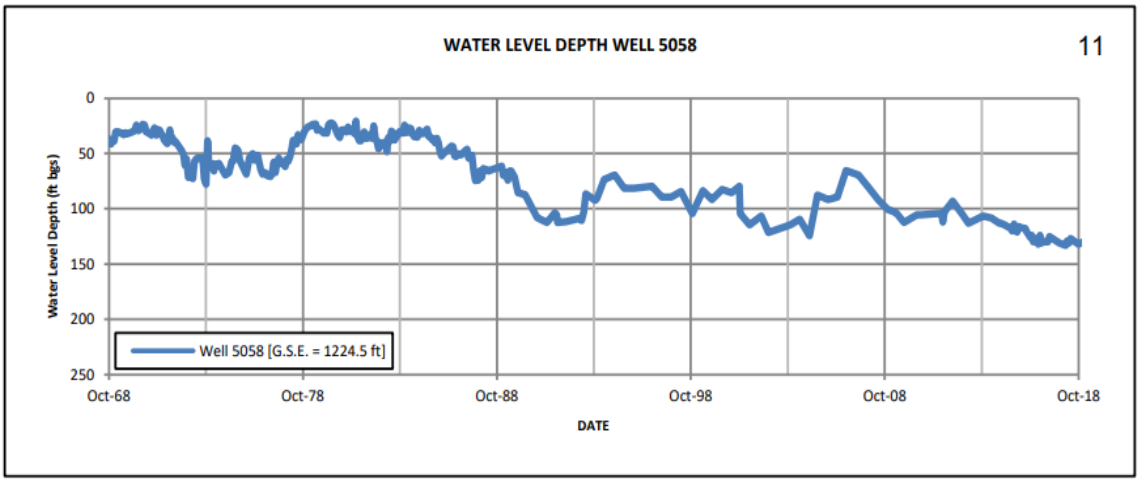


Figure 3.16: Hydrograph Well #11 Historic Groundwater Elevations

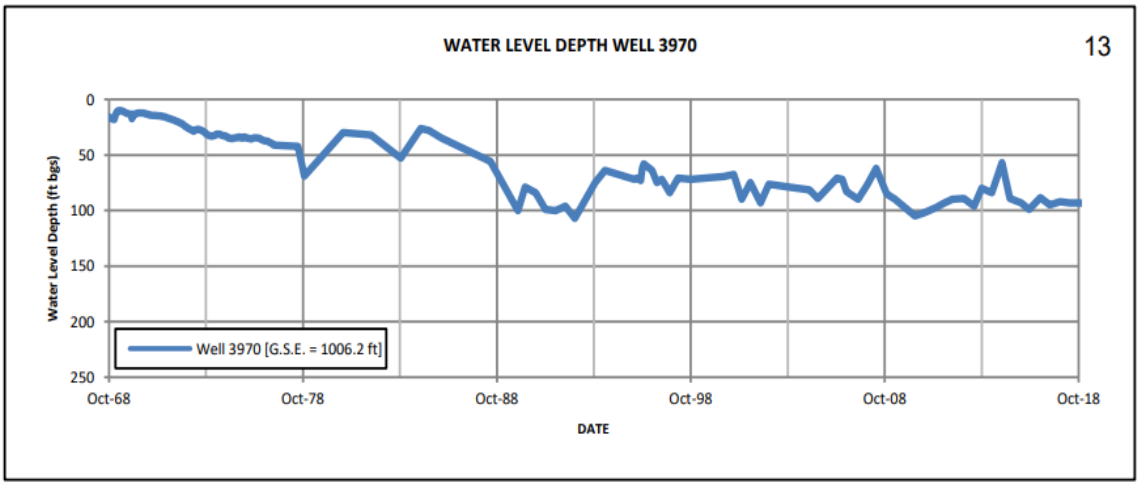


Figure 3.17: Hydrograph Well #13 Historic Groundwater Elevations

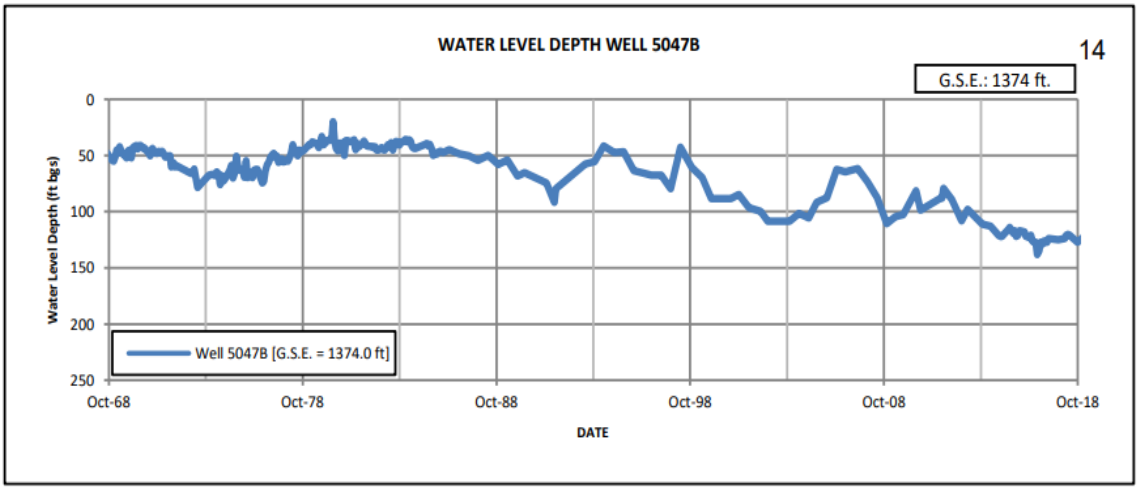


Figure 3.18: Hydrograph Well #14 Historic Groundwater Elevations

3.7 WATER SUPPLY PROJECTIONS

IMPORTED WATER SUPPLY PROJECTIONS

Based on MWD's supply projections that it will be able to meet full service demands under all three hydrologic scenarios, FMWD, CVWD's wholesale supplier concludes that it would also be able to meet the demands of its retail agencies under these conditions.

CWC section 10631(k) requires the wholesale agency to provide information to the urban retail water supplier for inclusion in its UWMP which identifies and quantifies the existing and planned sources of water available from the wholesale agency. **Table 3.7** indicates the wholesaler's water availability projections by source for the next 25 years as provided to CVWD by FMWD.

GROUNDWATER SUPPLY PROJECTIONS

Table 3.7 also shows the amount of groundwater projected to be pumped from the Basin by CVWD over the next 25 years. It also includes CVWD's projected amount of groundwater pumped from GWP's Rockhaven Well (Well #16). The projected amount of groundwater purchased from GWP over the next 25 years averages 300 AFY. In the past, various problems with CVWD's wells have hindered the amount that is able to be pumped. This is a contributing factor to CVWD's intention to embark on a well rehabilitation and development plan to increase reliance on local supplies over imported sources.

Table 3.7: Projected CVWD Water Supplies (AF) (2025 – 2045) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	MWD via FMWD	2,154	2,154	2,154	2,154	2,154
Groundwater (not desalinated)	CVWD Wells	3,294	3,294	3,294	3,294	3,294
Groundwater (not desalinated)	Well #16 (GWP)	300	300	300	300	300
	Total	5,748	5,748	5,748	5,748	5,748

3.8 SUPPLY VS DEMAND

3.8.1 MWD'S (AND SUBSEQUENTLY FMWD'S) SUPPLY OUTLOOK

COLORADO RIVER SUPPLIES

MWD's Colorado River Allocation continues to be a critical issue.

Water supply from the CRA continues to be a critical issue for Southern California as MWD competes with several agricultural water agencies in California for unused water rights to the Colorado River. Although California's allocation has been established at 4.4 MAF annually, MWD's allotment stands at 550,000 AFY with additional amounts increasing MWD's allotment to 842,000 AFY if there is any unused water from the agricultural agencies.

MWD recognizes that competition from other states and other agencies within California has decreased the CRA's supply reliability. In 2003, the Quantification Settlement Agreement (QSA) facilitated the transfer of water from agricultural agencies to urban uses. This historic agreement provides California the means to implement transfers and supply programs, which will allow California to live within the State's 4.4 MAF basic annual apportionment of Colorado River water.

Lake Mead, located on the Colorado River, is the largest reservoir in the United States. In 2015, it reached its lowest level since the 1930s when the reservoir first filled. As of March 18, 2021, the water level in Lake Mead measured 1,085.7 feet above mean sea level, which is 39 percent of capacity and only 11 feet above the level (1,075 feet) that would trigger a first-ever shortage declaration on the Colorado River.

STATE WATER PROJECT SUPPLIES

The reliability of the SWP affects the MWD member agencies' ability to plan for future growth and supply. DWR develops and releases The State Water Project Delivery Capability Report (DCR) where it provides updates and supply estimations on the SWP delivery capabilities. The latest edition of the report (2019 DCR) incorporates current regulatory requirements for the SWP, and utilizes climate change models from CalSim-II to project supply impacts and estimations.

On an annual basis, each of the 29 SWP contractors, including MWD, request an amount of SWP water based on their anticipated yearly demand. In most cases, MWD's requested

supply is equivalent to its full Table A amount. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on Northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, according to the 2019 DCR, the total SWP annual delivery of water to contractors ranged from 2009 to 2018 as shown in **Figure 3.19**. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A amount, but instead a percentage of that amount based on available supply.

Each December, DWR provides the contractors with their first estimate of allocation for the following year. As conditions develop throughout the year, DWR revises the allocations. Currently, the total contractor requested allocation for Table A water is 4.2 MAF. MWD initially requested 1.9 MAF, which is 45 percent of the total contractors' requests for Table A water. Due to the variability in supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors.

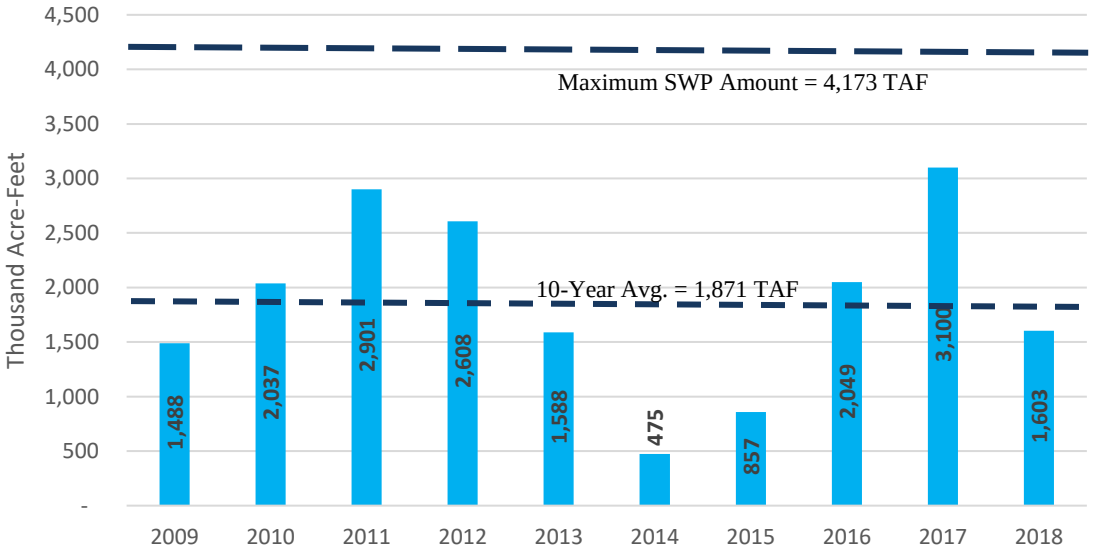


Figure 3.19: SWP Table A Deliveries (2009 - 2018)

With the state undergoing a second consecutive dry year, DWR has already taken the steps to prolong the SWP supplies. On March 2021, DWR decreased the allocation of 2021 SWP deliveries for the contractors from 422,848 AF to 210,266 AF. Based on the recent low amount of precipitation and runoff, and an assessment of overall water supply conditions, SWP supplies are projected to be 5 percent of most SWP contractor's 2021 requested Table A Amounts. This reduction decreased MWD's initial request from 1,911,500 AF to 95,575 AF.

STORAGE RESERVOIR SUPPLIES

Statewide, storage reservoir levels rise and fall due to seasonal climate changes, which induce increase in demand. During periods of drought, reservoir levels typically drop significantly and may limit the amount of supplies available. As a result, both DWR and MWD monitor reservoir levels regularly. Previously shown, **Table 3.6** compares the statewide reservoir levels during the recent drought period (2012-2015) with current levels (February 2021). **Figure 3.20** shows the MWD reservoir levels. As shown, the majority of the state's reservoirs were all at below average levels, and to this day, the state is still in a recovery stage from the recent droughts.

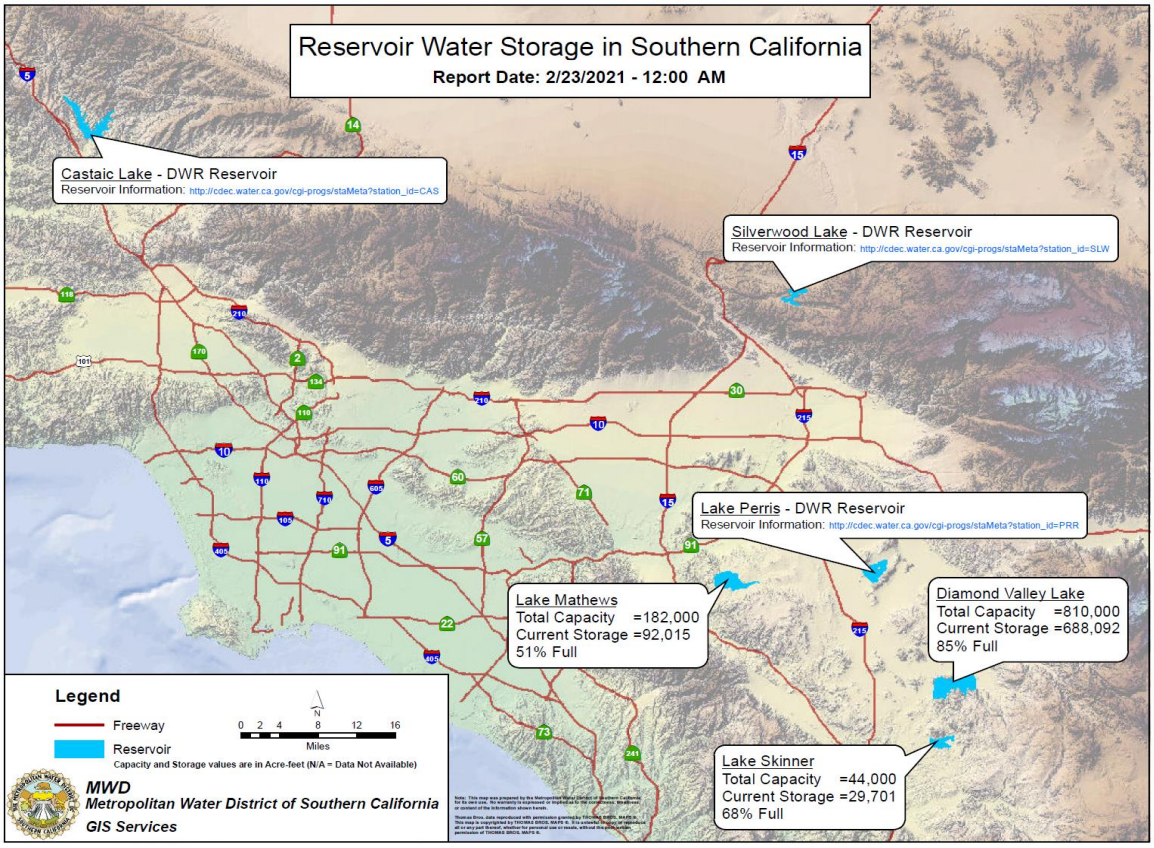


Figure 3.20: MWD Reservoir Levels (Feb. 2021)

3.8.2 MWD'S PROJECTED SUPPLY VS DEMAND COMPARISONS

MWD evaluated supply reliability by projecting supply and demand conditions for the single and multi-year drought cases based on conditions affecting the SWP (MWD's largest and most variable supply). For this supply source, the single driest-year was 1977, and the three-year dry period was 1990-1992. MWD's analysis illustrated in **Tables 3.8** and **3.9**, correspond to MWD's 2020 UWMP Tables 2-1, 2-2, 2-3, 2-4, 2-5, and 2-6. These tables demonstrate that the region can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year hydrologies.

Table 3.8: MWD Regional Imported Water Supply Reliability Projections
Average and Single Dry Years (AF) for 2025 to 2045

	Row	Region Wide Projections	2025	2030	2035	2040	2045
Supply	A	Projected Supply: Average Year	3,932,000	3,962,000	3,960,000	3,598,000	3,622,000
	B	Projected Supply: Dry Year	2,727,000	2,791,000	2,789,000	2,551,000	2,572,000
	C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	**69.4%**	**70.3%**	**70.4%**	**70.9%**	**71.0%**
Demand	D	Projected Average Year Demand	1,274,000	1,256,000	1,273,000	1,294,000	1,319,000
	E	Projected Dry Year Demand	1,402,000	1,387,000	1,408,000	1,431,000	1,457,000
	F=E/D	Projected Dry Year / Avg. Year (%)	**110.0%**	**110.4%**	**110.6%**	**110.6%**	**110.5%**
Surplus	G = A-D	Projected Surplus: Average Year	2,658,000	2,706,000	2,687,000	2,304,000	2,303,000
	H = B-E	Projected Surplus: Dry Year	1,325,000	1,404,000	1,381,000	1,120,000	1,115,000
Programs Under Dev.	I	Projected Capability of Programs (Average Year)	47,000	113,000	13,000	372,000	347,000
	J	Projected Capability of Programs (Dry Year)	0	0	0	0	0
Potential Surplus	K=A+I-D	Projected Surplus: Average Year	5,253,000	5,331,000	5,246,000	5,264,000	5,288,000
	L=B+J-E	Projected Surplus: Dry Year	4,129,000	4,178,000	4,197,000	3,982,000	4,029,000
Comparison	I = A/D	Projected Avg. Yr. Supply/Demand (%)	**308.6%**	**315.4%**	**311.1%**	**278.1%**	**274.6%**
	J = A/E	Projected Dry Yr. Supply/Demand (%)	**280.5%**	**285.7%**	**281.3%**	**251.4%**	**248.6%**

Table 3.9: MWD Regional Imported Water Supply Reliability Projections
Average and Multiple Dry Years (AF) 2025 to 2045

	Row	Region Wide Projections	2025	2030	2035	2040	2045
Supply	A	Projected Supply: Average Year	3,932,000	3,962,000	3,960,000	3,598,000	3,622,000
	B	Projected Supply: Multiple Dry Year	2,198,000	2,210,000	2,209,000	1,973,000	1,995,000
	C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	**55.9%**	**55.8%**	**55.8%**	**54.8%**	**55.1%**
Demand	D	Projected Average Year Demand	1,274,000	1,256,000	1,273,000	1,294,000	1,319,000
	E	Projected Dry Year Demand	1,412,000	1,414,000	1,435,000	1,457,000	1,484,000
	F=E/D	Projected Dry Year / Avg. Year (%)	**110.8%**	**112.6%**	**112.7%**	**112.6%**	**112.5%**
Surplus	G = A-D	Projected Surplus: Average Year	2,658,000	2,706,000	2,687,000	2,304,000	2,303,000
	H = B-E	Projected Surplus: Multiple Dry Year	786,000	796,000	774,000	516,000	511,000
Programs Under Dev.	I	Projected Capability of Programs (Average Year)	47,000	113,000	13,000	372,000	347,000
	J	Projected Capability of Programs (Multiple Dry Year)	10,000	0	0	235,000	213,000
Potential Surplus	K=A+I-D	Projected Surplus: Average Year	5,253,000	5,331,000	5,246,000	5,264,000	5,288,000
	L=B+J-E	Projected Surplus: Multiple Dry Year	4,129,000	4,178,000	4,197,000	3,982,000	4,029,000
Comparison	I = A/D	Projected Avg. Yr. Supply/Demand (%)	**308.6%**	**315.4%**	**311.1%**	**278.1%**	**274.6%**
	J = A/E	Projected Dry Yr. Supply/Demand (%)	**278.5%**	**280.2%**	**276.0%**	**246.9%**	**244.1%**

3.9 CVWD'S SUPPLY RELIABILITY

3.9.1 OVERVIEW

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years. CVWD depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure that it has adequate supplies.

3.9.2 IMPORTED WATER RELIABILITY

MWD is participating in the development of groundwater, groundwater recovery, recycled water systems, desalination opportunities, and collection of urban return flows to augment the reliability of the imported water system. There are various factors that may impact reliability of supplies, such as legal, environmental, water quality, and climatic, which are discussed below. The water supplies are projected to meet full-service demands; MWD's 2020 UWMP finds that MWD is able to meet with existing supplies full service demands of its member agencies in 2025 through 2045 during normal years, single dry year, and multiple dry years.

MWD's 2015 Integrated Water Resources Plan (IRP) update describes the core resource strategy used to meet full-service retail demands under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of MWD's resource strategy for achieving regional water supply reliability consists of developing and implementing water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources, such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements. FMWD is reliant on MWD for all of its imported water. With the addition of planned supplies under development, MWD's 2020 UWMP finds that MWD will be able to meet full-service demands from 2025 through 2045, even under a repeat of the worst drought. **Table 3.10** shows the reliability of the MWD's supply for single dry year and multiple dry year scenarios. MWD's single dry year is based on the drought in 1977. MWD's five-consecutive dry years is based on from 1988 to 1992, which represents as the driest five-

Table 3.10: MWD Supply Reliability
Single & Multiple Dry Years

		Base Year	Percent Available
Average Year		1922 - 2017	100%
Single Dry Year		1977	100%
Multiple Dry Years	Year 1	1988	100%
	Year 2	1989	100%
	Year 3	1990	100%
	Year 4	1991	100%
	Year 5	1992	100%

consecutive year historic sequence for MWD's water supply. In addition to meeting full-service demands from 2025 through 2045, MWD projects reserve and replenishment supplies to refill system storage.

3.9.3 FACTORS CONTRIBUTING TO CVWD'S IMPORTED WATER SUPPLY RELIABILITY

The Act requires a description of the reliability of the water supply and vulnerability to seasonal or climatic shortage. The following are some of the factors identified by MWD which may have an impact on the reliability of MWD supplies.

Environment - Endangered species protection needs in the Sacramento-San Joaquin River Delta have resulted in operational constraints to the SWP system. The Bay-Delta's declining ecosystem caused by agricultural runoff, operation of water pumps, and other factors has led to historical restrictions in SWP supply deliveries. SWP and CVP delivery restrictions due to the biological opinions have reduced SWP and CVP supplies by approximately 5.2 MAF since in 2008.

Legal - Listings of additional species under the Endangered Species Act and new regulatory requirements could further impact SWP operations by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations. Additionally, any challenges to the QSA in the court systems may have impacts on the Imperial Irrigation District and San Diego County Water Authority transfer. If there are negative impacts, San Diego could become more dependent on the Metropolitan supplies. One such challenge was settled in 2013 upholding the validity of the QSA.

Water Quality - Water imported from the CRA contains high levels of salts. The operational constraint is that this water needs to be blended with SWP supplies to meet the target salinity of 500 mg/L of TDS. Another water quality concern is related to the quagga mussel. Controlling the spread and impacts of quagga mussels within the CRA requires extensive maintenance and results in reduced operational flexibility.

Climate Change - Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning even more challenging. The areas of concern for California include the reduction in Sierra Nevada snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of levee failure.

Legal, environmental, and water quality issues may have impacts on MWD supplies. It is believed, however, that climatic factors would have more of an impact than the others. Climatic conditions have been projected based on historical patterns; however, severe pattern changes may occur in the future. **Table 3.11** shows the factors that may affect inconsistency of supply. These and other factors are addressed in greater detail in MWD's 2020 UWMP.

Table 3.11: Factors Which May Affect Inconsistency of Supply

Name of Supply	Legal	Environmental	Water Quality	Climatic
State Water Project	✓	✓	✓	✓
Colorado River			✓	✓

3.9.4 CVWD'S PROJECTED SUPPLY VS DEMAND COMPARISONS

To project future supply and demand comparisons, it will be assumed that demand will increase annually based on population growth and a constant of 107.7 GPCD in accordance with SBx7-7 requirements. During times of drought, however, demand will increase at a time when supply will decrease. **Table 3.12** outlines the various base years and demand increases to project during single and multiple dry drought periods. **Tables 3.13** to **3.19**, shown on the following pages, provide an analysis of CVWD's supply and demand projections.

Table 3.12: CVWD Demand during Single & Multiple Dry Years

		Base Year	Percent Increases
Single Dry Year		2013-2015	111%
Multiple Dry Years	Year 1	2011	115%
	Year 2	2012	121%
	Year 3	2013	122%
	Year 4	2014	115%
	Year 5	2015	95%

Based on the data contained in **Tables 3.13** to **3.19**, CVWD can expect to meet future demands through 2045 for all climatologic classifications. Projected groundwater supply capacities are not expected to be significantly affected during times of low rainfall and over short-term dry periods of up to three years; however, during prolonged periods of drought, CVWD's imported water supply capacities may potentially be reduced significantly due to reductions in MWD's storage reservoirs resulting from increases in regional demand.

Table 3.13: CVWD's Water Supply Availability & Demand Projections - Normal Water Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		32,974	33,494	34,022	34,558	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
Demand	**Total Normal Demand**	**3,979**	**4,041**	**4,105**	**4,170**	**4,236**
	% of 2015-2020 Avg. Demand (3,869)	103%	104%	106%	108%	109%
Supply/Demand Comparison	Supply/ Demand Difference	1,769	1,707	1,643	1,578	1,512
	Supply/Demand (%)	144%	142%	140%	138%	136%

Table is intended only to show CVWD has the capacity to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (SBx7-7) multiplied by population projections shown above.
2. Imported Water Supply represents supply available to CVWD, if needed, based on the CVWD's FMWD's Tier 1 Limit of 2,154 AFY.
3. Groundwater Supplies based on the CVWD's adjudicated rights of 3,294 AF and 300 AF from Glendale during a normal year.

**This Table not intended to be a projection of CVWD's actual groundwater production or FMWD planned purchases. Amounts are based on FMWD's Tier 1 Limit and their Total Pumping Rights.*

**This Table is not intended to be a projection of CVWD's actual demand. Demand of 107.7 GPCD is based on average water demands from 2015 - 2020. Actual demand may be above or below the 107.7 GPCD in accordance with water usage needs in the service area.*

Table 3.14: CVWD's Water Supply Availability & Demand Projections - Single Dry Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		32,974	33,494	34,022	34,558	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,412**	**4,481**	**4,552**	**4,624**	**4,697**
	Normal Year Demand	3,979	4,041	4,105	4,170	4,236
	% of Normal Year	111%	111%	111%	111%	111%
Supply/Demand Comparison	Supply/Demand Difference	1,336	1,267	1,196	1,124	1,051
	Supply/Demand (%)	130%	128%	126%	124%	122%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by single dry year increase of 111%

2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

Table 3.15: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2021 – 2025) (AF)

		2021	2022	2023	2024	2025
Water Service Area Population		32,564	32,666	32,768	32,871	32,974
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,531**	**4,781**	**4,836**	**4,565**	**3,789**
	Normal Year Demand	3,929	3,942	3,954	3,966	3,979
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,217	967	912	1,183	1,959
	Supply/Demand (%)	126.8%	120.2%	118.9%	125.9%	151.7%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

Table 3.16: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2026 – 2030) (AF)

		2026	2027	2028	2029	2030
Water Service Area Population		33,077	33,181	33,285	33,389	33,494
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,603**	**4,857**	**4,912**	**4,637**	**3,849**
	Normal Year Demand	3,991	4,004	4,016	4,029	4,041
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,145	891	836	1,111	1,899
	Supply/Demand (%)	125%	118%	117%	124%	149%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

Table 3.17: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2031 – 2035) (AF)

		2031	2032	2033	2034	2035
Water Service Area Population		33,599	33,704	33,810	33,916	34,022
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,676**	**4,933**	**4,989**	**4,710**	**3,910**
	Normal Year Demand	4,054	4,067	4,080	4,092	4,105
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	1,072	815	759	1,038	1,838
	Supply/Demand (%)	123%	117%	115%	122%	147%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

Table 3.18: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2036 – 2040) (AF)

		2036	2037	2038	2039	2040
Water Service Area Population		34,129	34,235	34,343	34,450	34,558
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,749**	**5,011**	**5,068**	**4,785**	**3,972**
	Normal Year Demand	4,118	4,131	4,144	4,157	4,170
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	999	737	680	963	1,776
	Supply/Demand (%)	121%	115%	113%	120%	145%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.

2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

Table 3.19: CVWD's Water Supply Availability & Demand Projections - Multiple Dry Years (2041 – 2045) (AF)

		2041	2042	2043	2044	2045
Water Service Area Population		34,667	34,775	34,884	34,994	35,103
Supply	Imported Water	2,154	2,154	2,154	2,154	2,154
	Groundwater	3,594	3,594	3,594	3,594	3,594
	Total Supply	**5,748**	**5,748**	**5,748**	**5,748**	**5,748**
	Normal Year Supply	5,748	5,748	5,748	5,748	5,748
	% of Normal Year	100%	100%	100%	100%	100%
Demand	**Total Dry Demand**	**4,824**	**5,090**	**5,148**	**4,860**	**4,034**
	Normal Year Demand	4,183	4,196	4,209	4,222	4,236
	% of Normal Year	115%	121%	122%	115%	95%
Supply/Demand Comparison	Supply/Demand Difference	924	658	600	888	1,714
	Supply/Demand (%)	119%	113%	112%	118%	142%

Table is intended only to show CVWD will be able to meet demand for all years per the following*:

1. Total Demand based on 107.7 GPCD (2015-2020 average demand) multiplied by population projections shown above and by multiple dry year increases of 115%, 121%, 122%, 115%, and 95%.
2. All other items derived in similitude to Table 3.13.

**See notes below Table 3.13 for explanation of groundwater supply / overall demand.*

3.10 ENERGY INTENSITY

3.10.1 OVERVIEW

New to the 2020 UWMP, it is required that every urban water supplier assess the energy required to distribute their water supply to their consumers or member agencies. The water supplier's energy intensity is required for to the preparation of an UWMP, as defined in CWC Section 10631.2(a). Energy intensity vary with climate, topography, source characteristics, proximity, and other factors. Therefore, urban water suppliers face issues related to the economic costs of the energy required for their operations, as well as issues related to the sustainable supply of energy and water. Knowing how much energy is needed to deliver water to customers is important because of its significance for the State's total energy demands, and for its implications regarding greenhouse gas (GHG) emissions and climate goals for the region and state.

This Section includes an assessment of the energy intensity of the water supply operation for FMWD. Energy is required for the pumping, conveyance, treatment and distribution of water, and for collection, treatment, and discharge of wastewater, and/or conveyance and distribution of recycled water. **Figure 3.21** illustrates a typical water use diagram.

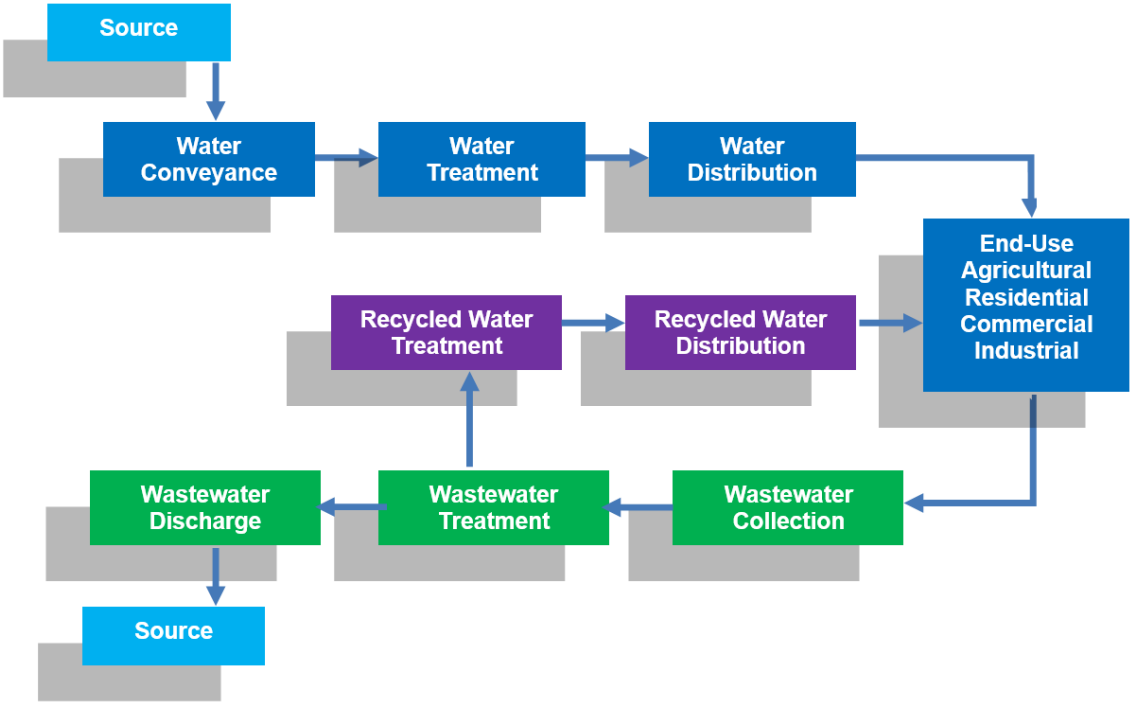


Figure 3.21: Typical Municipal Water Use Diagram

Energy intensity in respect to water supplies is a measure of unit energy consumption an urban water supplier expends per AF to convey water from the point where the supplier acquires the water to the point of delivery. Energy for public water and wastewater services are measured in kilowatt-hours of electricity, which is then normalized by water volume to express energy intensity in kilowatt-hour per acre-feet (kWh/AF).

Some of the main differences between energy use associated with various water supply sources are the distances the water must be transported from its origins (the amount of pumping necessary to harvest and distribute the water) and the location of treatment facilities in relation to the end users, among others.

3.10.2 Water Use and Energy Relationship

Energy production can emit a number of different types of Greenhouses Gas (GHGs). California's Air Resources Board recognizes that energy production accounts for between 30 and 40 percent of total GHG production in California, and include the following inventory of GHGs: Carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF3). These GHGs vary in magnitude in terms of their GHG strength, and therefore are converted to be equivalent to CO2 for the purposes of measuring GHG emission across the state. CO2 emissions (or the equivalent for other GHGs) are the common measurement for GHG emissions. Currently, statewide water uses accounts for nearly 20 percent of electricity use, and 30 percent of non-power plant related natural gas consumption. Water use and energy are linked in at least three critical ways:

- *Water pumping and purification*: The amount of energy used to pump water will depend upon the source (e.g., surface versus groundwater), the distance and height the water must be moved, and treatment requirements.
- *Wastewater treatment*: The amount of energy used in wastewater treatment plant typically ranges from 1,100 to 4,600 kWh per million gallons of wastewater treated.
- *Water heating*: In an average California home, 41 percent of the water is used for dishwashing, faucets, laundry, and bathing water that is often heated.

These amounts, in total, are so significant that one must also count the amount of GHGs from the fossil fuels that are burned to produce the oil, gas, coal and other combustibles which are then burned to produce the electricity. CVWD understand the water-energy nexus and aims to conserving water saves the energy that would have been used to convey, treat, and distribute the water. Reducing the energy consumption in water operations leads to the decreases production of GHGs.

3.10.3 Energy Usage and Intensity

In order to determine energy use related to water supply processes under CVWD's operational control, CVWD collected billing and energy quantity data provided by Southern California Edison (SCE) and GWP for 2020 (January 1, 2020 to December 31, 2020) representing the comprehensive one-year reporting period. The billing amounts for each facility were converted to an energy use quantity measured in kilowatt hours (kWh) for electricity. **Table 3.20** summarizes the energy intensity for CVWD. As shown, nearly 4.3 million kWh of energy was used to deliver over 4,216 AF of potable water. This equates to an energy intensity of 1,019.4 kWh/AF. DWR requires the reporting of energy intensity as kWh per million gallons (kWh/MG). Therefore, CVWD's energy intensity is 3,128.6 kWh/MG.

Table 3.20: CVWD Total Energy Intensity (DWR Table O1-B)

Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/31/2020			
☐ Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
Water Volume Units Used	*AF*	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		*4216*		*4216*
Energy Consumed (kWh)		*4297984*		*4297984*
Energy Intensity (kWh/vol. converted to MG)		*3128.6*	*#DIV/0!*	*3128.6*

SECTION 4: CONSERVATION MEASURES

2020 URBAN WATER MANAGEMENT PLAN

SECTION 4 CONSERVATION MEASURES

4.1 OVERVIEW

As a result of diminished existing supplies and difficulty in developing new supplies, water conservation is important to Southern California's sustainability. In Water Year 2018-2019, Governor Brown signed SB 606 and AB 1668 into law. The legislation required DWR, the State Water Resources Control Board (SWRCB), and three other state agencies to develop a long-term water conservation framework to "*make conservation a California way of life.*" In order to conform to the Water Action Plan, including meeting the SBx7-7 target (20 percent by 2020), many water agencies had to re-examine traditional conservation programs. Agencies statewide acknowledge that efficient water use is the foundation of its current and future water planning and operations policies.

As the California Urban Water Conservation Council (CUWCC) disbanded, MWD worked with other California water agencies to form the California Water Efficiency Partnership (CalWEP). CalWEP's mission is to maximize urban water efficiency and conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building collaborative approaches and partnerships. The CUWCC (now CalWEP) drafted the Memorandum of Understanding Regarding Urban Water Conservation (MOU) in 1991. At that time, the MOU established 14 Best Management Practices (BMPs) which define policies, programs, practices, rules, regulations, or ordinances that result in the more efficient use or conservation of water. Eventually the original 14 BMPs were diminished to 5 BMPs as shown in **Section 4.1.1**.

This section of the UWMP satisfies the requirements of § 10631 (f) & (j) of the CWC and describes how CVWD implements each applicable BMP and how CVWD evaluates the effectiveness of the BMPs. This section also provides an estimate of existing conservation savings where information is available.

4.1.1 CalWEP BMPS

The updated CalWEP BMPs from 2015 will still be in effect for the 2020 UWMP. The BMPs are:

- ***BMP 1**: Utility Operations*
- ***BMP 2**: Public Education & Outreach*
- ***BMP 3**: Residential Programs*
- ***BMP 4**: Commercial, Institutional, & Industrial Programs*
- ***BMP 5**: Landscape Programs*

4.2 CVWD CONSERVATION PROGRAMS

CVWD recognizes the importance of water conservation and has made water use efficiency an integral part of water use planning. In 2012, CVWD became a signatory to the CUWCC (now CalWEP) by signing the MOU. As a member of CalWEP, CVWD is required to submit Bi-Annual Reports to CalWEP which document the implementation of each BMP. As Signatory to the CalWEP MOU, CVWD has committed to use good-faith efforts to implement all applicable BMPs. CVWD has maintained compliance with the BMPs since becoming a signatory. CVWD actively implements all of the measures with good faith effort by achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition as described in the MOU. Water conservation is an integral part of the CVWD's water policies.

CVWD, in conjunction with FMWD and MWD, plays an active role in promoting water use efficiency in its service area. To this end, CVWD established Water Conservation Program (Phase I), which was adopted by the Board of Directors in April 2015 as Resolution No. 682, originally adopted in 2009. On May 2017, CVWD amended Resolution No. 681, which adopted a water conservation alert system. To this day, CVWD is continuously working with FMWD and MWD towards implementing the BMPs through means of various conservation measures.

Table 4.1 on the following page provides a status overview of CVWD's Conservation Measures.

Table 4.1: Conservation Measures

BMP	Description
BMP 1: Utility Operations	*Deals with water waste prohibitions, water efficiency ordinances, metering, conservation pricing, and other items related to managing water use.*
BMP 2: Public Education & Outreach	*Deals with outreach efforts including emails, newsletters, advertisements, presentations, promotions, etc. related to outreach & education.*
BMP 3: Residential Programs	*Deals with showerheads, faucets, toilets, turf removal, and leak detection surveys related to residential water use.*
BMP 4: Commercial, Industrial, & Institutional Programs	*Deals with toilets, urinals, steamers, cooling towers, food/restaurant equipment, medical equipment, and items related to commercial, institutional, and industrial water use.*
BMP 5: Landscape Programs	*Deals with establishing parameters for large landscapes, including measurements, budgets, audits, prohibitions, incentives, etc., related to large landscapes.*
Other	Any additional BMPs supported by CVWD are listed on the following pages.

4.2.1 BMP 1: UTILITY OPERATIONS

This CalWEP BMP deals with water waste prohibitions, water efficiency ordinances, metering, conservation pricing, and other items related to managing water use.

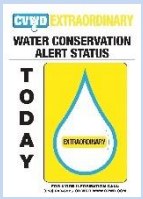
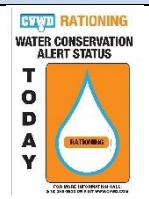
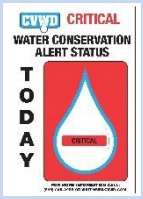
WATER WASTE PROHIBITION ORDINANCE

CVWD adopted Water Conservation Alert System (Resolution No. 681) and Water Conservation Program (Phase I) (Resolution No. 682) as water conservation ordinances.

Figure 4.1: Water Waste is Prohibited by District Ordinance

Water Conservation Alert System – The Water Conservation Alert System has been amended as a Phase II of the goal to reduce the risk and severity of water shortages and to notify its customers of the current conservation stage. The stages are color coded and described in **Table 4.2** on the following page.

Table 4.2: Water Conservation Alert System Codes

Alert Sign	Code	Description (as mentioned in Res. No. 681)
	Blue	Color Code "Blue" is defined as the Normal Water Conservation Alert, FMWD can meet all Member Agency demands. Standard water conservation applies as defined in Appendix G of CVWD's Rules and Regulations. **Currently (2021), CVWD has issued this alert as its current conservation status.**
	Green	Color Code "Green" is defined as an Increased Voluntary Conservation Alert, some supplies have been impacted and customers should increase efforts to conserve by following strict water conservation practices indoors and limiting outdoor water use to odd or even days, based on ending number of customer address.
	Yellow	Color Code "Yellow" is defined as an Extraordinary Conservation Alert, when MWD is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers. Customers are requested to minimize indoor water use and water outdoors no more than three (3) days per week. Outdoor irrigation will be permitted only on Tuesday, Thursday, and Saturday.
	Orange	Color Code "Orange" is defined as a Rationing Conservation Alert, when MWD has implemented its allocation plan to its member agencies. Customers are requested to minimize indoor water use and severely limit outdoor water use as further detailed in Appendix G of CVWD's Rules and Regulations.
	Red	Color Code "Red" is defined as a Critical Water Conservation Alert, when water supplies are drastically reduced. Customers are requested to minimize indoor water use and water outdoors no more than one (1) day per week.
	Purple	Color Code "Purple" is defined as an Emergency Water Conservation Alert, when water supplies are only available for health and safety needs. Customers are requested to minimize indoor water use and curtail all outdoor water use.

Water Conservation Program (Phase I) – The Water Conservation Program (Phase I) was amended in April 2015 stating waste water prohibitions to its customers. The prohibitions apply to the following:

- Water hose usage
- Leaks
- Windy and rainy days
- Construction water restrictions
- Hotels/Motels
- Prohibiting outdoor watering during or 48 hours following a rain event
- Overspray and Runoff
- Irrigation Times
- Vehicle Washing
- Fire hydrants
- Reporting of waste water
- New Development
- Fountains
- Hand Watering
- Swimming pools
- Drinking water
- Pre-rinse spray valve

A detailed description of each prohibition is shown in **Section 5**.

CVWD Rules and Regulations contain a Water Waste Prohibition Policy allowing termination of water service to customers who do not comply with a notice to remedy their wasteful practice. Additionally, the Rules and Regulations contain a leak repair policy whereby a financial incentive (one-time bill adjustment) is provided for customers who promptly fix internal/external plumbing leaks. The aforementioned sections of the Rules & Regulations are included in **Appendix C**.

The CVWD staff works cooperatively with property owners to reduce water waste. CVWD's billing software automatically flags high usage thresholds from meter reading data for additional staff follow-up. Also, CVWD's field staff reports all visible water waste situations observed to Customer Service for additional follow-up by CVWD's staff.

CVWD has not conducted an evaluation of the water savings attributable to this BMP.

METERING

All CVWD water accounts are metered and billed bi-monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly stated as a unit. The water rate structure is a three-tier increasing block rate. A summary of the water rates is shown in **Table 4.3**.

CVWD began working on the Water Meter Replacement Program in 2012 to replace 3/4" & 1" water meters that were beyond their useful life with new "Smart Meters". The plan was to replace 4,000 meters from FY 12/13 to FY 15/16. CVWD's field crews completed this task and continue to replace meters. To date, 5,212 meters have been replaced.

CVWD is currently applying for grants to fund replacement of the lager sized water meters.

The "Smart Meter" that CVWD chose to replace the older meters with was the Sensus iPERL meter. The iPERL meter offers low flow accuracy with high flow durability. The innovative magnetic technology allows for the capture of previously unmeasured low flow and drives additional revenue for the utility. The meter is 100 percent lead-free with no moving parts and maintains its accuracy over a 20-year lifetime. The iPERL has Advance Metering Infrastructure (AMI) connectivity and 14 conditions. Diagnostic and lifetime alarms allow for quick resolution to issues experienced in the field.

Figure 4.2: Water Meter with AMI Technology

In August 2020, CVWD awarded a consulting contract to UtiliWorks Consulting, Inc. (UtiliWorks) to provide professional services in assisting CVWD for the procurement and installation of the AMI Communications Network as the next phase towards CVWD having a fully function AMI system.

CVWD is currently under contract with Aqua-Metric for the procurement and installation of the AMI Communication Network project to be completed by the end of 2021.

CONSERVATION PRICING

All of CVWD's utility water accounts are metered and billed bi-monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly abbreviated as a unit.

CVWD does not have a way of measuring wastewater directly from a residential unit to the sewer, so to get a reasonable estimate of the amount of flow for wastewater, CVWD bases it on a customer's average water use during the winter months (December through March). Most water during the winter is used indoors and goes into the sewer system. Typically, outdoor irrigation is minimal during the winter months.

CVWD calculates your bimonthly wastewater charge based on the previous year average winter-time water use (i.e., 2021 wastewater charge will be based on December 2019 to March 2020 average winter-time water use) and it will remain in effect for a full year (from July 2021 to June 2022). In July of each year, your bimonthly wastewater charge will be recalculated based on the previous year average winter water use.

The new rate structure was implemented in the 2016/2017 fiscal year and was developed as part of a cost-of-service study and reflects the cost of providing wastewater service to individual residences.

CVWD offers a Low-Income Program to qualifying residents where a 20 percent discount on a combined bill for water (up to 26 units), wastewater and/or wastewater standby charges. This program may be modified or terminated without prior notice and is provided to qualified customers on a first-come, first-served basis until the program funds are no longer available.

CVWD has not conducted an evaluation of the water savings attributable to this BMP, however, CVWD will continue to make customers aware of the rate structure and use it as a tool to affect water conservation.

Since the 2015 UWMP, CVWD has increased their rates towards efforts of water conservation. **Table 4.3** below provides a summary of CVWD's water and sewer rate structures. **Table 4.4** provides a summary of the rates stated in the 2015 UWMP for comparison.

Table 4.3: Current Water & Sewer Rates (as of 09/01/2019)

Sector	Water		Sewer	
	Rate Structure	Rate	Rate Structure	Rate
Single-Family	Tier 1: 0 – 10 Units	$5.17/Unit	--	Bi-Monthly: $47.79 $1.93/Unit
	Tier 2: 11 – 26 Units	$8.14/Unit		
	Tier 3: 27+ Units	$12.27/Unit		
Multi-Family	>0 Units	$7.33/Unit	--	Bi-Monthly: $31.25 $2.15/Unit
Commercial / Institutional	>0 Units	$7.33/Unit	Customer Charge	Bi-Monthly: $0
			Quantity Charge per 1,000 gal of water use	Bi-Monthly: $5.10
			Minimum Charge for Each User	Bi-Monthly: $31.25
Schools	Elementary Schools	7.33	Elementary Schools	$84.86 per 100 ADA[1]
	Middle Schools	7.33	Middle Schools	$169.73 per 100 ADA
	High Schools	7.33	High Schools	$254.59 per 100 ADA Customer Charge: $31.25
Irrigation	Tier 1: 0 – 80 Units	$5.66/Unit	Not Applicable	Not Applicable
	Tier 2: 81+ Units	$10.89/Unit		

[1] ADA = Average Daily Attendance

Table 4.4: Past Water & Sewer Rates on 2015 UWMP

Sector	Water		Sewer	
	Rate Structure	Rate	Rate Structure	Rate
Single-Family	Tier 1: 1 – 10 Units	$4.61/unit	Flat Rate	$67.50/Mo
	Tier 2: 11 – 33 Units	$5.96/unit		
	Tier 3: 34 – 50 Units	$8.50/unit		
	Tier 4: 51 + Units	$11.39/unit		
Multi-Family	> 0 Units	$5.96/Unit	Flat Rate	$67.50
Commercial / Institutional	> 0 Units	$5.96/Unit	Customer Charge	$2.10
			Quantity Charger per 1000 Gal of Water Usage	$5.50
			Minimum Charge for Each Commercial User	$67.50
Schools	Primary Schools based on Average Daily Attendance	$4.53/unit	Primary Schools based on Average Daily Attendance	$81.00/100 students
			Customer Charge	$2.10
	Secondary Schools based on Average Daily Attendance	$4.53/unit	Secondary Schools based on Average Daily Attendance	$81.00/100 students
			Customer Charge	$2.10
Irrigation	Tier 1: 1 – 70 Units	$5.96/unit	Not Applicable	Not Applicable
	Tier 2: 71+ Units	$11.39/unit		

PROGRAMS TO ASSESS & MANAGE DISTRIBUTION SYSTEM REAL LOSS

CVWD monitors water loss in its distribution system on an annual basis. It is CVWD's highest priority to repair all known distribution system and service connection leaks immediately. In the past five years, non-revenue water averaged 8.5 percent.

A significant portion of non-revenue water could be attributed to meter inaccuracy. As mentioned previously on page 4-5, CVWD embarked on a meter replacement program starting mid-June 2012 to replace their meters installed to AMIs. CVWD is currently under contract with Aqua-Metric for the procurement and installation of the AMI Communication Network project to be completed by the end of 2021.

Distribution system leaks are the most-likely culprit for loss of water. CVWD has and will be continuing on its water main replacement program and is planning on a 20-year schedule to replace its deficient pipelines. CVWD prioritized its pipe replacement program by leak history, pipe size, fire-flow rates, and age. CVWD will be working on an updated water master plan, which will further address deficiencies in the system within the next few years.

CVWD has not developed a formal methodology to estimate the water savings attributable to this BMP. There are, however, real water savings as a result of the proactive pre-screening leak detection and repair programs, and the completion of the AMI program, which maintain an acceptable non-revenue water loss of 8 percent.

4.2.2 BMP 2: PUBLIC EDUCATION & OUTREACH

This CalWEP BMP deals with outreach efforts including emails, newsletters, advertisements, presentations, promotions, etc., related to outreach & education.

SCHOOL PROGRAMS

All of CVWD's public schools within CVWD's service area fall under the Glendale Unified School District. CVWD has been working with GWP to maintain a strong commitment to support educational excellence in the Glendale Unified schools. With this in mind, GWP provides "LivingWise", a water and energy classroom program to sixth grade students in both public and private Glendale schools.

The program was created by a group of teachers for the National Energy Foundation. It is a comprehensive set of 17 hands-on learning activities that use science and other core subjects so that "LivingWise" means being "water wise", "energy wise", and making "wise decisions" to protect the environment.

Each teacher and student receives a LivingWise 86-page workbook and a kit filled with such items as low-flow showerheads, kitchen faucet aerators and toilet leak detection tablets as well as an energy efficient nightlight, a fluorescent light bulb and a CD-Rom computer disk with a "conservation entertainment experience". Because many of the lessons require the students to complete an activity at home, parents and other family members learn conservation practices right along with their students. At the end of the program, the students practice what they have learned by installing the water and energy saving kit items in their homes.

In addition to Glendale's program, CVWD sponsors school assemblies from "Shows that Teach" and "Mad Science" for both public and private schools. Both assemblies offer different interactive lessons that always include water conservation and are geared towards the water cycle, water runoff, water quality, and water supplies and distribution systems. Each elementary school in CVWD's service area is invited to participate every year.

Currently, CVWD does not have a method to evaluate the water savings attributable to this

BMP, however, CVWD will continue to administer this BMP for its ability to educate and interact with customers.

FMWD also offers volunteering opportunities, called Foothill Water Conservation Corps, to assist in water conservation and education outreach. These volunteers will participate in presentations for water conservation at clubs or events, setting up and manning booths at fairs and other community functions. Not only does this aid in spreading awareness but provides incentives for students to earn community service hours at a professional setting.

GENERAL PUBLIC INFORMATION (BROCHURES, MAILINGS, WEBSITE, ETC.)

CVWD provides water conservation literature, brochures, posters, landscape advice and tips, home water conservation devices etc., directly to the public and its customers. These materials are available at CVWD's Administrative Office and during special events. In addition, CVWD posts online classes and other information on its Facebook page. CVWD also maintains a library of water resource education conservation films and videos for loan to local organizations. MWD will also provide speakers to various groups upon request.

Currently, CVWD does not have a method to evaluate the water savings attributable to this BMP; however, CVWD will continue to administer this BMP for its ability to educate and interact with customers.

4.2.3 BMP 3: RESIDENTIAL PROGRAMS

This CalWEP BMP deals with showerheads, faucets, toilets, and leak detection surveys related to residential water use.

RESIDENTIAL PROGRAMS

Water Survey Assistance - CVWD offers formal water audits for qualified residents (those using over 22 units of water per billing period). There is a budget limit of $6,000 per year which covers 35 audits. The service is performed by a contractor, WaterWise Consulting.

Figure 4.3: Residential Water Surveys

In addition to water audits, CVWD's customer service staff respond to residential and commercial requests for investigation of high-water bills. The investigation consists of meter

leak tests, meter accuracy testing, property leak checks, irrigation system analysis, or a complete "on-premises" water audit. A water bill adjustment is given to all customers who demonstrate that they have repaired an on-site leak along with proof of the repair. This appears to be an effective water conservation measure which potential savings are outlined on the audit forms.

In addition, CVWD's utility billing software identifies customers who exceed a higher-than-normal usage threshold in a given billing period, which prompts staff to further investigate as described above. Staff costs for this included measure are part of customer service duties.

CVWD also participates in various FMWD/MWD programs aimed at increasing landscape water use efficiency for residential customers, including rebate programs that provide financial incentives. SoCal Water$mart, formerly Save Water Save A Buck, is the conservation rebate program offered through MWD. The program offers rebates for high-efficiency clothes washers (HEWC), premium high-efficiency toilets (PHET), weather-based irrigation controllers (WBIC), soil moisture sensor system (SMSS), rotating sprinkler nozzles, rain barrels/cisterns, and turf removal, as described below.

- ***Weather-Based Irrigation Controllers Program*** – This program, previously called the "Smart Timer Rebate Program," started in FY 2004/05. Under this regional program, residential and small commercial properties are eligible for a rebate when they purchase and install a weather-based irrigation controller, which has the potential to save 13,500 gallons a year per residence. Rebates start at $80 per controller for landscapes less than 1 acre in area and $35 per station for more than 1 acre.

- ***Rotating Nozzle Rebate Program –*** This rebate program started in 2007 and is offered to both residential and commercial customers. Through this program, site owners will purchase and install rotary nozzles, which can use up to 20 percent less water than conventional fan spray nozzles, in existing irrigation systems. These sprinklers reduce runoff onto sidewalks and into local storm drain system and provide uniform water distribution onto the landscape. MWD offers $2 per nozzle with a minimum of 30 nozzles.

- ***Rain Barrels & Cisterns Program –*** Residential and commercial customers can receive rebates for installing rain barrels and/or cisterns to collect rainwater for re-use for watering their landscapes. Customers may receive rebates starting at $35 per barrel or $250-$350 per cistern. The barrels and cisterns must adhere to specified design guidelines. For the past seven years, CVWD participated in a Rain Barrel and Drought-Tolerant Landscape Event that took place at Descanso Gardens (La Cañada Flintridge,

CA). CVWD co-sponsored the event along with FMWD and the Cities of Burbank, Glendale, Pasadena, and South Pasadena. As a result of the event, over 1,000 rain barrels were purchased by local residents.

- ***Soil Moisture Sensor System Program*** – For large residential sites, a soil moisture sensor, which measures soil moisture content in the active root zone, can be installed to receive rebates starting at $80 or $35 per SMSS. The sensor must be connected to a compatible irrigation system controller.

- ***Turf Removal Program*** – Through this program, residential and small commercial customers of participating retail water agencies are eligible to receive a minimum of $2 per square foot of turf removed for qualifying projects.

RESIDENTIAL PLUMBING RETROFIT

CVWD participates in the distribution of low-flow showerheads, aerators, hose shut-off nozzles, water buckets, and toilet-tank leak detection kits at its customer service counter and various local outdoor events. Assuming each device saves 3 gallons per day, approximately 3.4 AF are saved annually.

Additionally, CVWD through FMWD/MWD offered rebates through SoCal Water$mart program for high-efficiency clothes washers and premium high-efficiency toilets.

CVWD also works with the local building/planning departments of the City of La Cañada-Flintridge, City of Glendale, and County of Los Angeles to assure enforcement of the ultra-low-flush toilet (ULFT) installation requirements for new construction, and supports the prohibition of the sale of toilets using more than 1.1 gallons per flush (gpf). Developers' needs for fire-flow certificates, "will-serve" certificates, and ultimately water service connections are used as ways to ensure compliance.

Another program offered by MWD offered rebates for HETs (1.28 gpf) for both residential and CII customers. Starting November 11, 2015, rebates are only eligible for Premium HETs (1.1 gpf or less) and no longer available for HETs at 1.28 gpf.

HIGH-EFFICIENCY WASHING MACHINE REBATES

Starting in 2002, CVWD passed along MWD's high efficiency washing machine rebate. CVWD promotes the program on its website and with flyers posted at the administration office and distributed at local events.

Figure 4.4: High-Efficient Washing Machines

Residents in CVWD's service area are eligible to receive a $85 rebate when they purchase a new High Efficiency Clothes Washer (HECW) as CVWD supplements MWD's rebate. Rebates are available on a first-come, first-served basis, while funds last. To qualify for a rebate, the HECW must have a water factor of 4.0 or less. An HECW with a water factor of 4.0 will use approximately 14 gallons of water per load compared to a conventional top-loading clothes washer which can use 40 gallons or more per load. Depending on use, these machines can save 10,000 gallons of water per year. Participants are encouraged to contact their local gas and/or electric utility as additional rebates may be available.

4.2.4 BMP 4: COMMERCIAL, INDUSTRIAL, & INSTITUTIONAL PROGRAMS

CVWD has a relatively small number of commercial accounts and no industrial accounts. The vast majority of businesses within CVWD do serve as small mom and pop shops or local restaurants. CVWD currently offers financial incentives under MWD's SoCal Water$mart Program, which offers rebates for various water efficient devices to some CII customers.

***SoCal Water$mart* –** MWD launched this program on July 1, 2008 and offers rebates to assist CII customers in replacing high-flow plumbing fixtures with low-flow fixtures. Rebates are available only on those devices listed in **Table 4.5** and must replace higher water use devices. Installation of devices is the responsibility of each participant. Participants may purchase and install as many of the water saving devices as are applicable to their site.

CVWD also provided a list of restaurants to MWD for retrofit of a pre-rinse spray valve. Due to very limited number of CII customers, CVWD has no formal plans to initiate an active CII replacement program beyond the programs offered by MWD.

Table 4.5: CII Retrofit Devices & Rebate Amounts under SoCal Water$mart Program

Retrofit Device	Rebate Amount
High Efficiency Toilet	$40
Ultra-Low & Zero Water Urinal	$200
Connectionless Food Steamers	$485 per compartment
Air-Cooled Ice Machines	$1,000
Cooling Tower Conductivity Controller	$625
pH / Conductivity Controller	$1,750
Dry Vacuum Pumps	$125 per 0.5 HP
Weather Based Irrigation Controller and Computer Irrigation Controller	$35 per station and $80 per controller
Rotating Nozzles for Pop-up Spray Head Retrofits	$2 (minimum of 30 per rebate)

4.2.5 BMP 5: LANDSCAPE PROGRAMS

CVWD supports large landscape conservation through FMWD/MWD's regional programs including:

SoCal Water$mart Program – CVWD, through FMWD/MWD, offered rebates through SoCal Water$mart program for landscape plumbing retrofitting. Landscape rebates are available for WBIC, SMSS, rotating sprinkler nozzles, and turf removal. The available landscape programs are described in **Section 4.2.3** and listed below:

- Weather-Based Irrigation Controllers Program (WBIC)
- Rotating Nozzle Rebate Program
- Rain Barrels & Cisterns Program
- Soil Moisture Sensor System Program (SMSS)
- Turf Removal Program

California Friendly Landscape Training – On behalf of its member agencies, FMWD supports MWD's California Friendly Landscape and Gardening Training, which provides education to residential homeowners and professional landscape contractors on a variety of landscape water use efficiency practices. These classes are hosted by MWD's member agencies to encourage participation across the county. The Professional Training Program

course consists of four consecutive classes in landscape water management, each building upon principles presented in the preceding class. Each participant receives a bound handbook containing educational materials for each class. These classes are offered throughout the year and taught in both English and Spanish languages.

In addition, CVWD takes advantage of regional and local efforts which target and market to large landscape properties using bill inserts and direct marketing efforts. CVWD also sponsors three or more independent water efficient gardening classes per year. Topics include turf removal, design, placement, irrigation, plant selection, composting, gardening with worms, and efficient watering practices.

4.2.6 OTHER FMWD CONSERVATION MEASURES

WHOLESALE AGENCY PROGRAMS

CVWD is a retail water agency. Therefore, this BMP does not apply. CVWD is a member agency of FMWD. FMWD provides financial incentives or equivalent resources, as appropriate and beneficial to distributing retail agencies, to advance water conservation efforts and effectiveness.

CVWD is currently budgeting approximately $50,500 per year for its conservation programs. The funding amounts for FY 2020-21 are shown in **Table 4.6**.

Table 4.6: CVWD's Water Use Efficiency Programs Budget for FY 20-21

Program Description	Budget
Water Conservation Expenses	$25,500
Water Conservation Rebates	$5,000
Community Outreach	$20,000
Total	**$50,500**

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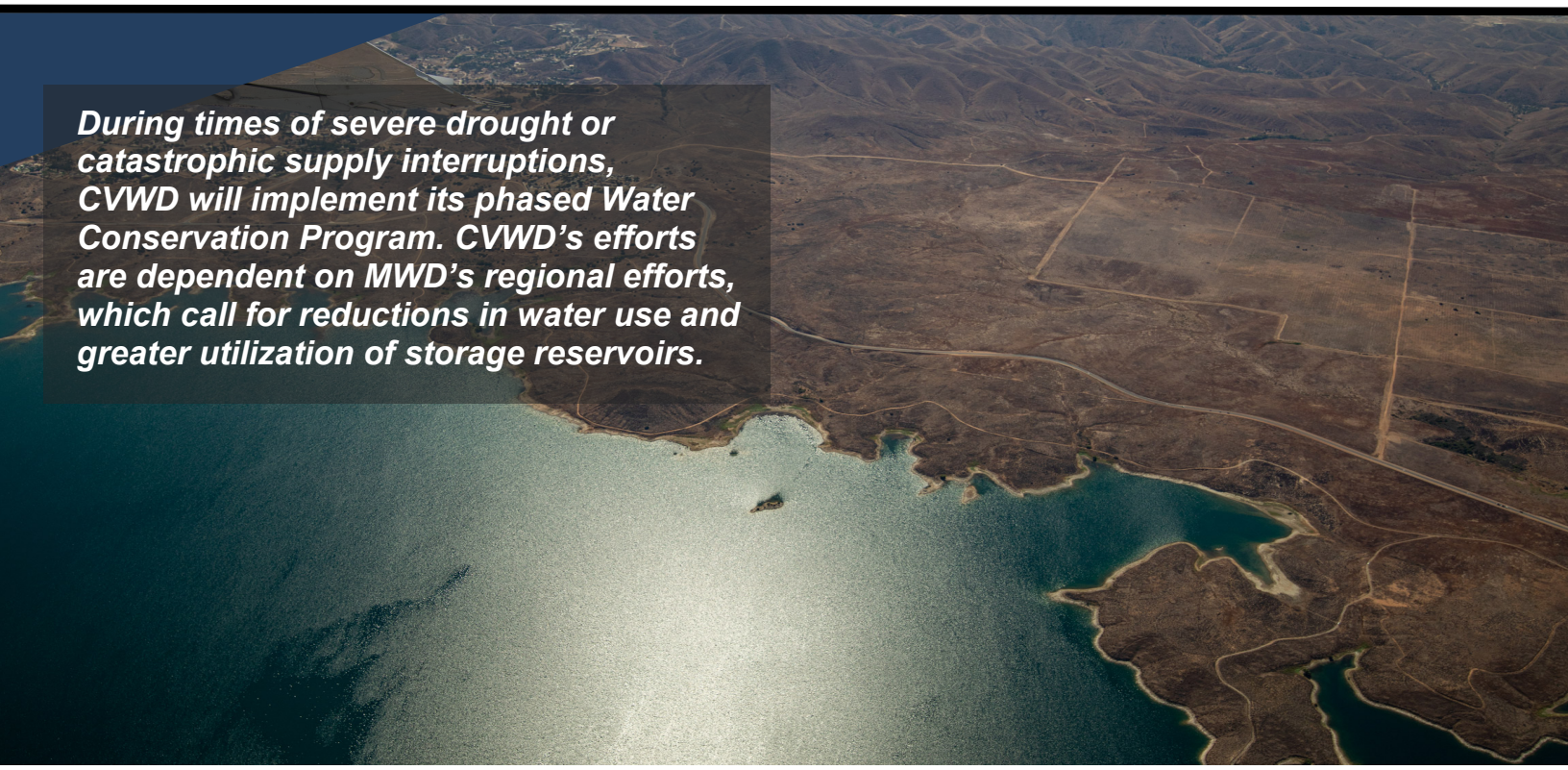

SECTION 5: CONTINGENCY PLANNING

2020 URBAN WATER MANAGEMENT PLAN

SECTION 5 WATER SHORTAGE CONTINGENCY PLAN

5.1 OVERVIEW

Water supplies may be interrupted or reduced significantly in a number of ways, including droughts, earthquakes, and power outages, which hinder a water agency's ability to effectively deliver water. The ability to manage water supplies in times of drought or other emergencies is an important part of water resources management for a community.

Recent water supply challenges throughout the American Southwest and the State of California have resulted in the development of a number of policy actions that water agencies would implement in the event of a water shortage. In Southern California, the development of such policies has occurred at both the wholesale and retail level. This section addresses elements related to the urban water supplier's Water Shortage Contingency Plan describing new and existing policies that MWD, FMWD, and CVWD have in place to respond to water supply shortages, including a catastrophic interruption and greater than a 50 percent reduction in water supply.

5.2 WATER SUPPLY RELIABILITY ANALYSIS

5.2.1 WATER SERVICE RELIABILITY ASSESSMENT

Southern California is expected to experience an increase in regional demands in the years 2025 through 2045 as a result of population growth. Although increases in demand are expected, future demands are effectively limited due to the requirements of SBx7-7. It can be reasonably expected that the majority of agencies have met or were near their compliance targets for 2020 and will continue to meet, or will soon meet, their per-capita usage limit in the future.

The data in the MWD 2020 UWMP shows supply reliability projections for average and single dry years and is important to effectively project and analyze supply and demand over the next 25 years for many regional agencies. Projected supplies during single and multiple dry year scenarios indicate MWD's projected supply will exceed its projected single dry year demands in all years. Likewise, for average years, MWD supply exceeds projected demands for all years.

Due to the semi-arid nature of CVWD's climate and as a result of past drought conditions, CVWD is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. **Section 3** describes the water availability during single and multiple dry year scenarios. **Tables 5.1**, **5.2**, and **5.3** summarize the supply and demand comparisons during normal, single-dry year, and multiple dry year, respectively. As shown, CVWD is capable of providing a reliable supply of water to meet the future demands.

Table 5.1: Normal Year Supply & Demand Comparison (AF) (DWR Table 7-2 R)

	2025	2030	2035	2040	2045
Supply totals	5,748	5,748	5,748	5,748	5,748
Demand totals	3,979	4,041	4,105	4,170	4,236
Difference	1,769	1,707	1,643	1,578	1,512

Table 5.2: Single Dry Year Supply & Demand Comparison (AF) (DWR Table 7-3 R)

	2025	2030	2035	2040	2045
Supply totals	5,748	5,748	5,748	5,748	5,748
Demand totals	4,412	4,481	4,552	4,624	4,697
Difference	1,336	1,267	1,196	1,124	1,051

Table 5.3: Multiple Dry Year Supply & Demand Comparison (AF) (DWR Table 7-4 R)

		2025	2030	2035	2040	2045
First year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,531	4,603	4,676	4,749	4,824
	Difference	1,217	1,145	1,072	999	924
Second year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,781	4,857	4,933	5,011	5,090
	Difference	967	891	815	737	658
Third year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,836	4,912	4,989	5,068	5,148
	Difference	912	836	759	680	600
Fourth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	4,565	4,637	4,710	4,785	4,860
	Difference	1,183	1,111	1,038	963	888
Fifth year	Supply totals	5,748	5,748	5,748	5,748	5,748
	Demand totals	3,789	3,849	3,910	3,972	4,034
	Difference	1,959	1,899	1,838	1,776	1,714

5.2.2 FIVE-YEAR DROUGHT RISK ASSESSMENT

During a five-year drought, CVWD may import water to meet demands in excess of its adjudicated pumping right of 3,294 AFY as necessary. Imported water supplies, like groundwater, are subject to demand increases and reduced supplies during dry years; however, MWD modeling in its 2020 UWMP, as referenced in **Tables 3.8** and **3.9** in **Section 3**, results in 100 percent reliability for full-service demands through the year 2045 for all climatic conditions. Based on the conditions described above, CVWD anticipates the ability to meet water demand for all climatic conditions for the near future.

New to the 2020 UWMP is the Drought Risk Assessment (DRA) over a 5-year period examining the reliability of CVWD's water supplies. **Table 5.4** shows the results of the analysis. The analysis was done utilizing DWR's DRA Planning Tool to determine supply and demand projections, and to analyze CVWD's vulnerability to droughts. The tool also allows water purveyors to utilize potential water usage saving or supply augmentation methods to mitigate supply shortfalls. These water usages saving methods (restrictions) are further discussed in the WSCP. As shown, CVWD is capable to meet the projected demands based on the estimated water supplies during drought conditions without the need for WSCP stage implementation and supply augmentation.

Table 5.4: Five-Year Drought Risk Assessment (AF) (DWR Table 7-5)

	2021	2022	2023	2024	2025
Total Water Use	3,929	3,942	3,954	3,966	3,979
Total Supplies	5,741	5,745	5,748	5,748	5,748
Surplus/Shortfall w/o WSCP Action	1,812	1,803	1,794	1,782	1,769
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	1,812	1,803	1,794	1,782	1,769
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Response to a future drought would follow the water use efficiency mandates of CVWD's Water Conservation Program along with implementation of the appropriate stage of regional plans, such as MWD's Water Surplus Drought Management (WSDM) Plan as described later in this section.

5.3 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Under CWC Section 10632(a)(2), beginning by July 1, 2022, each urban water supplier is required to prepare their annual water supply and demand assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR. The Annual Water Shortage Assessment Report will be due by July 1 of every year, as required by CWC Section 10632.1.

This section outlines CVWD's procedures used in conducting an Annual Assessment, including the following: 1) written decision-making process for determining water supply reliability; and 2) key data inputs and assessment methodology for evaluating the water supply reliability for the current year and one dry year.

5.3.1 DECISION-MAKING PROCESS

CVWD's Annual Assessment will be mostly based on daily recorded water production and supply figures, which are reported to the General Manager on a daily basis throughout the year. Water consumption is monitored regularly through the metering of all CVWD service connections in its distribution system. To determine its water supply reliability and actual reductions in water use during declared water shortages or emergencies, CVWD can rely on its daily records as well as the CVWD Water Production Reports including the monthly totals. These periodical analyses are used by CVWD to manage resources to meet projected demands and adjust to changing conditions (i.e., precipitation) throughout the year.

Starting in 2022, CVWD staff will submit and present a finalized Annual Water Shortage Assessment Report to the Board of Directors for approval by June each year. CVWD staff will also present determination of recommended water shortage response actions deemed appropriate as a result of the Annual Assessment. Following approval, CVWD staff will submit the approved Annual Water Shortage Assessment Report to DWR by July 1 of every year. The functional procedures for the decision-making process are depicted in the following timeline shown in **Figure 5.1**.

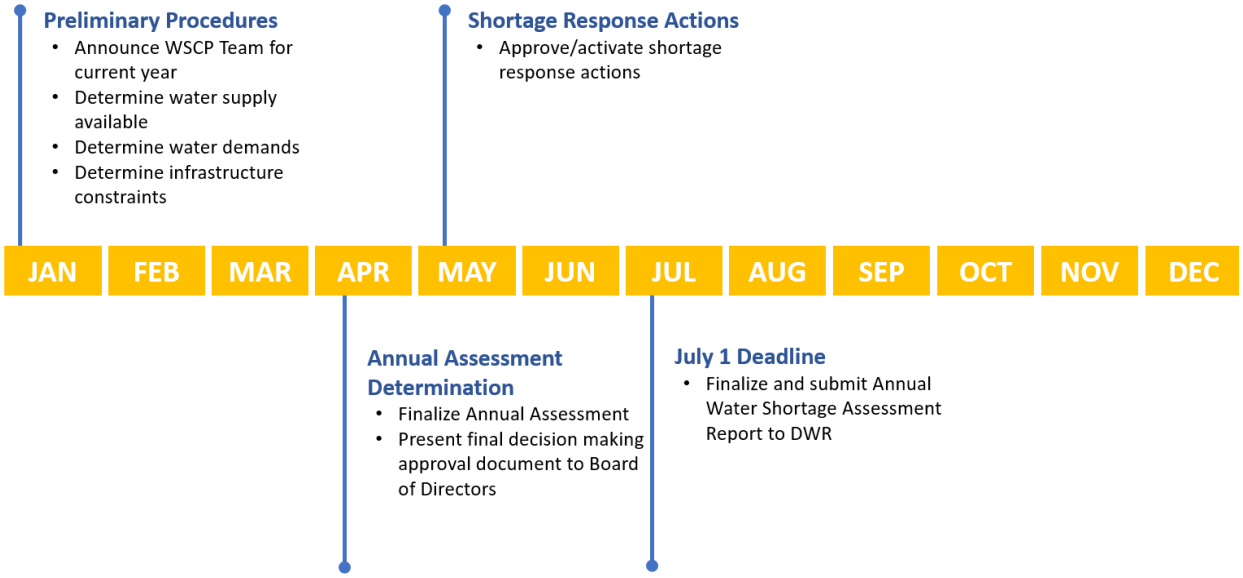

Figure 5.1: Sample Annual Assessment Decision-Making Process Timeline

5.3.2 KEY DATA INPUTS AND ASSESSMENT METHODOLOGY

This section defines the key data inputs and assessment methodology used to evaluate the water supply reliability for the anticipated conditions for the current year and for one dry year that follows. The Annual Assessment determination will focus on the current year unconstrained demand, infrastructure constraints, and total water supply availability. Moreover, the Annual Assessment will consider the current year's weather, population growth, policies in place that will impact demands, and other influencing factors. The current year available supply will incorporate the hydrological regulatory conditions for the current year and following dry year.

LOCALLY APPLICABLE EVALUATION CRITERIA

The locally applicable evaluation criteria that will be consistently relied on for each Annual Assessment include the following:

1) Assumed unconstrained demand (i.e., demand without any conservation measures) for current year and one dry year
2) Assumed total water supply availability for current year and one dry year
3) Existing infrastructure capabilities and plausible constraints
    - Any known issues with the water facilities (including water quality conditions limiting local sources)

- Planned power outages for operation and maintenance
- New construction and repairs
- Environmental mitigation measures
- Other constraints that may affect near-term water supply reliability

WATER SUPPLY SOURCES DESCRIPTION AND QUANTIFICATION

As part of the Annual Assessment, the total available water supply evaluation criteria will comprise of CVWD's water supply sources as shown and quantified in **Tables 5.5** and **5.6**.

Table 5.5: CVWD Water Supplies in 2020 (AF) (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	from FMWD	2,141	Drinking Water	2,154
Groundwater (not desalinated)	CVWD Wells	1,933	Drinking Water	3,294
Groundwater (not desalinated)	Well #16 (GWP)	142	Drinking Water	500
Total		4,216		5,948

Table 5.6: Projected CVWD Water Supplies (AF) (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Purchased or Imported Water	MWD via FMWD	2,154	2,154	2,154	2,154	2,154
Groundwater (not desalinated)	CVWD Wells	3,294	3,294	3,294	3,294	3,294
Groundwater (not desalinated)	Well #16 (GWP)	300	300	300	300	300
Total		5,748	5,748	5,748	5,748	5,748

Imported Water Purchases

CVWD receive its imported water supply from MWD through their wholesaler FMWD. Supply from MWD originates from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. Currently, CVWD supply is comprised of 48 percent imported water and is projected to able to have access of its full Tier 1 limit supply with FMWD of 2,154 AF as shown in **Table 5.6**.

Groundwater Supply

CVWD utilizes groundwater from the Verdugo Groundwater Basin. CVWD draws from this groundwater through 12 of its wells which fulfills 52 percent of its total supply. CVWD's current safe yield of the Basin is 3,294 AFY as shown in **Table 5.6**. Furthermore, CVWD has agreements with GWP to produce additional groundwater through Well #16 to obtain an additional 300 AFY. Groundwater supplies within the Verdugo Basin have remained stable throughout the recent drought during 2012 – 2016. As a result, groundwater production rights within the basin will continue to remains the same into the future until otherwise mandated for reduction by the Upper Los Angeles River Area (ULARA) Watermaster.

5.4 SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

5.4.1 MWD STAGES OF ACTION

WATER SURPLUS & DROUGHT MANAGEMENT PLAN (WSDM)

CVWD works in conjunction with FMWD and MWD to implement conservation measures within the framework of MWD's Water Shortage and Drought Management (WSDM) Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input from its member agencies. The plan addresses both surplus and shortage contingencies. MWD's WSDM Plan documents the stages of action that it would undertake in response to a water supply shortage. FMWD's water supply shortage stages reflect MWD's WSDM Plan.

Figure 5.2: Severe Droughts Highlight the Importance of Conservation Ordinances (Lake Oroville in 2014)

The WSDM Plan guiding principle is to minimize adverse impacts of water shortage. The plan guides the operations of water resources (local resources, Colorado River, SWP, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages of water to minimize the probability of severe shortages, which require curtailment of full-service demands. Mandatory allocations are avoided to the extent practical; however, in the event of an extreme shortage, an allocation plan will be implemented.

In addition to its WSDM Plan, MWD developed a Water Supply Allocation Plan (WSAP), which provides a standardized methodology for allocation of supplies during times of extreme shortage (Stage 7 in MWD's WSDM Plan). During a shortage, CVWD's imported water supplies will be allocated based on the methodology documented in FMWD's Allocation Plan, which typically mirrors the MWD allocation plan.

MWD's WSDM and WSAP Plans help guide drought management for many agencies throughout the region.

The description of shortage stages below is from MWD's 2020 UWMP, page 2-28:

> *"**Shortage**: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.*
>
> ***Severe Shortage**: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation.*
>
> ***Extreme Shortage**: Metropolitan allocates available supply to full-service customers.*
>
> *The WSDM Plan also defines six shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a 10 percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.*
>
> *When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, Metropolitan is still able to meet all end-use demands for water. For shortage stages 1 through 3, Metropolitan will meet demands by withdrawing water from storage. At shortage stages 4 and 5, Metropolitan may undertake additional shortage management steps, including issuing public calls for extraordinary conservation and exercising water transfer options, or purchasing water on the open market."*

MWD WATER SUPPLY ALLOCATION PLAN (FOR WSDM SHORTAGE STAGE 7)

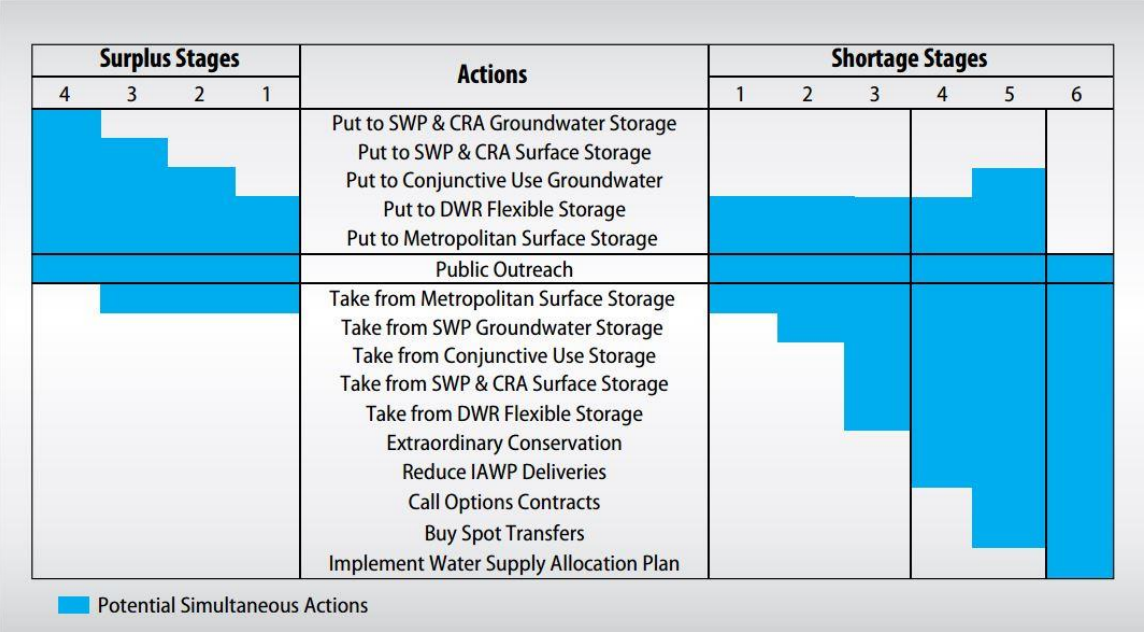

Figure 5.3: MWD WSDM Surplus & Drought Stages

In February 2008, MWD's Board of Directors adopted a WSAP, which includes a methodology for calculating supply allocations in the event that MWD enters a Shortage Stage 7 and is unable to meet the demands of its member agencies. MWD revised its WSAP in 2014 to include the following updates: new FY 12-13 to FY 13-14 baseline, implement a Conservation Demand Hardening Adjustment, create a separate Groundwater Replenishment Allocation for applicable agencies, and replace WSAP Penalty Rates with Allocation Surcharges based on the marginal costs of turf removal. It should be noted that the WSAP is not a rationing plan. Rather, it is a pricing plan where water is allocated at regular prices and agencies that choose to take more than the allocated water pay surcharges. The surcharge pricing mechanism acts to discourage the use of water above the allocation. The WSAP uses a combination of estimated total retail demands and historical local supply production within the member agency service area to estimate the demands on MWD from each member agency in a given year. Based on a number of factors, including storage and supply conditions, MWD then determines whether it has the ability to meet these demands or will need to allocate its limited supplies among its member agencies. Thus, implicit in MWD's decision not to implement an allocation of its supplies is that, at a minimum, MWD will be able to meet the demands identified for each of the member agencies.

According to MWD's 2015 IRP, the approach seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level and takes into account

growth, local investments, changes in supply conditions and the demand hardening aspects of non-potable recycled water use and the implementation of conservation savings programs. The methodology attempts to allocate supplies based on an estimate of an agency's relative need for imported water using the following process:

1. Establish a baseline for total retail demands (and adjust for growth) to determine the allocation year total retail demands. ("*What are your total water demands?*")

2. Estimate the amount of local supplies to be utilized in the allocation year and subtract from total retail demands. This is the allocation year baseline demand on MWD. ("*How much imported water do you need from MWD?*")

3. Apply the minimum allocation percentage (per the regional shortage level) to the allocation year baseline demand and provide minor adjustments based on various criteria. ("*Restrict normal supply deliveries and provide allocation.*")

BASE PERIOD CALCULATIONS (USED TO DETERMINE WSAP REDUCTIONS)

The Base Period is calculated using data from FY 2012-13 and FY 2013-14. Base Period wholesale demands are based on the two-year average of demands on MWD during the Base Period, including full-service, seawater barrier, seasonal shift, and surface storage operating agreement demands.

Local supplies for the base period are calculated using a two-year average of groundwater production, groundwater recovery, Los Angeles Aqueduct supply, surface water production, and other imported supplies. Non-potable recycling production is not included in this calculation, which, according to MWD, is intended to address the impact of demand hardening due to recycled water use.

Total potable retail demands for the Base Period are then calculated by adding the Base Period wholesale demands on MWD and the Base Period local supplies.

WSAP ALLOCATION YEAR CALCULATIONS

The next step is to estimate water needs in an allocation year by (1) adjusting the Base Period total retail demands for population or economic growth, and (2) accounting for changes in local supplies.

The Base Period retail demands are adjusted for growth using the average annual rate of population growth occurring since the two-year base period based on county-level data generated by the California Department of Finance.

Next, these growth-adjusted demands are adjusted again to account for (1) gains and losses of local supply, and (2) extraordinary increases in production over the base year. According to MWD, these adjustments are made to give a more accurate estimate of actual supplies in the allocation year, and, in turn, more accurately reflect an agency's demand for MWD supplies.

Figure 5.4: MWD's Diamond Valley Lake (Potential Reserves for WSAP Allocations)

The adjustment for gains in local supplies is intended to account for planned or scheduled gains in local supply production above the Base Period, which are not due to extraordinary actions to increase water supply in the allocation year. These previously scheduled increases in supply programs (i.e., San Diego County Water Authority/Imperial Irrigation District) or local production are added to the base period local supplies. Again, new supplies from non-potable recycling projects are not counted as local supplies.

While the local agency does become more reliable with the addition of the new supplies, assuming that the new supplies are available during an allocation, the benefits of these programs are partially offset because the impact of adding the new supplies to the Base

Period local supplies is to reduce an agency's dependence on MWD and thus their allocation under the WSAP.

Alternatively, only a portion of the additional supplies from what are termed "extraordinary increases in production" are added back to Allocation Year local supplies depending on the retail shortage level. Extraordinary increases in production include such efforts as purchasing transfers or mining of groundwater basins. By adding only a percentage of the yield from these supplies to Allocation Year local supplies, it has the effect of "setting aside" the majority of yield for the agency who procured the supply.

Table 5.7 reflects the set of percentages used in the WSAP to establish water allocations for each agency.

Table 5.7: Water Allocation Percentages

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Percentage	Maximum Retail Impact Adjustment Maximum
1	5%	92.5%	2.5%
2	10%	85.0%	5.0%
3	15%	77.5%	7.5%
4	20%	70.0%	10.0%
5	25%	62.5%	12.5%
6	30%	55.0%	15.0%
7	35%	47.5%	17.5%
8	40%	40.0%	20.0%
9	45%	32.5%	22.5%
10	50%	25.0%	25.0%

5.4.2 FMWD SHORTAGE STAGES OF ACTION

FMWD's plan mirrors MWD's plan with two exceptions. The first exception is that since FMWD does not take delivery of any Seawater Barrier water and FMWD is considered ineligible for the Replenishment Allocation, reference to those deliveries has been deleted.

The second exception is because of the way the water is allocated, without a further adjustment, total water allocated to FMWD's member agencies will never match the total water allocated to FMWD. Thus, an adjustment has been added to prorate the

difference between the amount allocated to FMWD by MWD and the initial allocation by FMWD.

Additionally, FMWD will reconcile over use and under use of member agency allocations at the same time that MWD does, typically at the end of every 12 months. Any allocation under used by agencies will be pooled together in one pot to be distributed to those agencies who over use their allocation. Any agency using that pooled water will be charged the regular FMWD Tier 1 or Tier 2 rate for having taken the water plus 50 percent of MWD's penalty rate. Any penalties assessed would go into the Water Resource and Conservation Fund.

FMWD only assesses 50 percent of the surcharge against its retail agencies in situations where FMWD is not subject to the Allocation Surcharge from MWD. In cases where FMWD as a whole is subject to the Allocation Surcharge from MWD, member retail agencies that have over used their allocation will take on the obligation proportionally and be subject to 100 percent of the surcharge.

Supply Allocation Formula Elements

The following are the elements of the allocation formula:

Base Period Demands **–** A two-year average of historical water use utilizing data from FY 2012-13 and FY 2013-14. Water use is divided into three components: total retail demand, locally produced water, and imported water.

Growth Adjustment **–** Retail demands are adjusted for growth between the base period and the time of allocation based on county level estimates of average annual growth in population. Growth for Los Angeles County is 0.46 percent. Agencies have an option to use weighted average population and job growth instead based on an appeal process to MWD.

Local Supplies **–** The amount of local supplies that are planned to be utilized in an allocation year.

Extraordinary Allocation Year Local Supplies **–** These are previously unscheduled local water supplies to be utilized in an allocation year, including transfers, recycled water, desalination, and recovery of groundwater. This amount is credited without reduction in the Wholesale Minimum Allocation. In addition, it decreases both the Retail Impact Adjustment and the reliance on MWD.

Conservation Demand Hardening Adjustment **–** An adjustment is made for demand hardening due to active conservation based on GPCD. Calculation considers conservation savings, dependence on MWD and the associated Regional Shortage Level percentage.

Regional Shortage Percentage **–** This is the percentage of shortage between supplies and demands and will be declared by MWD's Board. **Table 5.7** contains the percentages used to establish water allocations for agencies.

Wholesale Minimum Allocation **–** This is the first step in the formula and provides the minimum imported water allocation from MWD. It is calculated as an allocation baseline demand on MWD (Base Period Demands minus Local Supplies) multiplied by the Wholesale Minimum Percentage of the associated Regional Shortage Level.

Retail Impact Adjustment **–** This is the maximum additional allocation an agency may receive based on impacts to retail customers. Those agencies with less local supplies would receive a higher adjustment than those agencies with more local supplies. This adjustment is calculated as a percent dependence on MWD times the allocation baseline demand on MWD multiplied by the Retail Impact Adjustment factor of the associated Regional Shortage Level.

Minimum Per-Capita Adjustment **–** An adjustment made should gallons per capita per day for an agency drop to 100 GPCD or lower.

Total FMWD Allocation **–** A preliminary allocation is provided to agencies based on calculations, which mirror MWD's WSAP. Without a further adjustment, total water allocated to FMWD's member agencies will never match the total water allocated to FMWD. Thus, an adjustment has been added to prorate the difference between the amount allocated to FMWD by MWD and the initial allocation by FMWD.

Allocation Surcharge **–** Previously known as WSAP Penalty Rates, an Allocation Surcharge will be in effect based on the costs to implement outdoor water use reductions through turf removal programs. The Allocation Surcharge would provide a price signal based on the marginal conservation costs incurred to reduce water use in dry and shortage years.

Conservation Plan Ordinance

FMWD's Conservation Plan (adopted April 2009; revised plan adopted June 2021) establishes a comprehensive staged water conservation program, which will encourage

reduced water consumption within FMWD through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within FMWD. In June 2021, FMWD amended its Conservation Plan to conform to six standard water shortage levels as required by CWC Section 10632(a)(3)(A) and to better align with long-term water use goals. Along with permanent water conservation requirements, FMWD's Water Conservation Plan consists of six stages, which are described in **Table 5.8**, to respond to a reduction in potable water available to FMWD for distribution to its customers. Stage 1 conservation requirements are in effect at all times unless a mandatory conservation stage has been implemented by the Board of Directors.

5.4.3 CVWD STAGES OF ACTION

CVWD has adopted a Water Conservation Program. The purpose of this program is to provide water conservation regulations, in a phased approach, to minimize the effect of a shortage of water supplies on the customers of CVWD during various critical stages of a water shortage. Along with permanent water conservation requirements, CVWD's Water Conservation Program consists of the following six stages, as shown in **Table 5.8**, to respond to a reduction in potable water available to CVWD for distribution to its customers with Phase 1 conservation requirements in effect at all times unless a mandatory conservation stage has been implemented by CVWD Board of Directors.

Table 5.8: Water Supply Shortage Stages and Conditions – Rationing Stages

Stage No.	Water Supply Conditions	% Shortage
Phase 1 - Color Code "Blue" – Normal Water Conservation Alert	FMWD can meet all Member Agency demands. Voluntary water conservation applies.	Up to 10%
Phase 2 - Color Code "Green" – Increased Voluntary Water Conservation Alert	Some supplies have been impacted, and customers should increase efforts to conserve.	10% to 20%
Phase 3 - Color Code "Yellow" – Extraordinary Water Conservation Alert	MWD is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers.	20% to 30%
Phase 4 - Color Code "Orange" – Rationing Water Conservation Alert	MWD has implemented its allocation plan to its member agencies. Thus, supplies are limited.	30% to 40%
Phase 5 - Color Code "Red" – Critical Water Conservation Alert	Water supplies are reduced drastically.	40% to 50%
Phase 6 - Color Code "Purple" – Emergency Water Conservation Alert	Water supplies are only available for health and safety needs.	Greater than 50%

5.4.4 PROHIBITIONS

CVWD's Water Conservation Plan promotes the efficient use of water, reduce or eliminate water waste, complement CVWD's Water Quality regulations and urban runoff reduction efforts, and enable implementation of CVWD's Water Shortage Contingency Measures. Prohibitions include, but are not limited to: restrictions on outdoor watering, washing of vehicles, food preparation establishments, repairing of leaks and other malfunctions, swimming pools, decorative water features, construction activities, and water service provisions, which can be found in **Table 5.9**.

Table 5.9: Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas shall not be permitted. Exception: Flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety. Businesses or schools required to hose down public eating areas will be provided with access to a water broom.	Phase 1 - Color Code "Blue"
Use of water for any purpose which results in overspray, excessive runoff onto hardscapes, driveways, streets, adjacent lands or into gutters shall not be permitted.	Phase 1 - Color Code "Blue"
Water used to clean, fill or maintain levels in decorative fountains or similar structures must be part of a recirculation system.	Phase 1 - Color Code "Blue"
Leaks from any facility both inside and outside of a customer's premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak. Failure to affect the repair of any leak shall subject said customer to all penalties provided herein for waste of water.	Phase 1 - Color Code "Blue"
No watering, sprinkling or irrigating shall take place between the hours of nine a.m. (9:00AM) and five p.m. (5:00PM) in any landscaped or vegetated areas, including, but not limited to, golf courses, parks, cemeteries and school areas landscaped with, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, trees, and California-friendly plantings. With the exception of drip irrigation systems or weather based irrigation controllers,	Phase 1 - Color Code "Blue"

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
residential timers shall not run for more than a total of 10 minutes per station.	
Hand watering of non-turf areas is allowed using a hose with a positive shut-off nozzle or watering can within the allowable times as specified above.	Phase 1 - Color Code "Blue"
No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray. No irrigation or watering of turf or ornamental-landscapes during and 48 hours following measurable precipitation.	Phase 1 - Color Code "Blue"
The washing of commercial and non-commercial privately owned automobiles, trucks, trailers, motor-homes, boats, buses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.	Phase 1 - Color Code "Blue"
Owners of outdoor swimming pools, wading pools or spas, when these are not in use, are requested to use covers to minimize the evaporation of water.	Phase 1 - Color Code "Blue"
Water for construction purposes including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner which will not result in runoff.	Phase 1 - Color Code "Blue"
The use of potable water from fire hydrants shall be limited to firefighting related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents of the city.	Phase 1 - Color Code "Blue"
No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested by a customer.	Phase 1 - Color Code "Blue"
Hotels, motels, and other commercial lodging establishments are requested to post notices informing their guests about CVWD's water conservation policy and urging guests to conserve water. Water conservation notices will be provided by CVWD.	Phase 1 - Color Code "Blue"

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Hotels, motels and other commercial lodgings are requested to post notices giving their guests the option of not laundering towels and linens daily.	Phase 1 - Color Code "Blue"
Where applicable, restaurants must utilize water conserving nozzles.	Phase 1 - Color Code "Blue"
Watering Days: Odd/Even assigned days	Phase 2 - Color Code "Green"
Watering Days: Tuesday, Thursday, Saturday	Phase 3 - Color Code "Yellow"
Residential and commercial landscape irrigation is limited to no more than two (2) days per week on Tuesday and Saturday. Exempt are public areas owned or operated by School Districts or public use areas greater than 4,000 square feet.	Phase 4 - Color Code "Orange"
The filling, refilling or adding of water to indoor and outdoor pools, wading pools, or spas is prohibited. Exemptions: Commercial Repairs mandated by the Federal Virginia Graeme Baker Act, or adding water for the prevention of equipment failure is permissible, however, the District strongly urges that a cover be used to prevent evaporation and thereby reducing the frequency of refilling.	Phase 4 - Color Code "Orange"
The use of water to clean, maintain, fill, or refill decorative fountains or similar structures is prohibited. Exemptions: Adding water for the prevention of equipment failure is permissible.	Phase 4 - Color Code "Orange"
Vehicle washing is restricted to the use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.	Phase 4 - Color Code "Orange"
Fix leaks within 48 hours.	Phase 4 - Color Code "Orange"
1 day limit per week year-round irrigation.	Phase 5 - Color Code "Red"
All outdoor water use is prohibited.	Phase 6 - Color Code "Purple"
Fix any leaks within 24 hours.	Phase 6 - Color Code "Purple"

5.4.5 CONSUMPTION REDUCTION METHODS

Methods to reduce the use of potable water exist in all Water Shortage Levels are listed in **Table 5.10**.

Table 5.10: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Phase 1 Conservation Measures	"Blue"	Up to 10%
Phase 2 Conservation Measures	"Green"	10% to 20%
Phase 3 Conservation Measures	"Yellow"	20% to 30%
Phase 4 Conservation Measures	"Orange"	30% to 40%
Phase 5 Conservation Measures	"Red"	40% to 50%
Phase 6 Conservation Measures	"Purple"	>50%

5.4.6 CATASTROPHIC SUPPLY INTERRUPTION

Given the great distances imported water supplies travel to reach the FMWD service area, the region is vulnerable to interruptions along hundreds of miles of aqueducts, pipelines and other facilities associated with delivering the supplies to the region. Additionally, this water is distributed to customers through an intricate network of pipes and water mains that are susceptible to damage from earthquakes and other disasters, natural or otherwise.

MWD

MWD has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM and WSAP Plans. MWD also developed an Emergency Storage Objective to mitigate potential interruption in water supplies resulting from catastrophic occurrences within the Southern California region, including seismic events along the San Andreas Fault. In addition, MWD is working with the state to implement a comprehensive improvement plan to address catastrophic occurrences that could occur outside of the Southern California region, such as a probable maximum seismic event in the Delta, which could cause levee failure and disruption of SWP deliveries.

In July 2019, MWD's Board adopted amendments to their Administrative Code allowing deliveries of member agency water supplies in MWD's system during an emergency. With

these enabled deliveries, MWD's member agencies will be able to deliver their water through MWD's system under specific emergency conditions. Emergency deliveries using a portion of MWD's system can only be made if MWD is unable to make deliveries to a member agency due to physical damage to its system resulting from a natural disaster or other emergency, and there are no alternatives.

CVWD

For a sudden or catastrophic water supply interruption, CVWD has developed an Emergency Preparedness and Disaster Response Plan, as required by the State Water Resource Control Board, and an Emergency Response Plan (ERP) to ensure the most effective use of its resources for the benefit and protection of facilities and employees, in addition to the preservation of a reliable water supply for its customers.

Power Outage **–** In the event of a power outage, CVWD maintains five emergency standby power generators. One of the emergency generators is stationary and dedicated to power water supply wells and the auxiliary equipment at the Glenwood Nitrate Operations Center. Four emergency generators are portable and are mounted on trailers. They can be mobilized to any pump station for movement of water out of a reservoir into a higher pressure zone. Each pump station site is equipped with emergency power receptacles and transfer switches, which allow personnel to hook up the portable generators. The fourth generator is located at CVWD's Administrative Office. CVWD also has Universal Power Supply systems on the computer systems at the Administrative Office, the Supervisory Control and Data Acquisition (SCADA) systems at the Glenwood Nitrate Operations Facility and at booster station at well sites. In addition, FMWD operates standby emergency generators, which could be used by CVWD.

Water Outage **–** In the event of a water outage, CVWD has the ability to receive water from the City of Glendale, La Cañada Irrigation District, and Los Angeles Department of Water and Power (LADWP) through emergency water supply interconnections.

City of Glendale Emergency Interconnection:

- Glendale/CVWD emergency interconnection was installed in 2004 and allows for CVWD to receive up to 5.0 cubic feet per second (cfs) from Glendale.
- Glendale and CVWD also have an agreement for emergency hydrant-to-hydrant interconnections that allows CVWD to take water from Glendale or for Glendale to take water from CVWD.

La Cañada Irrigation District (LCID) Interconnection:

- CVWD has an interconnection with LCID that allows CVWD to take water from LCID into CVWD's Zone 3.
- LCID has two interconnections with CVWD that allows LCID to take water from CVWD into LCID westerly zones.

LADWP Interconnection:

- CVWD to receive up to 2.2 cfs or 1.9 MGD from LADWP, which will provide an emergency water supply to FMWD through a metered connection.
- LADWP to receive up to 2.2 cfs from CVWD through a booster pump system that will provide LADWP water in emergency situations.

CVWD is an active member of the southern region of the statewide Water Agency Response Network (WARN), a mutual aid coalition of water departments and agencies which allows for coordination of resources during disasters or catastrophic events.

Supplemental Water Supplies – Supplemental water supplies to help offset future shortages due to drought would be available through FMWD via MWD and their WSDM. The WSDM is referenced in FMWD's 2020 UWMP and described in detail in MWD's 2020 UWMP.

Preparation actions for possible catastrophes are summarized in **Table 5.11**.

Table 5.11: Preparation Actions for Catastrophe

Possible Catastrophe	Preparation Actions
Regional Power Outage	• Emergency Preparedness and Disaster Response Plan • Standby Emergency Power Generators • Interconnections with nearby agencies • Water Agency Response Network Membership • Supplemental Water Supplies
Earthquake	
Supply Contamination	
Terrorist Act which Interrupts Service	
Other(s)	

5.4.7 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

INTRODUCTION

Earthquakes can vary significantly in magnitude and the amount of damage caused. Major earthquakes can cause loss of electrical power, damage to CVWD's structures and

equipment, disruption of service, and injuries to staff. This section provides a description of CVWD's procedures (i.e., response and mitigation) after an earthquake event.

As mandated in CWC Section 10632.5, beginning January 1, 2020, water suppliers are required to include a seismic risk assessment and mitigation plan as part of their WSCP to assess the vulnerability of each of the various facilities of their water system and mitigate those vulnerabilities. If an urban water supplier does not have a seismic risk assessment and mitigation plan, the urban water supplier may instead, per CWC Section 10632.5(c), include a local hazard mitigation plan (LHMP) or a multi-hazard mitigation plan. This requirement is satisfied by the incorporation of elements and analyses from CVWD's Risk and Resilience Assessment (RRA), ERP, and seismic evaluation as well as the 2019 County of Los Angeles All-Hazards Mitigation Plan (attached as **Appendix D**). The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although CVWD does not currently have a Seismic Risk Assessment and Mitigation Plan, CVWD applied for a planning grant in March 2019 and was awarded funding by the Federal Emergency Management Agency in April 2020 to complete an LHMP.

CVWD LHMP

During the LHMP process, residents and officials from neighboring agencies will be asked to contribute by sharing local knowledge of the area's vulnerability to hazards and by suggesting ways CVWD can mitigate disasters. CVWD also formed a Steering Committee made up of local stakeholders, who oversaw the plan's development and outreach. The committee met on a monthly basis for approximately seven months and meetings were open to the public. The LHMP process was started in late 2020, with a seismic evaluation, and is expected to be completed by the Fall of 2021.

Figure 5.5: The Five Phases of Emergency Management

LHMP Goals and Objectives

The six goals of CVWD's LHMP are listed below:

1. Protect life and property

2. Maintain continuity of essential water and sewer services
3. Increase public awareness of the risk of loss of water/sewer service
4. Facilitate partnerships with recognized stakeholders within the Crescenta Valley and implement a coordination plan between the stakeholders
5. Protect local water supply sources
6. Protect against environmental consequences caused by water and sewer system failure initiated by natural hazards

The CVWD Steering Committee members identified the following plan objectives:

- Implement activities that assist in protecting lives by making CVWD's infrastructure, critical facilities, and other properties more resistant to natural hazards
- Protect water quality and supply
- Properly address aging infrastructure issues to reduce/minimize future hazards and disasters
- Raise awareness and communicate to the Crescenta Valley Community about the risks to CVWD assets
- Leverage grant funding and low interest loan programs to implement hazard mitigation capital projects
- Establish policies to ensure mitigation projects are prioritized for critical facilities, services, and infrastructure
- Create, rehabilitate, enhance, and preserve local ecosystems to serve as natural hazard mitigation functions

SEISMOLOGY OF WATER FACILITIES & VULNERABILITY

According to the maps provided on the California Office of Emergency Services' online planning tool (My Plan) and the California Geological Survey's online earthquake hazards zone application (EQ Zapp), no portion of the CVWD system is crossed by a known fault line as shown in **Figure 5.6**. Furthermore, based on the CVWD seismic evaluation, none of CVWD's pipelines, wells, booster pump stations, reservoirs, or other water facilities are located in areas containing soft, fine grained soils, which amplify the earthquake energy during an earthquake. All water facilities are located in areas of very dense and stiff soil. Therefore, there are no CVWD potable water structures with an extremely high risk of earthquake damage. There are, however, areas with increased risk due to landslides, liquefaction, and some CVWD facilities that are more susceptible to earthquake damage than other facilities.

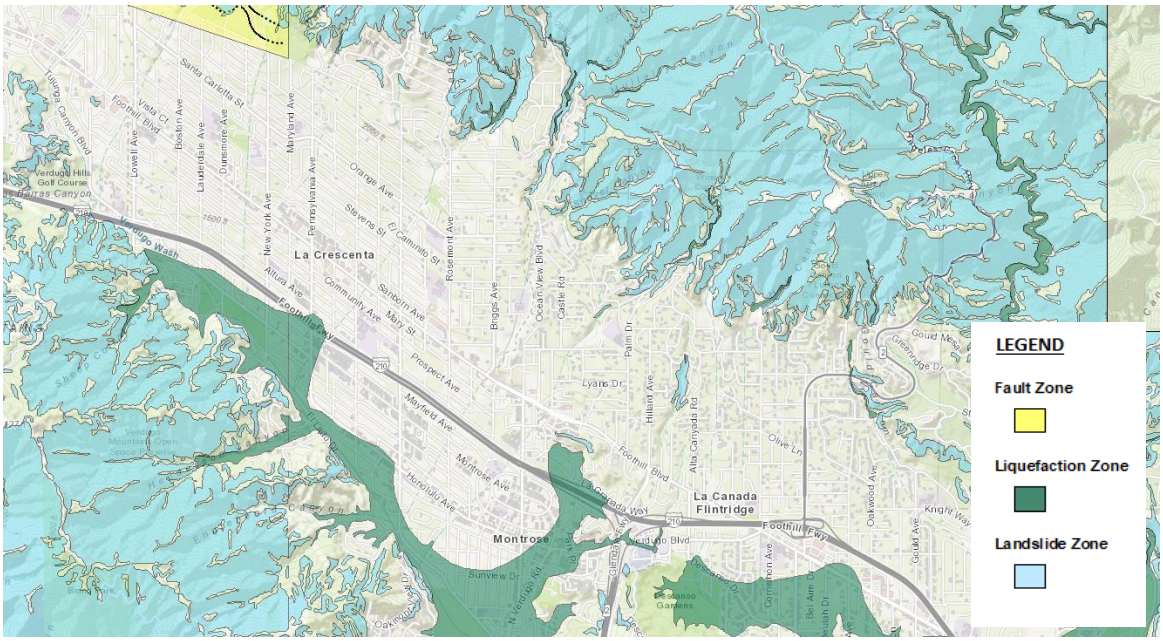

Figure 5.6: Seismic Hazards within CVWD Service Area (California Geological Survey)

An earthquake is caused by the shifting of tectonic plates beneath the Earth's surface. Ground shaking from moving geologic plates collapses buildings and bridges, and sometimes triggers landslides, avalanches, flash floods, fires and tsunamis. The strong ground motion of earthquakes has the potential to cause a great deal of damage to drinking water and wastewater utilities, particularly since most utility components are constructed from inflexible materials (i.e., concrete, metal pipes). Earthquakes create many cascading and secondary impacts that may include, but are not limited to:

- Structural damage to facility infrastructure and equipment
- Water tank damage or collapse
- Water source transmission line realignment or damage
- Damage to distribution lines due to shifting ground and soil liquefaction, resulting in potential water loss, water service interruptions, low pressure, contamination and sinkholes and/or large pools of water throughout the service area
- Loss of power and communication infrastructure
- Restricted access to facilities due to debris and damage to roadways

Additional seismic risks will be further described in the CVWD LHMP.

ERP – EARTHQUAKE EMERGENCY RESPONSE

CVWD is currently updating its ERP to replace its existing ERP by December 31, 2021 in order to meet the requirements of America's Water Infrastructure Act of 2018 (AWIA).

The ERP provides CVWD staff with the necessary information, strategies, procedures, and mitigation actions to address earthquake emergencies. CVWD's ERP policies are intended to guide disaster management planners and emergency responders, and to provide a consistently high level of preparedness at all the facilities.

Per the ERP, after a major earthquake, the Emergency Operations Center (EOC) will be activated if potential or significant damage has occurred in CVWD's service area, and the situation cannot be handled by routine public safety response or immediate mutual aid assistance. The General Manager shall assess the situation and establish the incident command post as necessary. In the event of an emergency, CVWD personnel will be required to inspect all water facilities for apparent signs of damage or abnormal conditions and conserve the existing water supply in the reservoirs from loss through water line breaks in the distribution system.

CVWD SEISMIC EVALUATION

As part of the LHMP preparation process, CVWD performed a seismic evaluation in 2020 involving seismological and geological investigations of the CVWD service area that was used to evaluate the susceptibility of the water system to damage following an earthquake. The purposes of the seismic evaluation were as follows:

- Determine the probability of damage to potable water structures and identify the expected functionality of essential features of the system after a major earthquake in the service area.
- Identify the amount of potable water structures located in high hazard areas (i.e., liquefaction zones, soft soils, landslide risk zones).
- Protect human life against earthquake hazard as it affects the existing water system.

Figures 5.7 and **5.8** show some of the results of the seismic evaluation regarding the potential for damage due to the impacts of a major earthquake event. The evaluation used the aftermath of the 1994 Northridge earthquake as a basis.

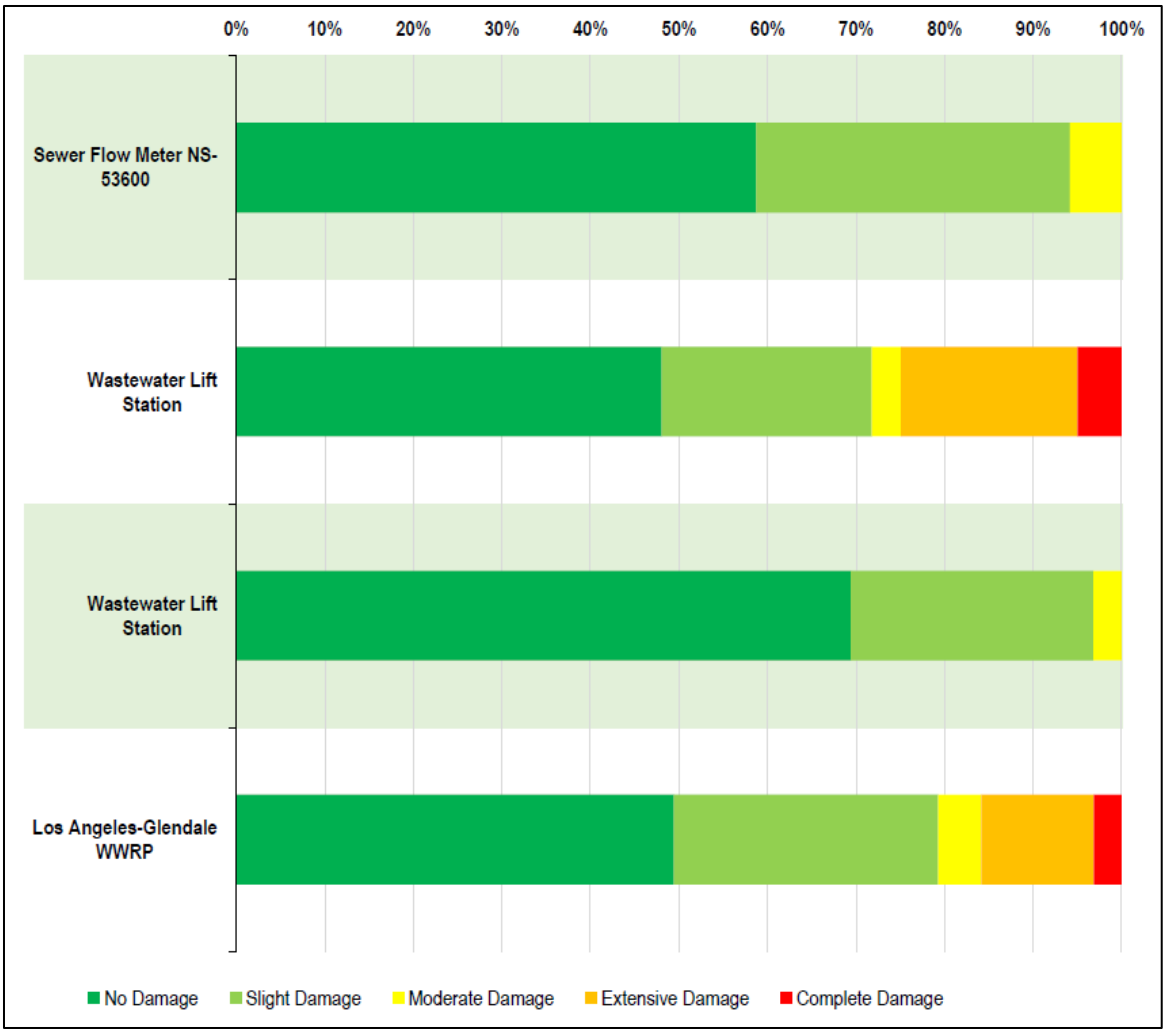

Figure 5.7: Probability of Damage to Facilities from a Magnitude 6.9 Event

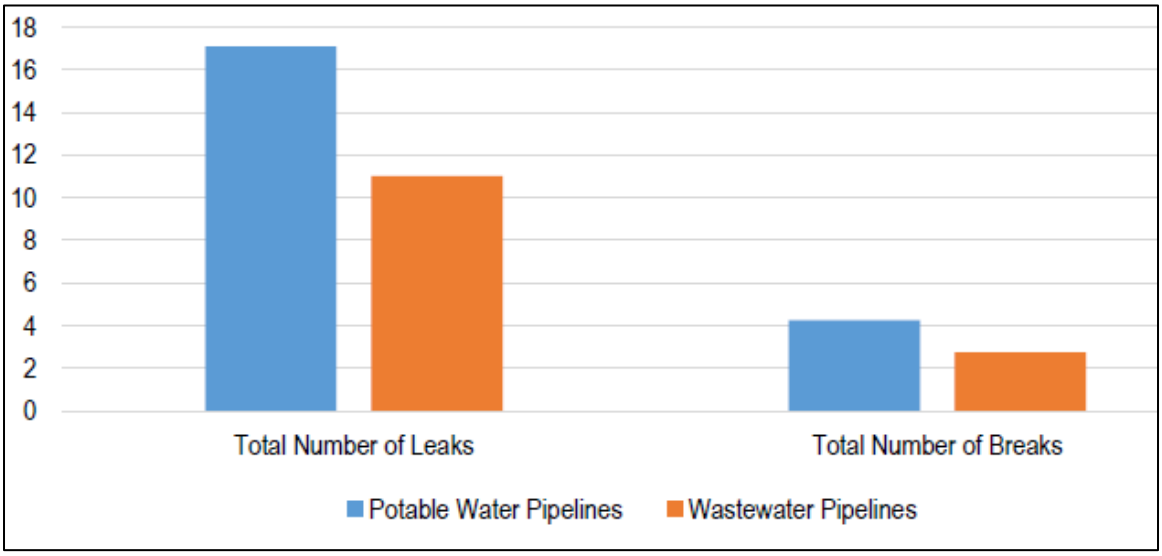

Figure 5.8: Pipeline Repairs Required after a Magnitude 6.9 Event

MITIGATION ACTIONS

Hazard mitigation may occur during any phase of a threat, emergency, or disaster. Mitigation can and may take place during the preparedness (before), response (during), and recovery (after) phases. The process of hazard mitigation involves evaluating a hazard's impact and identifying and implementing actions to minimize or eliminate the impact.

As part of the LHMP planning process and risk assessment, CVWD's Core Planning Team developed a mitigation action plan, consisting of pre-mitigation projects, to present how CVWD can reduce the risk and vulnerability of people, property, infrastructure, natural and cultural resources, and economic impacts to future disaster losses, including earthquake events. Emphasis was placed on both existing and future development.

Pre-mitigation projects to mitigate earthquake events may include, but are not limited to, the following:

- New Portable Emergency Electrical Generators – four (4) new portable generators to be staged at Booster Pump Station sites to move water to higher elevations.
- New Seismic Sensors & Valve Actuators on Reservoir Inlet/Outlet Valves (4 sites) to close valve and save water.
- Emergency Preparedness Education Site and Water Refilling Station at Rosemont Reservoir.

Specific seismic mitigation actions/measures will be further described in the CVWD LHMP.

5.5 COMMUNICATION PROTOCOLS

5.5.1 INTRODUCTION

CVWD's communication protocol includes the various channels that CVWD will utilize to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. The goal of CVWD is to provide more public outreach to help increase awareness of water shortages. A strong communication strategy and a common understanding on the water supply situation and necessary actions between CVWD and its customers, the public, elected officials, and other key stakeholders are essential should the WSCP need to be activated. How the water shortage messages are addressed to the public are described in this communication protocol. The communication protocol will be in place prior to a water supply shortage and be initiated in Stage 2 Increased Voluntary Conservation. Activation of the communication protocol will continue through all

subsequent water shortage stages. CVWD will ensure outreach efforts are reaching key audiences as needed.

It is important to communicate to its customers the following when urgent conservation is needed:

- Which shortage stage is being implemented;
- What response actions are triggered to save water;
- Why water needs to be saved; and
- What actions CVWD is taking to respond to the water supply situation.

5.5.2 COORDINATION

The goal of CVWD's outreach plans during dry periods and water shortages is to maintain effective coordination with key audiences. In order to maintain reliability in this communication, CVWD will work closely with the Board of Directors. During dry periods or other times of limited supply, the frequency and extent of coordination will increase to ensure outreach tactics are consistent with the changing needs of CVWD and its customers. In addition to collaboration with its wholesaler, FMWD, CVWD will seek opportunities with outside organizations and agencies to complement its own outreach.

5.5.3 COMMUNICATION GOALS

Communication objectives during an existing or anticipated water shortage condition include the following:

- Motivate key audiences (i.e., customers) to increase conservation in following any voluntary or mandatory actions called for at the current stage of the WSCP.
- Raise awareness of the drought, regulations, or other conditions affecting water sources and supplies.
- Educate customers, key stakeholders, elected officials, and the general public about water supply reliability, water quality, and water delivery.
- Prepare customers for any potential escalation of the supply shortage stages.

5.5.4 COMMUNICATION PROTOCOL FOR CURRENT OR PREDICTED SHORTAGE

A current or predicted shortage, as determined by CVWD's Annual Assessment, will be addressed to the public and its customers upon submittal of the Annual Water Shortage Assessment Report to DWR by July 1 of every year. This notice may be conducted by

CVWD's website, signage in front of the CVWD office, and wholesale agency coordination.

5.5.5 COMMUNICATION PROTOCOL FOR SHORTAGE RESPONSE ACTIONS TRIGGERED OR ANTICIPATED TO BE TRIGGERED

CVWD's customers and public will be notified about any triggered or anticipated to be triggered shortage response actions. CVWD monitors and measures the projected supply and demand for water by its customers monthly and recommends the stage of conservation required to the Board of Directors. After Stage 3, 4, 5 or 6 is declared, and at each regular board meeting, the Board of Directors will consider a report by the General Manager concerning the then current water supply status. The Board will change the stage designation as appropriate; however, the Board will not impose mandatory measures without first conducting a duly-noticed public hearing pursuant to Water Code Sections 350 et seq., or 375 et seq. The appropriate stage of water conservation and the shortage response action triggered by the stage is then declared in a public notification posted on CVWD's website and published in a daily newspaper.

5.5.6 OTHER RELEVANT COMMUNICATION PROTOCOLS

To reduce water use consumption during any water shortage stage, CVWD will increase its public education and outreach efforts to build awareness of needed actions from the public. Moreover, CVWD will regularly revise its outreach campaign to reflect current supply conditions. Key communication strategies and associated water shortage stage implementation are listed below:

- Promote available water assistance resources for vulnerable populations; specialized outreach for impacted industries (Stages 3 and 4).
- Keep stakeholders aware of conditions (all Stages).
- Proclaim stage change to key stakeholders and the general public (all Stages).
- Conduct meetings with elected officials and other key civic and business leaders (Stage 2).
- Encourage reduced optional outdoor use through outreach (Stages 3 and 4).

CVWD may implement these communication strategies through its newsletters, website, and social media platforms to reflect supply conditions. In addition, CVWD may conduct news briefings or other media outlets (i.e., TV, radio, newspapers) to announce changes in supply conditions.

5.5.7 CRISIS COMMUNICATION PROTOCOL

In the event of a catastrophic supply interruption due to a natural disaster or damage to CVWD's facilities, CVWD will implement communication procedures in accordance with local, regional, state, and federal emergency response guidelines as outlined in its ERP. Depending upon the severity of the emergency and potential damage to CVWD's facilities, CVWD may determine that it is necessary to utilize the Standardized Emergency Management System (SEMS) response and the Incident Command System (ICS). Public information and crisis communication are an integral part of the ICS structure. National Incident Management System (NIMS), SEMS, and ICS have been integrated into the ERP. It provides for a strategic response by all employees and assigns specific responsibilities in the event the plan is activated.

When an incident occurs, the General Manager (Emergency Response Manager), District Engineer (Emergency Operations Center Manager) and the Operations Manager (Field Crew Supervisor) will go to the designated EOC and begin implementation of CVWD procedures and employ appropriate strategies from the shortage stages in **Table 5.2**.

Crisis communication efforts will concentrate on providing information to the public and external audiences. Furthermore, outreach messaging will reflect emergency conditions and the need to focus on health and public safety. CVWD will keep the Board of Directors informed of incident status and coordinate with public health officials.

CVWD will maintain communication with FMWD and its customers. Situation status reporting will be conducted during each operational shift during an event. In addition, CVWD may also authorize release of public information to news media to announce conditions and explain needed action. Finally, CVWD will ensure ongoing coordination with emergency response services with daily advisories or alerts as needed.

5.6 COMPLIANCE AND ENFORCEMENT

The District will use all means at its disposal to communicate compliance with its WSCP, including, but not limited to:

- Direct mailings
- Billing messages
- Website posts
- Press releases
- Social media posts
- Newspaper advertisements
- Speaker groups
- Waste of water reporting

5.6.1 PENALTIES OR CHARGES

Any customer who violates provisions of CVWD's Water Conservation Plan Ordinance by either excess use of water or by specific violation of one or more of the applicable water use restrictions for a particular mandatory conservation stage may be cited by CVWD and may be subject to written notices, surcharges, fines, flow restrictions, service disconnection, and/or service termination, which are detailed in **Table 5.12**.

Table 5.12: Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Written Notice (Warning)	First Violation (Any Phase)
Written Notice with Description of Penalties	Second Violation (Any Phase)
Flow restrictors (installation: $150, removal: $100) for a period of not less than 48 hours	Third Violation (Any Phase)
Flow restrictors (installation: $200, removal: $150) for a period of not less than one week OR Discontinuation of water service	Flagrant Disregard of ordinance or Multiple Violations (Any Phase)

For any violations subsequent to the second violation, if the penalty assessed is, or includes the installation of a flow-restrictor or the discontinuance of water service to the customer for any period of time, notice of the fact of the violation will be delivered 15 working days before the penalty is to be enacted, in the following manner:

- Personal delivery of written notice to the customer at their residence or place of business and obtain their signature of delivery.
- Return receipt delivery to customer at their residence or place of business.

All notices will contain, in addition to the facts of the violation, a statement of the possible penalties for the present violation for which the notice was written and each subsequent violation, a statement of the anticipated date of the penalty, if any, will be enacted for the present violation, and a statement informing the customer of the customer's right to a hearing on the violation.

5.6.2 APPEAL REGARDING VIOLATIONS

Any customer against whom a restriction or limitation is levied has the right to a hearing and a right to appeal to the Board of Directors. Written request from customer to the District must be received within 15 working days of the date of notification of the violation. Before

the hearing can be scheduled, all existing plumbing fixtures in the structure must be retrofitted exclusively with water-conserving plumbing fixtures including low flush or high efficiency toilets, low flow showerheads, and aerators. A water audit will be used to verify installation.

Enactments of the appropriate penalty will be deferred until the appeal is resolved.

If the appeal decision is not in favor of the customer, the determined penalty will be enacted within 10 days after the customer is advised of the decision in writing through certified mail, return receipt requested.

5.7 LEGAL AUTHORITIES

Under California law, including CWC Chapter 3 (commencing with Section 350) of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the CVWD Board is authorized to implement the water shortage response actions outlined in this section. In all water shortage cases, shortage response actions to be implemented will be at the discretion of the CVWD Board and will be based on an assessment of the supply shortage, customer response, and need for demand reductions.

It is noted that upon proclamation by the Governor of a state of emergency under the California Emergency Services Act, Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code, based on drought conditions, the state will defer to implementation of locally adopted water shortage contingency plans to the extent practicable. CVWD will coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

5.8 FINANCIAL CONSEQUENCES OF WSCP IMPLEMENTATION

CVWD has established a target reserve of funds within its annual budget to address the issue of lost revenue during a water shortage or drought situation. CVWD has an established reserve level that includes a 25 percent rate stabilization fund, which can offset short-term loss of revenue. The total target reserve level consists of $1,000,000, 3 months of operations and maintenance costs (less the cost of imported water) and 25 percent of expected rate revenue. In the case of a long-term water shortage or drought situation,

CVWD has instituted a tiered rate structure on its customers to offset the loss of revenue that will occur. Such measures are listed in **Tables 5.13** and **5.14**.

Table 5.13: Proposed Measures to Overcome Revenue Impacts

Name of Measures
Reserve Funds
Rate Stabilization Fund
Rate Structure Adjustment

Table 5.14: Proposed Measures to Overcome Expenditure Impacts

Name of Measures
Obtain Alternative Sources of Funding
Defer Certain Expenditures

5.9 MONITORING AND REPORTING

5.9.1 REDUCTION MEASURING MECHANISM

Under normal water supply conditions, potable water production figures are recorded daily. Water Production totals are reported to the General Manager and the Management staff on a daily basis and monthly totals are incorporated into CVWD's Water Production Report.

During any declared water shortage emergency, the General Manager and the Management staff will compare the daily water production to a maximum water supply capacity and a targeted daily production to see if the reduction goals are being met. Those daily updates will be forwarded to CVWD's Board of Directors semi-monthly. Corrective action may be taken by the CVWD Board of Directors if reduction goals are not met.

During local water shortage emergencies due to a natural disaster, production figures will be monitored daily by the General Manager and the Management staff. Reports will be provided to the CVWD Board of Directors as necessary. Water use Monitoring Mechanisms are listed in **Table 5.15**.

Table 5.15: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
Daily Records	Potable water production figures

5.10 SPECIAL WATER FEATURE DISTINCTION

As required under CWC 10632(b), water features that are not pools or spas must be analyzed and defined separately from pools and spas in the WSCP. Non-pool or non-spa water features may use recycled water, whereas, for health and safety considerations, pools and spas must use potable water. Although CVWD does not currently use recycled water and does not have the ability to use recycled water due to a lack of infrastructure, CVWD would use non-potable water for non-pool water features if and when recycled water supply ever becomes available to CVWD. Furthermore, the WSCP requires potable water recirculation for fountains and decorative water features.

5.11 WSCP ADOPTION AND REFINEMENT PROCEDURES

5.11.1 WSCP PUBLIC NOTICE AND ADOPTION

To encourage broad community participation in the WSCP preparation process, CVWD provided 60-day notification letters to agencies within CVWD's service area. Copies of the draft WSCP were made available for public review at the CVWD office prior to the public hearing. Shortly before the public hearing, a two-week and a one-week notice was published in the local press alerting the public of the public hearing. At a subsequent board meeting following the public hearing, CVWD's final WSCP was approved and adopted by its Board of Directors on June 9, 2021. **Appendix E** contains the Board resolution adopting the WSCP. The final plan was submitted to DWR within 30 days of Board adoption and includes all information necessary to meet the requirements of CWC Section 10632.

By June XX, 2021, CVWD's approved WSCP was filed with DWR. By July 1, 2021, CVWD's plan was submitted to the California State Library, County of Los Angeles, and cities within its service area. CVWD will make the plan available for public review no later than 30 days after filing with DWR.

5.11.2 WSCP REFINEMENT PROCEDURES

This section discusses the process for reviewing and updating the WSCP to ensure it

remains actively used, relevant and appropriate to the community, and consistent with applicable state and requirements. It is vital that CVWD's WSCP remain up to date so as to best ensure shortage risk tolerance is adequate, appropriate water shortage mitigation strategies are implemented as needed, proper procedures for water efficient practices are in place for the community, and better alignment with long-term water use goals.

The CVWD Core Planning Team is responsible for maintaining this plan and updating it as needed. The Director of Engineering and the Regulatory and Public Affairs Manager are the primary CVWD staff members who will carry out this process, under the direction of the General Manager or other appropriate staff member. The General Manager, or their designee, will serve as the WSCP project manager and will coordinate maintenance of the plan, conduct the formal review process, and direct the plan updates. The project manager will assign tasks, which may include collecting data, developing new or updated water shortage mitigation measures, updating sections of the plan, and presenting the plan to others.

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SECTION 6: RECYCLED WATER

2020 URBAN WATER MANAGEMENT PLAN

SECTION 6 RECYCLED WATER

6.1 OVERVIEW

Recycled water is defined as domestic wastewater purified through primary, secondary and tertiary treatment. The Southern California region, from Ventura to San Diego, discharges over 1 billion gallons of treated wastewater to the ocean each day. Since recycled water is acceptable for a variety of non-potable water purposes such as irrigation, groundwater recharge, and commercial/industrial processes, it is considered a reliable and drought-proof water source and could greatly reduce the region's reliance on imported water. As technological improvements continue to reduce treatment costs, and as public perception and acceptance continue to improve, more reuse opportunities should develop, which will increase demands for recycled water. Recycled water is a critical part of the California water picture because of the area's high likelihood of drought. As part of its overall water resources planning, CVWD continues to investigate the feasibility and cost-effectiveness of using recycled water.

Cost-effective opportunities for using recycled water are limited due to the lack of large users or large irrigated areas within CVWD's service area. In addition, there is presently a possible source from Glendale Water and Power, but no infrastructure is available. This potential use of recycled water is continually assessed by CVWD, FMWD, and MWD.

6.2 WASTEWATER DESCRIPTION & DISPOSAL

6.2.1 WASTEWATER COLLECTION

Municipal wastewater is generated in CVWD's service area from a combination of residential, commercial, and industrial sources. The quantities of wastewater generated are generally proportional to the population and the water used in the service area. It is estimated that customers within CVWD's service area generate wastewater based on 80 percent of potable water demand, although that is not a strict figure.

CVWD operates a sewage collection system with approximately 6,000 connections. The system transports this wastewater outside CVWD boundaries to a regional wastewater

treatment plant owned by the City of Los Angeles. CVWD pays a flow-based share of treatment and disposal costs to the City of Los Angeles and the treated effluent from the Los Angeles-Glendale (LAG) Water Reclamation Plant (WRP) or LAGWRP. CVWD generates approximately 550 to 600 MG of raw wastewater annually.

Wastewater collection volumes are shown in **Table 6.1**.

Table 6. 1: CVWD Wastewater Collected Within Service Area (AF) (DWR Table 6-2 Retail)

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume	Volume of Wastewater Collected from UWMP Service Area 2020	Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
CVWD	Estimated	3,373	Los Angeles County Sanitation District	Los Angeles-Glendale Water Reclamation Plant	No	No
Total Wastewater Collected from Service Area in 2020:		3,373				
NOTES: Estimated wastewater amount to be 80 percent of water demand.						

6.2.2 WASTEWATER TREATMENT

LOS ANGELES-GLENDALE WRP

The LAGWRP serves a small portion of the west side of La Cañada Flintridge and La Crescenta. The wastewater is treated through a three-step process imitating nature's cleaning processes also referred as tertiary treatment. The LAGWRP processes approximately 20 MG of non-potable water each day. Five new concurrent projects are underway at the LAG campus to improve daily wastewater and recycled water treatment operations and to reduce the strain on major sewers and the Hyperion Water Reclamation Plant. All five

Figure 6.1: Los Angeles-Glendale Plant

projects are targeted to be completed by December 2024.

6.3 CURRENT RECYCLED WATER USES

There are currently no recycled water uses within CVWD's service area.

6.4 POTENTIAL RECYCLED WATER USES

There are currently no potential recycled water uses within CVWD's service area. It is cost prohibitive due to the low demand for recycled water; however, CVWD will continue to evaluate potential projects.

6.4.1 DIRECT NON-POTABLE REUSE

CVWD does not have the potential for direct non-potable reuse within their service area due to no existing recycled water system.

6.4.2 INDIRECT POTABLE REUSE

CVWD does not have the potential for indirect potable reuse within their service area.

6.5 OPTIMIZATION PLAN

Because CVWD is not using recycled water at this time, it is not practicable to provide a recycled water optimization plan.

To determine if a recycled water project is cost-effective, cost/benefit analyses must be conducted for each potential project. This raises the issue of technical and economic feasibility of a recycled water project requiring a relative comparison to alternative water supply options. Analyses indicate that capital costs of water recycling in CVWD's service area exceed the cost of purchasing additional imported water from MWD.

CVWD will continue to conduct cost/benefit analyses for various recycled water projects and seek creative solutions in coordination with MWD and other cooperative agencies. These include solutions for funding, regulatory requirements, institutional arrangements, and public acceptance.

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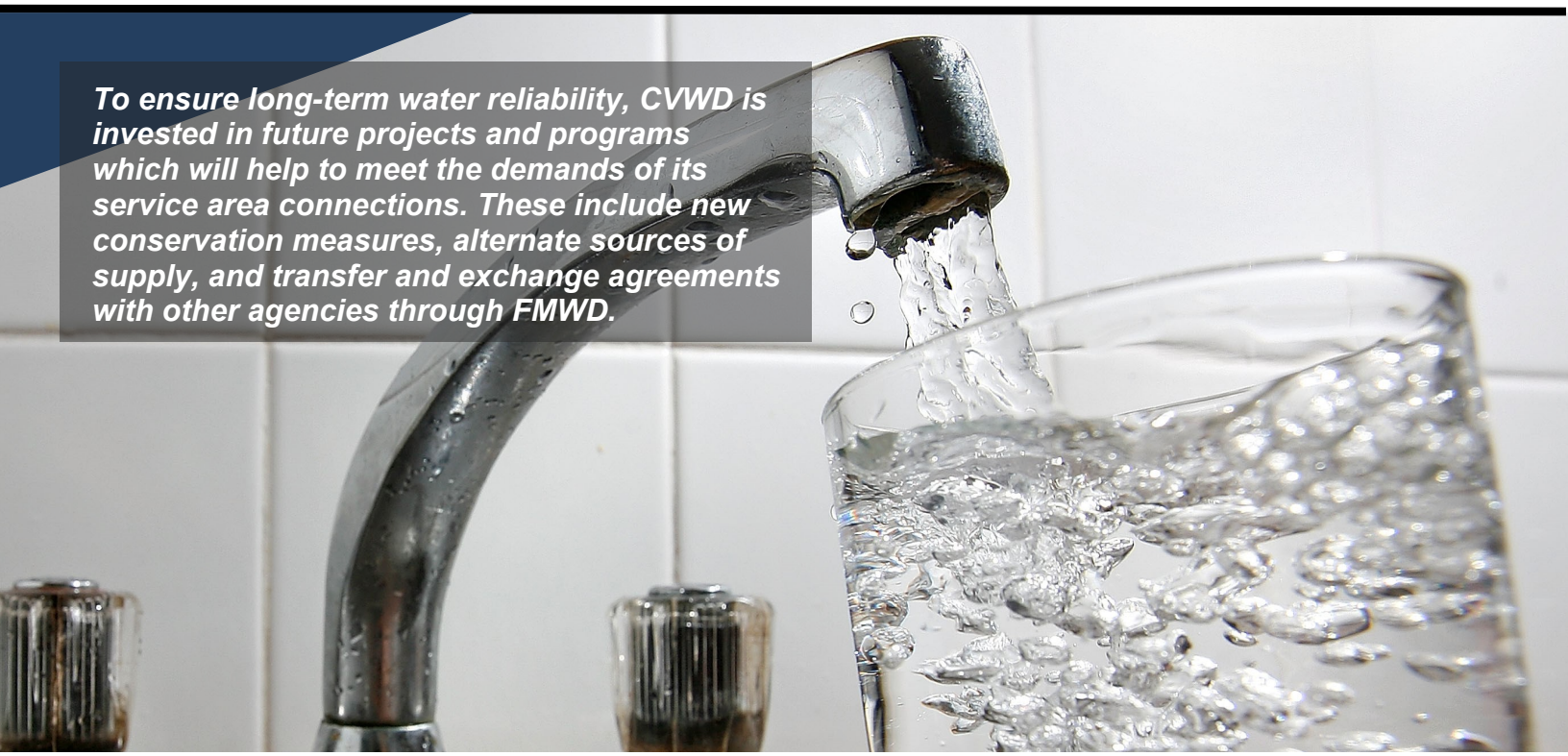

To ensure long-term water reliability, CVWD is invested in future projects and programs which will help to meet the demands of its service area connections. These include new conservation measures, alternate sources of supply, and transfer and exchange agreements with other agencies through FMWD.

SECTION 7: FUTURE SUPPLY PROJECTS & PROGRAMS

2020 URBAN WATER MANAGEMENT PLAN

SECTION 7 FUTURE WATER SUPPLY PROJECTS & PROGRAMS

7.1 OVERVIEW

In general, CVWD continually reviews practices that will provide its customers with adequate and reliable supplies. As discussed in previous sections, CVWD is dedicated to maximizing its supply sources while reducing its dependency on imported supplies. CVWD considers plans for alternate sources such as recycled, greywater, and rainwater harvesting. This section discusses planned and potential future water supply projects and programs, while updating existing plans from 2015 as well as presenting new plans.

7.2 MWD REGIONAL SUPPLY PROJECTS & PROGRAMS

MWD is implementing water supply alternative strategies for the region and on behalf of member agencies to ensure available water in the future, including:

- Conservation
- Water recycling & groundwater recovery
- Storage and groundwater management programs within the region
- Storage related to SWP & CRA
- Other water supply management programs outside of the region

MWD has made investments in conservation and supply augmentation as part of its long-term water management strategy. MWD's approach to a long-term water management strategy was to develop an Integrated Resource Plan (IRP) to include diversified supply sources.

MWD is currently updating its IRP; however, that process will not be completed until after submittal of this UWMP. The IRP projects demands and identifies a mix of supplies to meet those demands. These supplies include desalination, recycling, conservation, brackish groundwater recovery and conjunctive use. MWD has financial incentive programs in place for local agencies to develop these supplies. FMWD, as a member agency of MWD, supports these incentive programs and contributes to these financial incentives through its payments for water from MWD.

7.3 WATER MANAGEMENT TOOLS

Resource optimization, such as local groundwater, storm water recharge, and recycled feasibility studies to minimize the needs for imported water, is key for CVWD to meet future water demands. CVWD can meet projected demands with existing facilities and distribution systems. With the eventual replacement of older wells with new and more efficient wells in addition to the continued efforts in reducing water waste, CVWD can meet projected demands with existing facilities and distribution systems.

7.4 TRANSFER OR EXCHANGE OPPORTUNITIES

At this time, CVWD is not currently involved in any transfer or exchange opportunities.

7.5 PLANNED WATER SUPPLY PROJECTS & PROGRAMS

GROUNDWATER RECHARGE

CVWD is working towards the development of the Crescenta Valley County Park Multiuse Project. This Project will allow CVWD to increase groundwater storage in the Basin by installation and maintenance of underground infiltration galleries underneath portions of the existing park. This will be accomplished by utilizing the existing Los Angeles County flood control channels (Verdugo Wash) and surface flow within the Crescenta Valley to divert storm water during the rainy season and capturing dry weather flow to proposed underground infiltration basins within the recreational areas. The project will potentially increase the local water supply by an annual average of 340 AFY, thus enhancing CVWD's groundwater resource and reducing dependence on imported supplies. Also, through the process of capture, treatment, and reuse of storm water and dry weather flow, the project could potentially reduce pollutant load from contaminating the Los Angeles River.

NEW WELLS

CVWD is planning to replace its older groundwater wells with new modern constructed wells over a 10-year period, which started in 2015. The existing wells are between 55 to 80 years old and are reaching the end of their useful life. CVWD's current program is to perform at least two well rehabilitations a year, which includes cleaning the well casing with chemical treatment and installation of steel linear to extend the life of a well.

RESERVOIR REHABILITATION

In Fall 2020, CVWD began the rehabilitation of the Rosemont Reservoir. The 500,000-gallon reservoir rehabilitation project is midway through its construction phase, with most of its heavy construction completed. Construction is currently in Phase II of the rehabilitative process, including sandblasting, stripping, and adding primer coats to both the inside and outside of the tank. The project is estimated to be completed by April 2021. The reservoir structure has not been rehabilitated in over 20 years, and though the tank is starting to show signs of aging, its structural integrity has not been compromised over the years. This reservoir project is part of CVWD's Reservoir Rehabilitation Program for the next 12-years where CVWD plans to rehabilitated one reservoir per year.

7.6 DESALINATION OPPORTUNITIES

There are technologies in place to remove the salts in both brackish groundwater and ocean water for potable use. CVWD does not have any projects to remove salts from local supplies to replace imported water; however, it supports these projects through MWD's programs where MWD provides incentives to other agencies for treatment.

7.6.1 DESALINATION OF GROUNDWATER

There are currently no brackish groundwater opportunities within CVWD's service area.

7.6.2 DESALINATION OF OCEAN WATER

CVWD does not have opportunities to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination; however, CVWD supports MWD's Seawater Desalination Program, which provides incentives to MWD's member agencies of up to $340 per AF for the production of desalinated ocean water.

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CVWD recognizes that the success of its operations comes from the participation of other agencies and the general public. For this 2020 UWMP, CVWD encouraged participation prior to the public hearing and Board Adoption.

SECTION 8: UWMP ADOPTION PROCESS

2020 URBAN WATER MANAGEMENT PLAN

SECTION 8 PLAN ADOPTION PROCESS

8.1 OVERVIEW

Recognizing that close coordination among other relevant public agencies is the key to the success of its 2020 UWMP, CVWD worked closely with other agencies to develop and update this planning document. CVWD provided 60-day notification letters to encourage agencies to participate in the UWMP preparation process. Copies of the draft UWMP and draft WSCP were made available for public review at the CVWD office prior to the public hearing. Shortly before the public hearing, a two-week and a one-week notice was published in the local press alerting the public of the public hearing. At a subsequent Board meeting following the public hearing, CVWD adopted the 2020 UWMP and WSCP on June 8, 2021. Finally, as required by the UWMP Act, this 2020 UWMP and the WSCP are being provided by CVWD to DWR, the California State Library, and the public within 30 days of Board adoption. Details of coordination efforts are provided in **Sections 8.1.1** and **8.2**.

CVWD's 2020 UWMP is a collaborative effort involving its own staff, outside agencies, and the general public.

8.1.1 WATER CODE REQUIREMENTS

Article 3 of the CWC requires that CVWD provide a minimum level of agency and public participation during the UWMP preparation process, as well as the adoption and implementation process of the UWMP. **Table 8.1** on the following page summarizes external coordination and outreach activities carried out by CVWD during the preparation of its 2020 UWMP, along with corresponding dates.

Also in accordance with Article 3 of the CWC, CVWD is required to distribute its official (adopted) UWMP and WSCP and make it publicly available. After the adoption of the 2020 UWMP and WSCP by Board Resolution No. XXX (attached as **Appendix E**) on June 9, 2021, CVWD provided copies of its adopted UWMP in accordance with **Table 8.2**.

Table 8.1: Coordination & Outreach during UWMP Preparation

Effort	Description	Date
"60-Day Notification"	Letters sent to Cities, County, & other Agencies	March 9, 2021
Public Hearing	Public Hearing Held at CVWD Headquarters (two-week and one-week notices published)	June 9, 2021
Board Adoption	Board Adoption of UWMP by Resolution	June 9, 2021

Table 8.2: UWMP & WSCP Distribution Following Adoption of Plans

Effort	Description	Date
DWR Submittal	Submitted UWMP and WSCP to DWR (within 30 days of adoption)	June 15, 2021
Agency Submittal	Submitted UWMP and WSCP to the California State Library and County of Los Angeles (within 30 days of adoption)	June 15, 2021
Public Access	Made UWMP and WSCP available to public (within 30 days of submittal to DWR)	June 15, 2021

8.2 DETAILS OF COORDINATION EFFORTS

8.2.1 GENERAL PUBLIC COORDINATION

To meet the CWC and to provide for its own benefit, CVWD has actively solicited community participation during the UWMP preparation and adoption process by performing the following activities:

- Encouraging attendance and participation in Board Meetings prior to the actual UWMP Public Hearing as part of CVWD's ongoing community outreach efforts
- Soliciting comments on the UWMP while providing copies of its Draft 2020 UWMP at the CVWD office and on its website
- Holding a public hearing for the express purpose of inviting UWMP comments and

opening the floor for public comments to be received

On June 9, 2021, CVWD held a Public Hearing to receive comments on the 2020 UWMP, including the WSCP as part of the UWMP. Notification of the public meeting for consideration of adoption of CVWD's draft UWMP was printed in a local newspaper, a copy of which is provided in **Appendix F**. All comments received prior to and during the Public Hearing were taken into consideration in the preparation of the final report. No comments were received during the public hearing.

8.2.2 OUTSIDE AGENCY COORDINATION

CVWD coordinated the development of this UWMP with several outside agencies and the cities which reside in CVWD's service area.

All of CVWD's water supply planning relates to the policies, rules, and regulations of its regional and local providers. CVWD is dependent on imported water from MWD via FMWD and local groundwater from the Basin which is an adjudicated basin within the ULARA. CVWD is also a member of the Administrative Committee, which oversees the ULARA Watermaster. The Watermaster is responsible for coordinating all groundwater pumping activities within the Basin. As such, CVWD involved these entities in the development of its 2020 Draft UWMP at various levels of contribution as summarized in **Table 8.3**.

Table 8.3: UWMP Coordination Efforts

Agency	Helped Plan Prep.	Contacted for Assistance	Comments on Draft	Notified of Public Hearing	Attended Public Hearing
FMWD	✓	✓	✓	✓	✓
City of Glendale		✓		✓	
City of La Cañada Flintridge		✓		✓	
LA County		✓		✓	

8.3 UWMP SUBMITTAL

CVWD's final 2020 UWMP and WSCP were approved by its Board of Directors on June

9, 2021. The final plans were submitted to DWR within 30 days of Board approval and includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

By June 15, 2021, CVWD's approved 2020 UWMP and WSCP was filed with DWR. By July 1, 2021, CVWD's plans were submitted to the California State Library, County of Los Angeles, and cities within its service area. CVWD will make both plans available for public review no later than 30 days after filing with DWR.


CRESCENTA VALLEY WATER DISTRICT
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