NOTICE OF A
PUBLIC HEARING
BEFORE THE SAN FERNANDO CITY COUNCIL

NOTICE IS HEREBY GIVEN that the City Council of the City of San Fernando will hold a Public Hearing to consider the adoption of the 2020 Urban Water Management Plan.

All those wishing to testify for or against are requested to be present at the regular meeting of the City of San Fernando City Council.

The time, date, and place of the Public Hearing is as follows:

DATE:	Monday, June 21, 2021
TIME:	6:00 p.m.
LOCATION:	Council Chambers, 117 Macneil Street, San Fernando, CA 91340

A copy of the Final 2020 Urban Water Management Plan is on file in the Office of the City Clerk for public review.

Dated: May 24, 2021
Publish: June 7, 2021 & June 14, 2021

2020

URBAN WATER MANAGEMENT PLAN

CITY OF SAN FERNANDO

June 2021

PUBLIC DRAFT

2020

URBAN WATER MANAGEMENT PLAN

City of San Fernando

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JUNE 2021 PUBLIC DRAFT

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Appendix **Description**

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ACRONYMS

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
Basin	Sylmar Groundwater Basin
BMP	Best Management Practice
cfs	cubic feet per second
CII	Commercial Industrial Institutional
CIMIS	California Irrigation Management Information System
City	City of San Fernando
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
DBPs	Disinfection Byproducts
DDW	State Water Resources Control Board Division of Drinking Water
DMM	Demand Management Measure
DOF	California Department of Finance
DWR	Department of Water Resources
eARDWP	electronic Annual Report to the Drinking Water Program
EPA	United States Environmental Protection Agency
ETo	Evapotranspiration
GPCD	Gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
hcf	hundred cubic feet
HECW	High Efficiency Clothes Washer
HR	Hydraulic Region
IRP	Integrated Resources Plan
LADWP	City of Los Angeles Department of Water and Power
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
mg/L	milligrams per liter
µg/L	micrograms per liter
MARS	Member Agency Response System
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MWD	Metropolitan Water District of Southern California
NDMA	N-nitrosodimethylamine

NOAA	National Oceanic and Atmospheric Administration
PCE	Perchloroethylene
PHET	Premium High-Efficiency Toilet
PPCPs	Pharmaceuticals and Personal Care Products
SBx7-7	Senate Bill x7-7: The Water Conservation Act of 2009
SMSS	Soil Moisture Sensor System
SWP	State Water Project
TCE	Trichloroethylene
TDS	Total Dissolved Solid
ULARA	Upper Los Angeles River Area
UWMP	Urban Water Management Plan
VOCs	Volatile Organic Compounds
WARN	Water Agencies Response Network
WBIC	Weather-Based Irrigation Controller
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 City of San Fernando's (City) 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). 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 offers a summary of each section of this 2020 UWMP.

SERVICE AREA AND FACILITIES

The City provides water to a population of approximately 25,207 throughout its service area. The City primarily receives its water from the Sylmar Groundwater Basin. The City can also acquire imported water from Metropolitan Water District of Southern California (MWD), but has not done so in years. The City provides potable drinking water to its customers via three active groundwater wells (four wells total). The City distributes water to approximately 5,238 service customers through a 66.5-mile network of distribution mains ranging from 4 to 20 inches in size. The water system consists of two pressure zones that provide modified pressure to customers.

WATER DEMAND

The total water demand for the 25,207 people served by the City is over 2,800 acre-feet of potable water for the 2020 calendar year.

The City has selected to comply with **Method 3**. Under Compliance Option 3, the City chose to achieve 95 percent of the State's hydrologic region target of 134 gallons per capita per day (GPCD) by 2020. In addition, since the City's 20 percent reduction target (112 GPCD) far exceeds the minimum reduction requirement of 134 GPCD, it is feasible for the City to select 134 GPCD as its 2020 water use target. Therefore, the City's compliance target for 2020 per capita water consumption is 134 GPCD. A description of the compliance options is discussed in **Section 4.4**.

In 2020, the City has a per capita water use of **101 GPCD**. As a result, **the City achieved its 2020 final water use target**.

WATER SOURCES AND SUPPLIES

On average, 100 percent of the City's source water is local ground water supply in the Basin. All of the City's ground water wells are located along the Sylmar Groundwater Basin. The City continues to use MWD's connections for emergency use only.

FUTURE WATER SUPPLY PROJECTS

The City continually reviews practices that will provide its customers with adequate and reliable supplies. The City projects water demands within its service area to remain relatively constant over the next 25 years due to minimal growth combined with water use efficiency measures. At the moment, the City has plans to reactivate Well 3 to increase groundwater production capabilities. Currently, the well is inactivated due to high levels of nitrates and has future plans of installing an ion-exchange system with the well.

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. MWD's 2015 Integrated Water Resources Plan update 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. As for groundwater supplies, the Basin remained stable and production rights remained the same throughout the recent drought. As a result, groundwater supplies continue to be a reliable source into the future. The City 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 6.4** to **Table 6.10** in **Section 6**.

CHALLENGES AHEAD & STRATEGIES FOR MANAGING RELIABILITY RISKS

The City faces challenges in the near future regarding water supply including:

- Over the last decade, drastic changes in annual hydrologic conditions 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 MWD.

The City's strategies for managing these reliability risks include:

- Continuing a progressive and effective water conservation program.
- Supplementing water supplies through water 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 under the Water Shortage Contingency Plan (WSCP) to conserve limited supplies.
- Reactivating ground water wells impacted by water quality contaminants with the addition of treatment systems.

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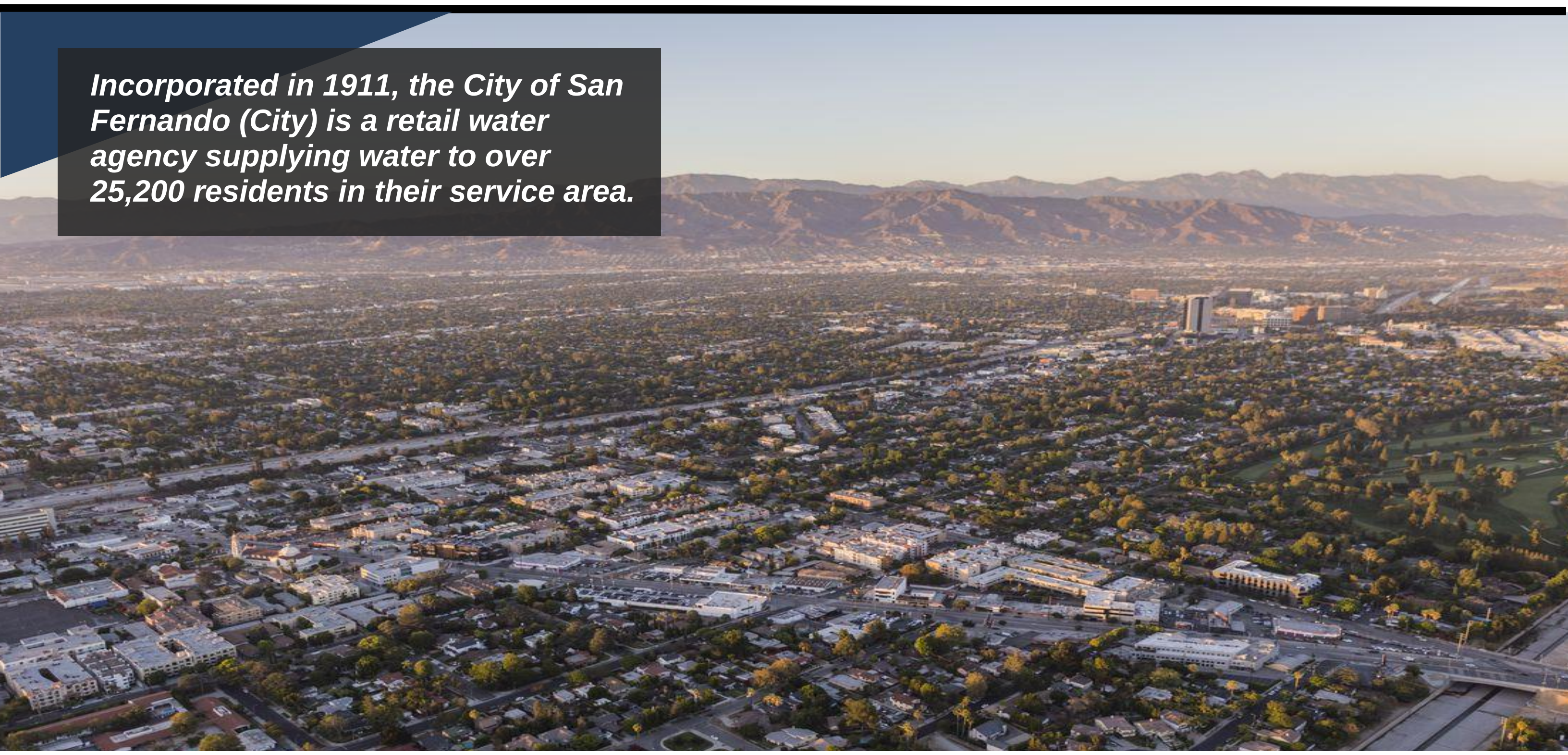


SECTION 1: INTRODUCTION

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 1 INTRODUCTION

1.1 PURPOSE AND SUMMARY

This is the 2020 Urban Water Management Plan (UWMP) for the City of San Fernando (City). This plan has been prepared in compliance with the Urban Water Management Planning Act (Act), per Division 6 of the California Water Code, Sections 10610 to 10657 (**Appendix A**), which has been most recently amended by SB 606 in 2018.

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.

The 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 describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities (*See generally* Wat. Code § 10631).

The Act has been amended on several occasions since its initial passage in 1983. New requirements of the Act due to Water Conservation Act of 2009 (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. 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. Effective 2021, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans.

1.2 COORDINATION

In preparing this 2020 Plan, the City has encouraged broad community participation as indicated by **Table 1.1**. Copies of the City's draft plan were made available for public review at City Hall and the local public libraries in the City. The City noticed a public hearing to review and accept comments on the draft plan with more than two weeks in advance of the hearing. The notice of the public hearing was published in the local press and mailed to the City Clerk**.** On June 21, 2021, the City held a noticed public hearing to review and accept comments on the draft plan. Notice of the public hearing was published in the local press. Following the consideration of public comments received at the public hearing, the City adopted the 2020 Plan on June 21, 2021. A copy of the City Council resolution approving the 2020 Plan is included in **Appendix D**.

As required by the Act, the 2020 Plan is being provided by the City to DWR, the California State Library, and the public within 30 days of the City's adoption. The 2020 UWMP will be available to the public during normal business hours within 30 days of submitting the 2020 UWMP to DWR.

Table 1.1: Coordination and Public Involvement

Agency	Participated in Plan Preparation	Notice of Preparation/ Contacted for Assistance	Commented on Draft	Notified of Public Hearing	Attended Public Hearing
City Water Dept. Staff	✓	✓	✓	✓	✓
City Public Works Dept. Staff		✓	✓	✓	✓
City Manager's Office				✓	✓
City Council				✓	✓
Metropolitan Water District (MWD)		✓		✓	
LA County Dept. of Public Works		✓		✓	
LADWP		✓		✓	
ULARA Water Master				✓	
City of LA Bureau of Sanitation				✓	
Interested General Public				✓	

1.3 UPDATES TO THE UWMP ACT

Since the 2015 UWMPs, there are no 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 FORMAT OF THE PLAN

The sections and information contained in this 2020 UWMP correspond to the items in the Act and other amendments to the Water Code, as follows:

Section 1 - Introduction	This section describes the Act, the City's planning and coordination process, the history of the City's water supply system, and a description of its water service area. This section also describes the local climate, population served, and the water system.
Section 2 – Water Sources & Supplies	This section describes the City's water supplies, including imported water from the State Water Project (SWP), and how the City handles those water supplies. This section also discusses potential water supplies and energy intensity.
Section 3 – Water Quality	This section discusses the quality of the City's water sources, including a discussion on the treatment and testing of water. This section also discusses water quality effects on management strategies and supply reliability.
Section 4 – Water Demands	This section describes past, current, and projected future water demands within the City's service area. This chapter also discusses the requirements of the SBx7-7.

Section 5 – Climate Change	This section discusses climate change, its overall impacts on society, and its impact on the City's water supplies. This section also discusses potential future impacts, current efforts to combat climate change, and climate change considerations for water supply and demand projections.
Section 6 – Reliability Planning	This section discusses the need for reliability planning due to historic and recent droughts. This section also presents an assessment of the reliability of the City's water supplies by comparing projected future water demands within City of San Fernando's service area with expected water supplies under three different hydrologic conditions: a normal year; a single dry year; and multiple dry years.
Section 7 – Demand Management	This section addresses the City's compliance with the current Best Management Practices (BMPs), otherwise known as Demand Management Measures (DMMs).
Section 8 – Water Shortage Contingency Plan	This section describes the City's efforts that will be utilized in the event of a water supply interruption, such as a drought. City of San Fernando's Board adopted an ordinance in 2014 (City Ordinance No. 1638) which encourages conservation and recommends minimum restrictions be placed on water use. In addition, Metropolitan Water District of Southern California's (MWD) Water Surplus and Drought Management Plan (WSDM) is also described. This section will also include a description of the seismic risk that may impact the City's supply and member agencies.
Section 9 – Recycled Water	This section describes past, current and projected recycled water use, along with a description of wastewater collection and treatment facilities.
Appendices	The appendices contain references, supplemental information, and specific documents relating to the City, used to prepare this 2015 UWMP.

1.5 UPDATES TO THE 2020 PLAN

In addition to updated information for the years 2015 - 2020, the City's UWMP has undergone several changes since the 2015 UWMP. The most significant change is the inclusion of the climate change section (**Section 4**). A summary of the changes to the 2015 UWMP is provided below:

- **Revised UWMP layout (double column to single)**
- **New Section: Climate Change (Section 5)**
- **Updated Section 8 – Water Shortage Contingency Plan**
- **Added new topics not previously discussed in the 2015 UWMP (Energy Intensity, Seismic Risk, etc.)**
- **Updated data, facts, and figures previously included in the 2015 UWMP**
- **Added new data, facts, and figures not previously included in the 2015 UWMP**

In addition to the above changes, there are multiple minor changes. The changes reflect both those that are required by the Water Code and those that the City elected to include or modify.

1.6 WATER SYSTEM HISTORY

In the early 1900s, much of the western Los Angeles area was unincorporated, which prompted the City of Los Angeles to offer a reliable imported water supply (via the Los Angeles Aqueduct) as an incentive for annexation to the City of Los Angeles. For many areas, this was a welcomed opportunity for many communities. In 1911 however, the City of San Fernando was incorporated and remained autonomous by relying on groundwater to meet its water needs.

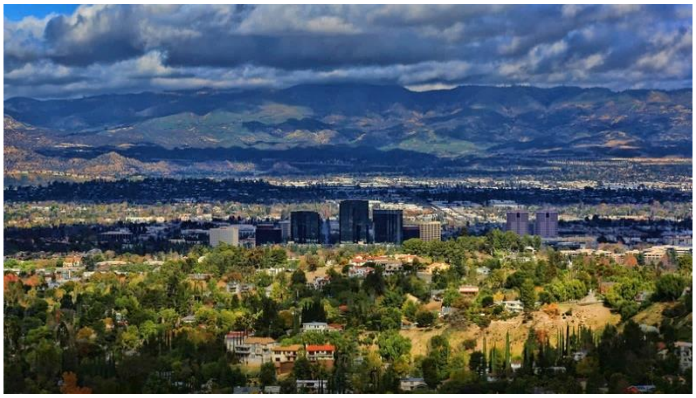


Figure 1.1: San Fernando Valley

Due to the continued development of Southern California, several water agencies came together to form the Metropolitan Water District of Southern California (MWD) in 1928. MWD was originally created to build the Colorado River Aqueduct to supplement the water supplies of the original founding members. In 1972, MWD augmented its supply sources to include deliveries from the State Water Project via the California Aqueduct. Today, the MWD serves more than 145 cities and 94 unincorporated communities through its 26 member agencies.

Figure 1.2: Metropolitan Water District (MWD)

As a result of the City's urban growth, the City of San Fernando realized the benefits of reliable imported supplies and became a member agency of MWD in 1971 (due to an earthquake that destroyed the City's wells). Today, the City of San Fernando is one of 14 retail water agencies served by MWD and receives imported water to supplement its groundwater supplies on an as-needed basis only.

Typically, the City has been able to meet 100 percent of its demand from its groundwater wells. Occasionally, the City experiences high water demand which causes the City to purchase imported water. For this reason, the City has been working on equipping two of the City wells (Well 7A and Well 3) with an ion-exchange nitrate treatment system in order to decrease the need for imported water while increasing groundwater utilization. At the end of 2018, Well No. 7A's treatment system completed construction and was reactivated, providing additional pumping capabilities of 1,000 gallons per minute (gpm). Well No. 3's treatment system is planned for the near future and also has a capacity of 1,000 gpm.

1.7 WATER SERVICE AREA

The City is located in the San Fernando Valley northwest of downtown Los Angeles and is bounded on all sides by the City of Los Angeles. The City's total area is 1,550 acres or 2.42 square miles and overlies both the San Fernando and Sylmar groundwater basins. The water service area comprises the entire City limits and serves all of the City's residents. The City is primarily a residential community but also has a mixture of commercial, industrial, and landscape water users.

1.8 CLIMATE

San Fernando has a Mediterranean climate with moderate, dry summers with an average temperature of about 73°F and cool, wet winters with an average temperature of 55°F. The average annual rainfall for the region is below 10 inches. Evapotranspiration (ETo) in the region averages approximately 58.6 inches annually. **Table 1.2** lists the average ETo, temperatures, precipitation from 2012 to 2020 for the City.

Monthly average ETo, precipitation, and temperature data was obtained from Arleta Station (#216) from the California Irrigation Management Information System (CIMIS).

Table 1.2: Historical Climate Characteristics

Month	Avg. ETo (in.)	Precip. (in.)	Temperatures (°F)	
			Min	Max
Jan.	2.53	2.54	45.28	69.29
Feb.	3.01	2.16	45.11	69.15
Mar.	4.40	1.51	47.54	72.58
Apr.	5.52	0.41	49.28	75.94
May	5.77	0.38	52.26	75.59
Jun.	6.85	0.13	56.65	82.50
Jul.	7.47	0.17	61.05	88.60
Aug.	7.33	0.11	61.14	90.23
Sep.	5.81	0.11	60.43	88.96
Oct.	4.53	0.30	55.33	82.98
Nov.	2.98	0.56	49.23	75.34
Dec.	2.37	1.60	44.44	67.03
Annual	**58.57**	**9.97**	**52.31**	**78.18**

1.9 POPULATION

According to the most recent population figures from the California Department of Finance (DOF), the current 2020 resident population of the City is approximately 25,207 persons. Since the City's service area accounts for all of the City's total residents, the total current resident population served by the City’s water system is approximately 25,207 persons. Population growth over the past 5 years, was approximately 0.3 percent. Population projections in accordance with this growth rate over the next 25 years are shown in **Table 1.3**.

Table 1.3: Current & Projected Service Area Population Projections (DWR Table 3-1 Retail)

	2020	2025	2030	2035	2040	2045
Population Served	25,207	25,637	26,075	26,521	26,974	27,434

Since the City is a not a major commercial center for the region, daytime populations estimates are not significantly higher than the City's resident population; however, the City does experience some increases in daytime population that affect overall water consumption.

1.10 WATER SYSTEM

1.10.1 Imported Water

The City's imported water supply is delivered through its 48-inch connection to MWD. Imported water is conveyed from Northern California via the State Water Project and treated by MWD at its Joseph Jensen Treatment Plant. The City's imported water supply does not consist of water received from the Colorado River.

Figure 1.3: MWD's Jensen Treatment Plant

1.10.2 Groundwater

Currently, the City produces groundwater from three active wells (Wells 2A, 4A, and 7A). The wells extract groundwater from the Sylmar Groundwater Basin and range in capacity from 450 gpm to 2,100 gpm. Well 7A was recently reactivated with a newly equipped ion-exchange system to treat the high nitrate levels. Well 3 continues to be inactive with future plans for installing an ion-exchange system.

Figure 1.4: Well No. 2A

1.10.3 Distribution System

The City distributes water to approximately 5,238 service customers through a 66.5-mile network of distribution mains ranging from 4 to 20 inches in size. The water system consists of two pressure zones that provide modified pressure to customers. The water service area and zoning map are shown in **Figures 1.5** and **1.6** on the following pages.

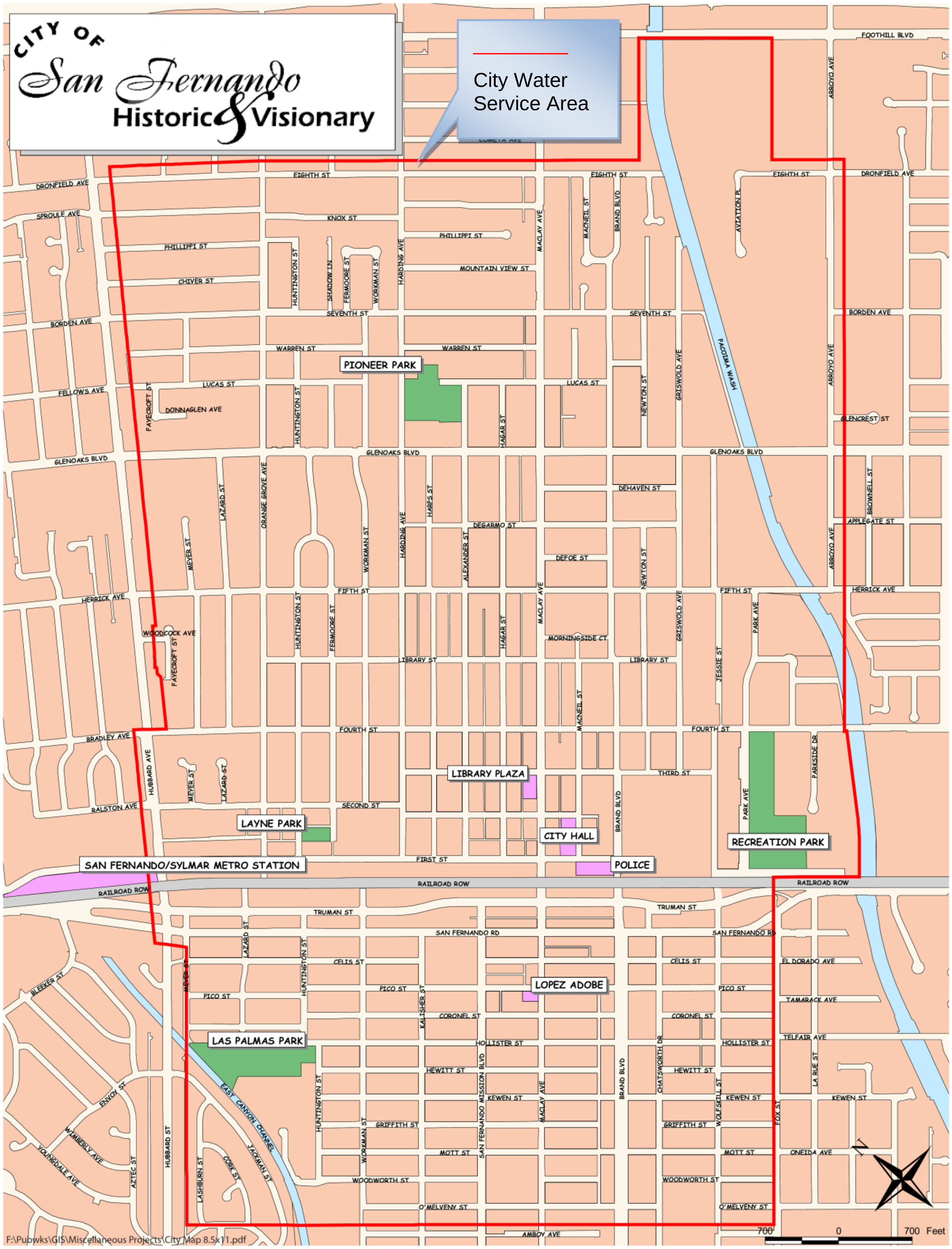


Figure 1.5: City of San Fernando Water Service Area

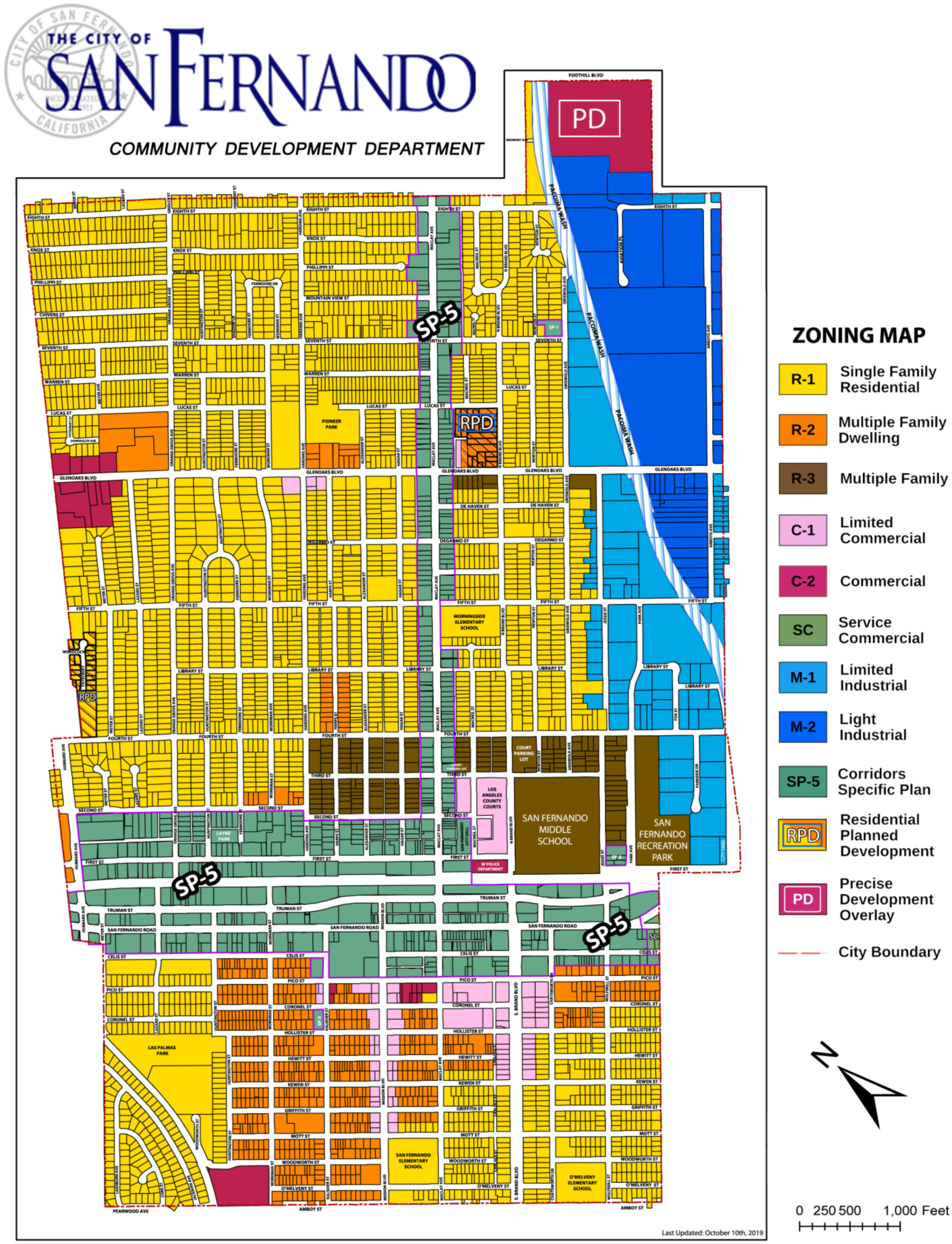


Figure 1.6: City of San Fernando Zoning Map

Water Storage

For storage needs, the City of San Fernando maintains 4 storage reservoirs with a combined storage capacity of 8.9 MG. The City's reservoirs, which are designated as 2A, 3A, 4, and 5, are located adjacent to the City limits.

Table 1.4 lists the City's reservoirs and their capacities:

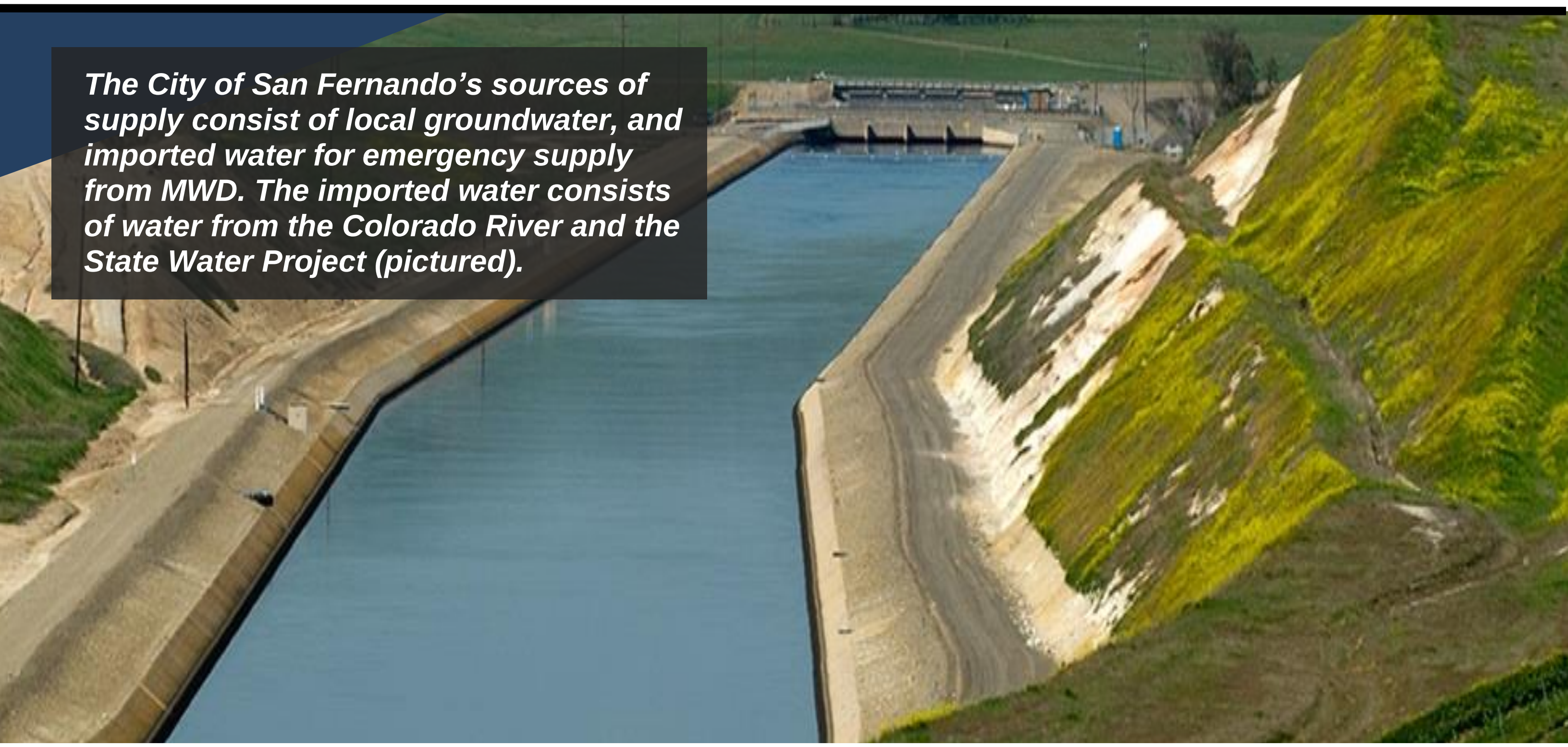
Figure 1.7: Upper Reservoirs 3A and 4

Table 1.4: City of San Fernando Reservoirs

Reservoir	Description	Capacity (MG)
2A	Concrete/ Partially Underground	3
3A	Concrete/ Partially Underground	2.5
4	Concrete/ Partially Underground	1
5	Concrete/ Partially Underground	2.4
	Total Capacity:	**8.9**

Emergency Interconnection

In addition to its imported water and groundwater, the City's water supply system also includes a 6-inch emergency connection with the City of Los Angeles Department of Water and Power (LADWP) distribution system. During emergencies, this connection enables the City to provide a minimum amount of water to its citizens.



SECTION 2: WATER SOURCES & SUPPLY

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 2 WATER SOURCES & SUPPLIES

2.1 INTRODUCTION

The City's water supply sources consist of imported water from MWD, and groundwater produced from the Sylmar Groundwater Basin.

2.2 WATER SUPPLY SOURCES

2.2.1 Imported Water

The City 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.

Figure 2.1: Parker Dam at Colorado River

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 - 800,000 acre-feet (AF)) is used for urban purposes in MWD's service area.

Bay-Delta

In addition to the Colorado River, the Sacramento-San Joaquin River Delta provides 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.

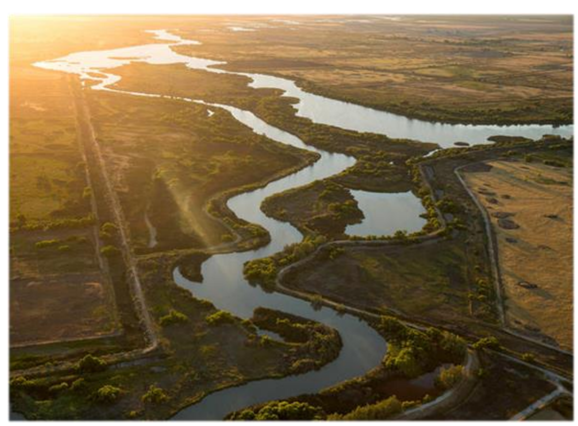


Figure 2.2: Sacramento-San Joaquin Delta

The use of water from the Colorado River and the Sacramento-San Joaquin Delta continues to be a critical issue. In particular, Colorado River water allotments have been debated among the seven basin states and various regional water agencies at both the federal and state levels. The use of Delta water has been debated as competing uses for water supply and ecological habitat have jeopardized the Delta's ability to meet either need and have threatened the estuary's ecosystem.

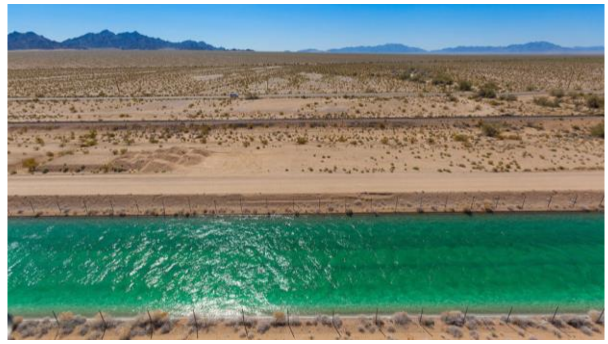


Figure 2.3: Colorado River Aqueduct

In order to provide Southern California imported water, two separate aqueduct systems (one for each source of supply) are utilized to obtain its supplies. These two aqueduct systems convey water from each source into separate reservoirs whereupon the water is pumped to one of several treatment facilities before entering MWD's distribution system. One of these aqueduct systems is known as the Colorado River Aqueduct (CRA). The CRA was constructed as a first order of business shortly after MWD's incorporation in 1928. The CRA is 242 miles long and carries water from the Colorado River to Lake Matthews and is managed by MWD.

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 water from the Delta to Southern California and is operated by DWR.

Figure 2.4: California Aqueduct

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 that are vital to the State. The major aqueducts in California are shown in **Figure 2.5**.

Imported Water Purchases

As a wholesale agency, MWD distributes imported water to 26 member agencies throughout Southern California as shown in **Figure 2.6**. The City is one of 14 retail agencies served by MWD. The City has one 48-inch imported connection to MWD with a capacity of approximately 4,400 gpm (about 7,100 AFY). **Table 2.1** presents the City's imported water purchased from 2015 to 2020.

Table 2.1: Imported Water Supply 2015 – 2020 (Purchases from MWD)

Year	Purchases (AF)
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
Average:	**0**

As can be noted from **Table 2.1**, the City imports water on an as-needed basis only. The City currently has a Tier 1 limit of 629 AFY with MWD.

Figure 2.5: Aqueduct Systems in California

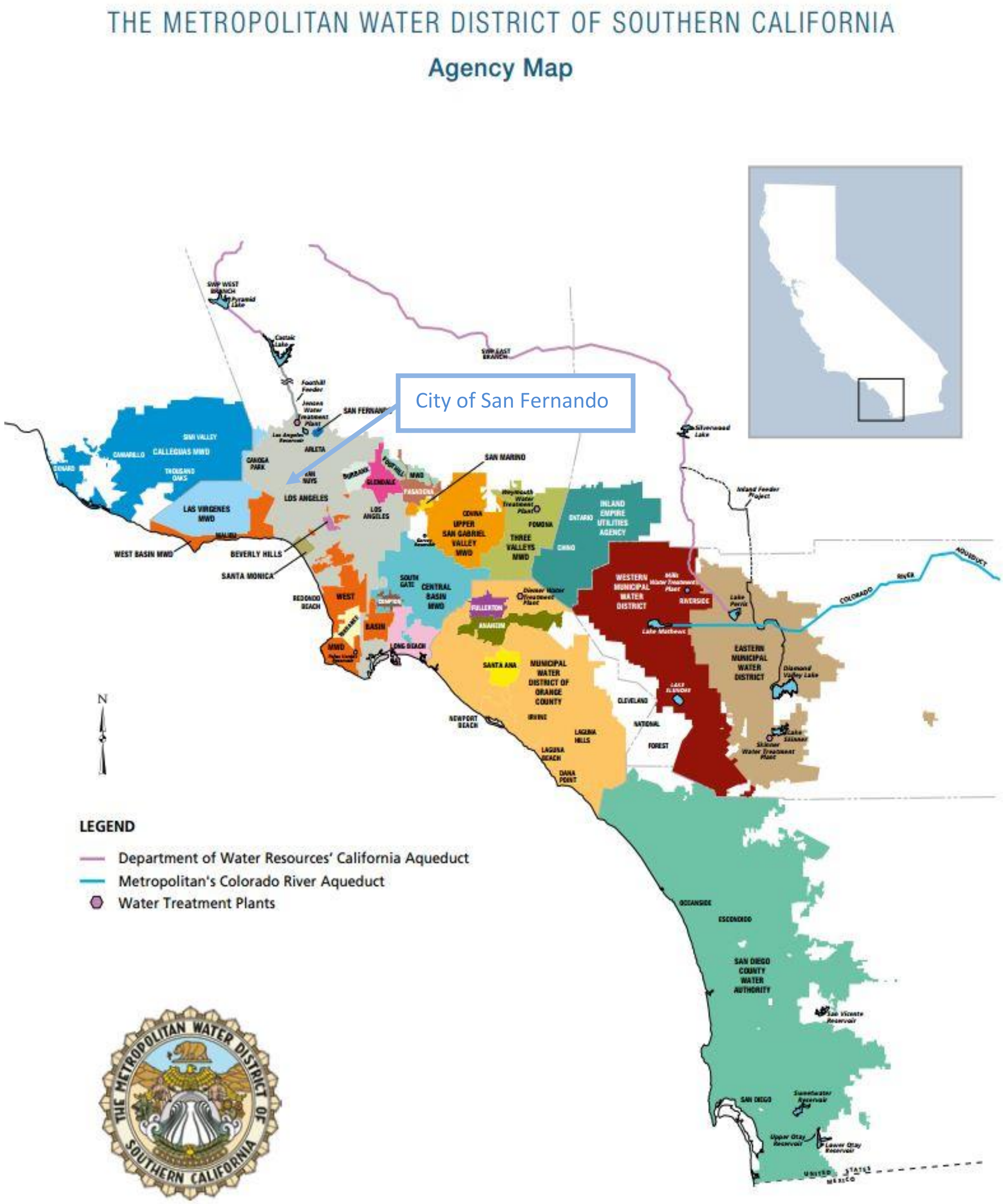


Figure 2.6: MWD Service Area Map

2.2.2 Groundwater

The City obtains its groundwater supply from the Sylmar Groundwater Basin (Basin). The Basin is located in the San Fernando Valley and underlies the City of San Fernando and unincorporated communities of the City of Los Angeles (see **Figures 2.7** and **2.8**). The Basin is in the northerly part of the Upper Los Angeles River Area (ULARA) basins (as shown in **Figure 2.7**), and consists of 5,600 acres and comprises 4.6 percent of the total valley fill. The Sylmar Basin is separated from the San Fernando Basin by the Sylmar Fault zone. The Basin is bounded to the north and northeast by the San Gabriel Mountains, and to the north and northwest by the Santa Susana Mountains.

Water-bearing deposits of the Sylmar Basin include unconsolidated and semi-consolidated marine and alluvial sediments deposited over time. The water-bearing sediments consist of the lower Pleistocene Saugus Formation, Pleistocene and Holocene age alluvium (CSWRB 1962). The ground-water in this basin is mainly unconfined with some confinement within the Saugus Formation in the western part of the basin and in the Sylmar and Eagle Rock areas (CSWRB 1962). The average specific yield for deposits within the basin varies from about 14 to 22 percent (DPW 1934). Well yield averages about 1,220 gpm with a maximum of about 3,240 gpm.

Groundwater in the Basin is replenished naturally by percolation from precipitation, receiving an average annual precipitation of about 23.13 inches, and by stream flow and subsurface inflows from the Santa Susana and San Gabriel Mountains. Since the Basin is mostly urbanized and soil surfaces have been paved to construct roads, homes, buildings, and flood channels, natural replenishment to the basin's water-bearing formations is limited to only a small portion of basin soils. Since the Basin does not receive any artificial recharge through injection wells or spreading basins, groundwater production is limited by low safe-yield limits.

Groundwater levels in the Sylmar Basin are typically at or above mean sea level (MSL), with water levels of about 1,000 feet underneath the City of San Fernando. A few portions of the Basin, however, contain deeper aquifers with groundwater as deep as 6,000 feet below surface levels.

Groundwater flow in the Sylmar Basin is generally from the Santa Susana and San Gabriel Mountains in the north towards the south/southeast into the San Fernando Basin in the south as water levels are substantially higher in the Sylmar Basin; however, there are no stipulations regarding these outflows into the San Fernando Basin.

The total storage in the Sylmar Basin is estimated to be about 310,000 AF. The natural safe yield is currently estimated to be about 7,140 AFY according to a July 2012 assessment. This is a temporary safe yield that will be in place for at least five years. In the 1984 Sylmar Basin Judgment, the Cities of Los Angeles and San Fernando were granted an equal share to the safe yield of the Sylmar Basin, which stood at 6,210 AFY at the time the judgment was issued. Since then, the safe yield limit was increased three times and currently stands at 7,140 AFY (3,570 AFY per City). Additionally, the City and the City of Los Angeles each have the right to receive stored water credit in the Sylmar Basin.

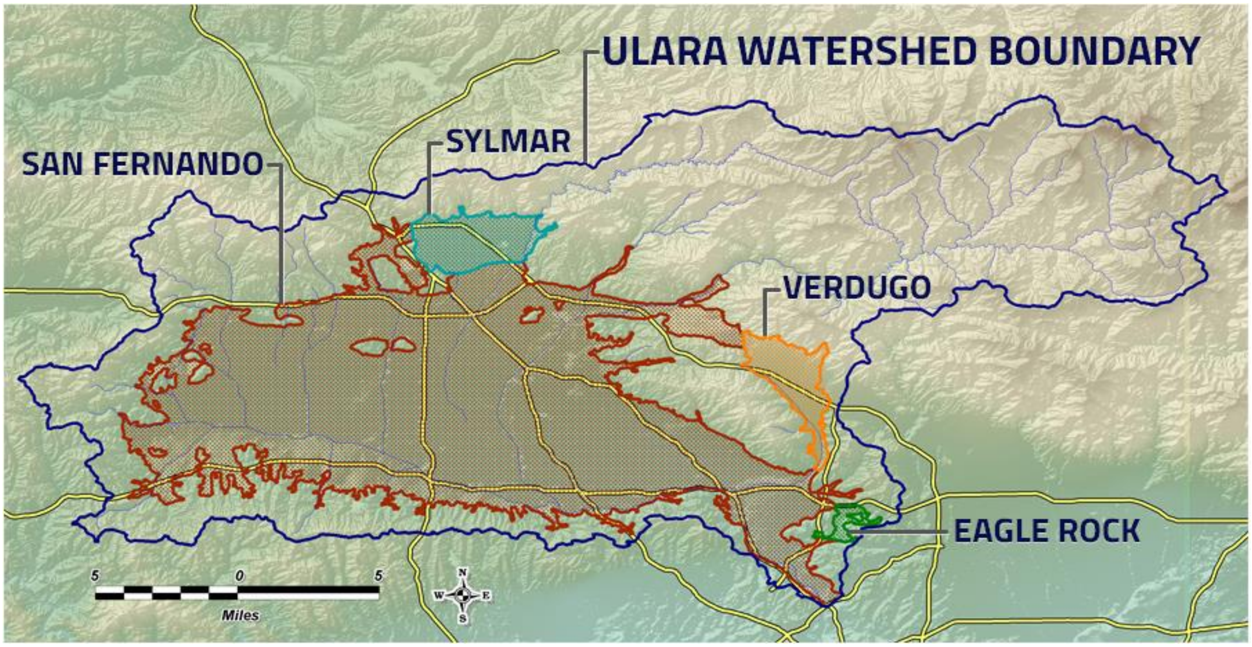


Figure 2.7: ULARA Groundwater Basins

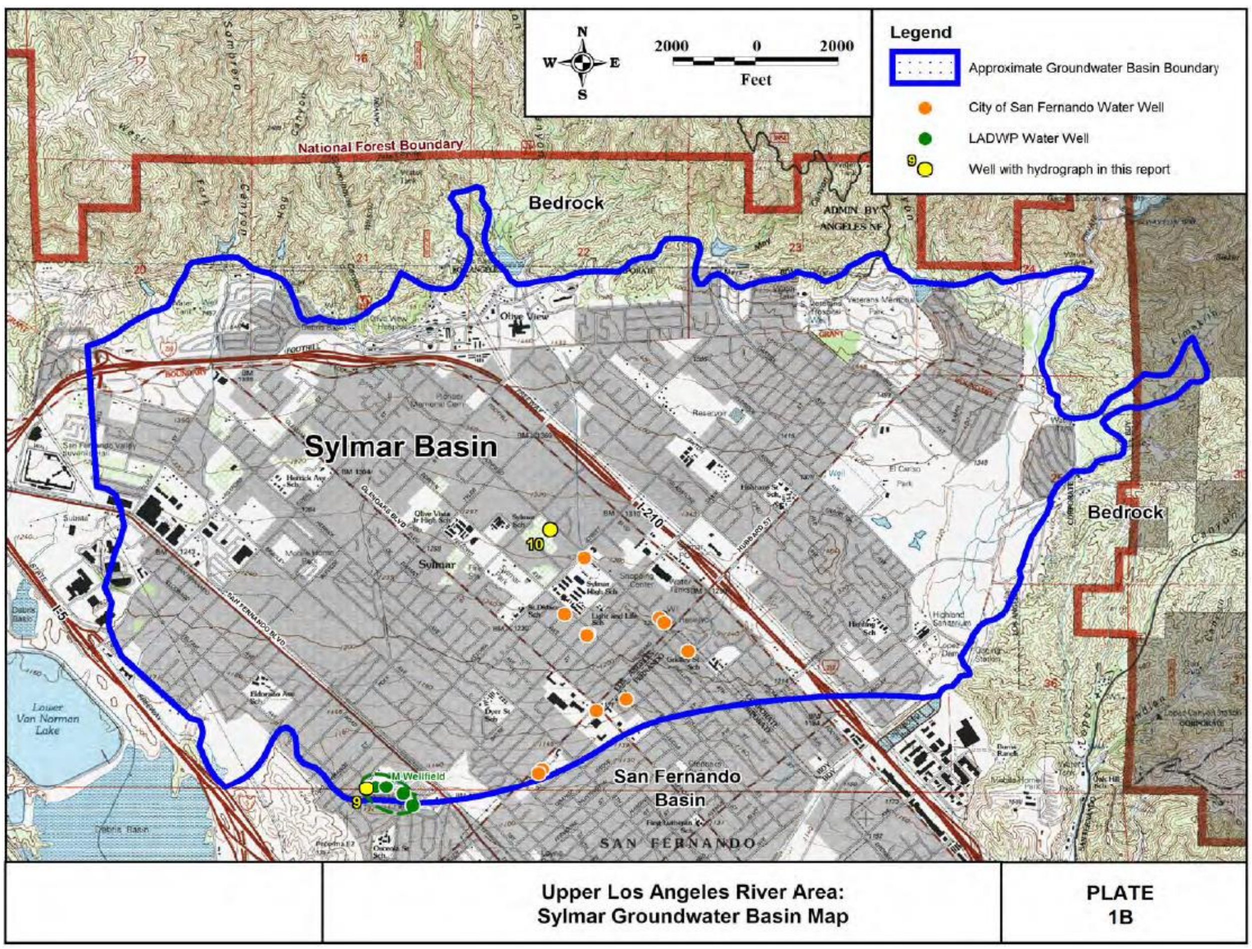


Figure 2.8: Sylmar Groundwater Basin

The Sylmar Basin is an adjudicated basin and the management of water resources and operations in the Basin is provided by the ULARA Watermaster. A copy of the judgment is attached in **Appendix I**. The California State Water Resources Control Board's Division of Drinking Water (DDW) helps monitor groundwater quality and contaminant levels. The key characteristics of the Sylmar Basin are listed below in **Table 2.2**.

Table 2.2: Sylmar Basin Summary Characteristics

Item	Capacity
Depth to Groundwater	50-6,000 ft.
Thickness of Groundwater Table	180-1,050 ft.
Storage Capacity	310,000 AF
Operating Safe Yield	7,140 AFY
Adjudicated Rights	7,140 AFY
Spreading Basins (Total)	0
Wells (Active)	3
Wells (Inactive)	1

Groundwater Production

The City currently has three active wells (Wells 2A, 4A, and 7A) for groundwater extraction. Well No. 3 is currently on stand-by due to high nitrate levels; however, a nitrate treatment plant for this well is currently in the planning stages. Well No. 2A is the City's most productive well with a rated capacity of 2,100 gpm. Occasionally, the City's groundwater facilities experience contamination issues that can affect their supply reliability. In the past, the City has used imported water to maintain supply reliability; however, in more recent years, the City has looked to other options in order to decrease imported water while increasing groundwater quality and production.

The City has recently completed the installation of a nitrate treatment ion-exchange plant for Well No. 7A, and the well was reactivated in 2018. A similar ion-exchange treatment plant is also in the planning stages for Well No. 3. All four wells combined provide the City the capabilities to pump at a rate of 4,450 gpm.

Figure 2.9: Ion-Exchange Facility at Well No. 7A

To monitor the City's groundwater extraction, each of the City's wells are equipped with flowmeters to measure well production. Well production is recorded monthly by City water staff and reported monthly to the ULARA Watermaster and annually to DDW. Every year, as part of their conservation and documentation efforts, the City completes and submits the Electronic Annual Report to the Drinking Water Program (eARDWP), as pursuant to Section 116530 of the California Health and Safety Code. The total groundwater production since 2016 is shown below in **Table 2.3**.

Table 2.3: 2016 - 2020 Groundwater Production (AF) (DWR Table 6-1 Retail)

Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Sylmar Groundwater Basin	2,766	2,842	2,845	2,725	2,862
	TOTAL	2,766	2,842	2,845	2,725	2,862

2.3 WATER SUPPLY SUMMARY

Over the past five years, the City's groundwater pumping ability has led the City to be completely independent of imported water. Due to rising costs of imported water, the continued reliance of groundwater provide cost savings for the City. **Table 2.4** shows the 2020 water supply. **Table 2.5** shows the water supply from 2016 to 2020.

Table 2.4: 2020 Water Supply (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	MWD	0	Drinking Water	629
Groundwater (not desalinated)	Sylmar Groundwater Basin	2,862	Drinking Water	3,570
	Total	2,862		4,199

Table 2.5: 2016 – 2020 Water Supply Summary

Year	Imported (AF)	Ground (AF)	Total (AF)
2016	0	2,766	2,766
2017	0	2,842	2,842
2018	0	2,845	2,845
2019	0	2,725	2,725
2020	0	2,862	2,862
Average (2015-2020):	**0**	**2,808**	**2,808**

2.4 PROJECTED WATER SUPPLY

The City expects to maintain their low levels of imported water purchases through groundwater production from its well facilities. It is unlikely that the City will add to these supply sources to include recycled water, as the infrastructure is not in place to receive recycled water. **Table 2.6** displays the City's projected supply availability outlook during a normal water year based on the City's adjudicated groundwater rights and MWD's Tier 1 limit.

Table 2.6: Projected Water Supply Availability (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	629	629	629	629	629
Groundwater (not desalinated)	Sylmar Groundwater Basin	3,570	3,570	3,570	3,570	3,570
	Total	4,199	4,199	4,199	4,199	4,199

Although the City's groundwater rights are currently at 3,570 AFY, the City's overall water supply reliability is expected to remain consistent or improve slightly due to limited population growth coupled with conservation. The City will also continue to benefit indirectly from regional conservation efforts and also through MWD's efforts to augment its supplies and improve reservoir storage capacities. **Section 6** discusses reliability issues and compares the City's projected water supplies to projected demands for normal, dry, and multiple dry years through 2045.

2.5 ALTERNATE WATER SOURCES

This section provides an overview of alternative water sources (non-potable supplemental supplies) and their potential uses. Alternative water sources include recycled water, recycled stormwater, greywater, and desalinated seawater.

2.5.1 Recycled Water

Recycled water is the reuse of treated wastewater for non-potable and indirect potable reuse applications. Wastewater is treated to different levels of purification based on the usage need. Recycled water is often used to irrigate landscapes, replenish groundwater aquifers, and provide industrial users with an alternative water supply to meet their non-personal water use needs.

Wastewater Collection & Treatment System

Municipal wastewater is generated in the City'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. Under a contract entered into in 1969, the City's wastewater is collected and discharged to the City of Los Angeles for treatment and disposal. The contract provides the City with purchased capacity rights in the Hyperion Treatment Plant in El Segundo, for average daily flow of 1.14 million gallons per day (MGD) and an instantaneous peak flow of 3.2 cfs.

Recycled Water Potential in the City

Figure 2.10: Wastewater Treatment at Hyperion in El Segundo, CA

Due to the high costs involved in constructing recycled water infrastructure, the City has not considered using recycled water in the past and the City currently does not use recycled water. As a result, the City has not considered any formal plans nor has specifically identified any potential recycled water users. If the City were to use recycled water in the future (with help from LADWP or MWD), the City would benefit as typical recycled water users (large landscapes, City parks & medians, and dual-plumbed buildings) could receive recycled water. If the City anticipates receiving recycled water in the near future, the City could prepare an optimization plan which identifies specific recycled water customers. Currently, the City encourages the efficient use of potable water while raising awareness of alternative water sources such as recycled water.

Section 9 discusses future use for Recycled water within the City service area.

2.5.2 Greywater

Greywater systems have been used in California to provide a source of water supply for subsurface irrigation and also as a means to reduce overall water use. Greywater consists of water discharged from sinks, bathtubs, dishwashers, and washing machines. Greywater systems consist of an underground tank and pumping system. Greywater is currently legal for subsurface irrigation in the State of California; however, strict regulations and high installation costs have impeded installation of professional greywater systems and have the unintended consequence of undocumented and noncompliant use of greywater.

The promotion of greywater systems as a means to reduce the City's overall water use is not recommended since the use of greywater is currently limited to subsurface irrigation and therefore the overall service area-wide reduction in water use (in AF) would be minimal at best. The City does not currently have a formal program in place to support greywater use.

2.5.3 Desalinated Seawater


Figure 2.11: Desalination Plant

Seawater desalination is a process whereby seawater is treated to remove salts and other constituents to develop both potable and non-potable supplies. There are over 10,000 desalination facilities worldwide that produce over 13 million AFY. Desalinated water can add to Southern California's supply reliability by diversifying its water supply sources and mitigating against possible supply reductions due to water shortage conditions. With its Seawater Desalination Program, the MWD facilitates implementation and provides financial incentives for the development of seawater desalination facilities within its service area.

A total of five member agencies submitted projects totaling 142,000 AFY. In 2004, MWD adopted an Integrated Resource Plan (IRP) update, which included a desalination goal of 150,000 AFY by the year 2025. Currently, the five-member agency projects are in various levels of development. Since the City's service area is not located adjacent to the ocean, there are no plans to incorporate desalinated seawater into its supply sources.

2.6 TRANSFERS OR EXCHANGES

The City owns rights to extract 3,570 AF of groundwater annually; however, the City may experience at times reliability issues with its wells due to mechanical or water quality issues that limits the City's groundwater production. Conversely, the City may extract amounts in excess of 3,570 AFY based on the Sylmar Basin Judgment (up to 10 percent) or based on leases with the City of Los Angeles. The City may consider short-term or long-term leases of its groundwater either to or from the City of Los Angles, based on the need. Additionally, the City has a 6-inch interconnection with the City of Los Angeles that is capable of transferring water to the City during short-term emergencies.

Over the long term, the City expects to reduce dependency on imported water while increasing water use efficiency. Groundwater is expected provide the majority of the City's water supplies while imported water will be purchased to meet the gap between total demand and groundwater production. Since the City's population is not expected to increase significantly, the City does not foresee a need to lease or to purchase groundwater rights as a long-term practice.

2.7 PLANNED SUPPLY PROJECTS

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Due to this fact, the City is currently in the design phase of a denitrification treatment plant for Well No. 3. This is in addition to the denitrification treatment plant (ion-exchange) that completed construction for Well No. 7A in 2018. Since Well No. 3 has had nitrate readings slightly above the MCL of 10 mg/l in the past, it has been taken offline and production has temporarily halted. With the completion of these treatment plants, groundwater quality and production will be increased.

The City's local groundwater source from the Sylmar Basin provides a reliable local water source which is an asset utilized to minimize the City's dependence on imported water. The City will continue effective operation and maintenance efforts to ensure all well sites and water infrastructure are used in an efficient manner.

2.8 ENERGY INTENSITY

2.8.1 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 the City. 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 2.12** illustrates a typical water use diagram.

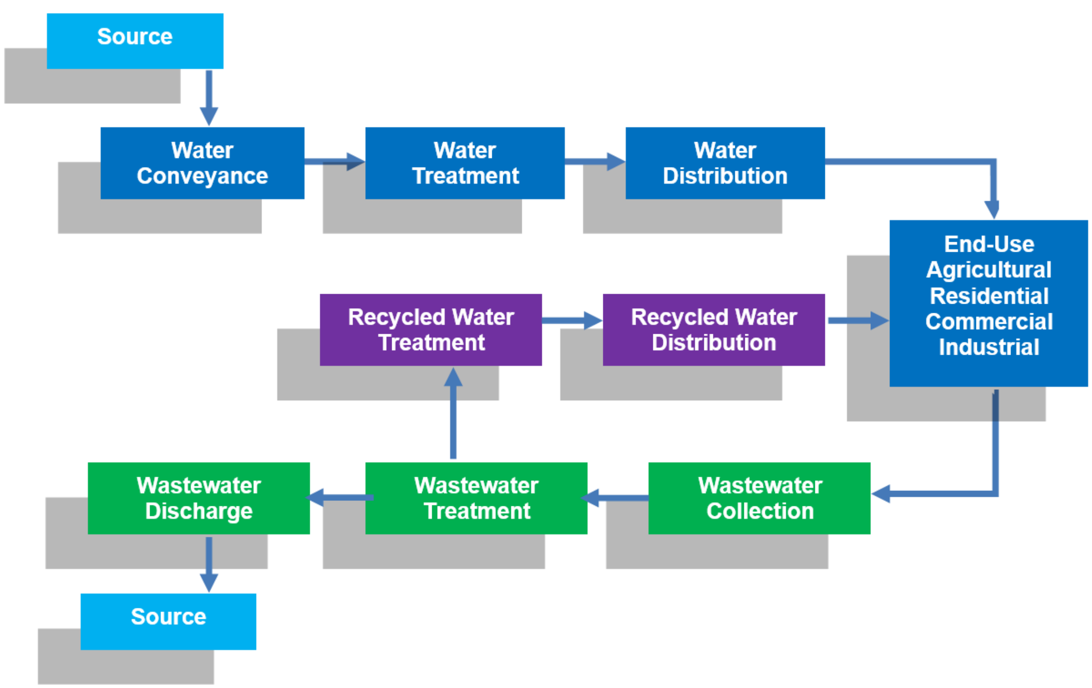


Figure 2.12: Typical Municipal Water Use Diagram

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.

2.8.2 Water Use & 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.

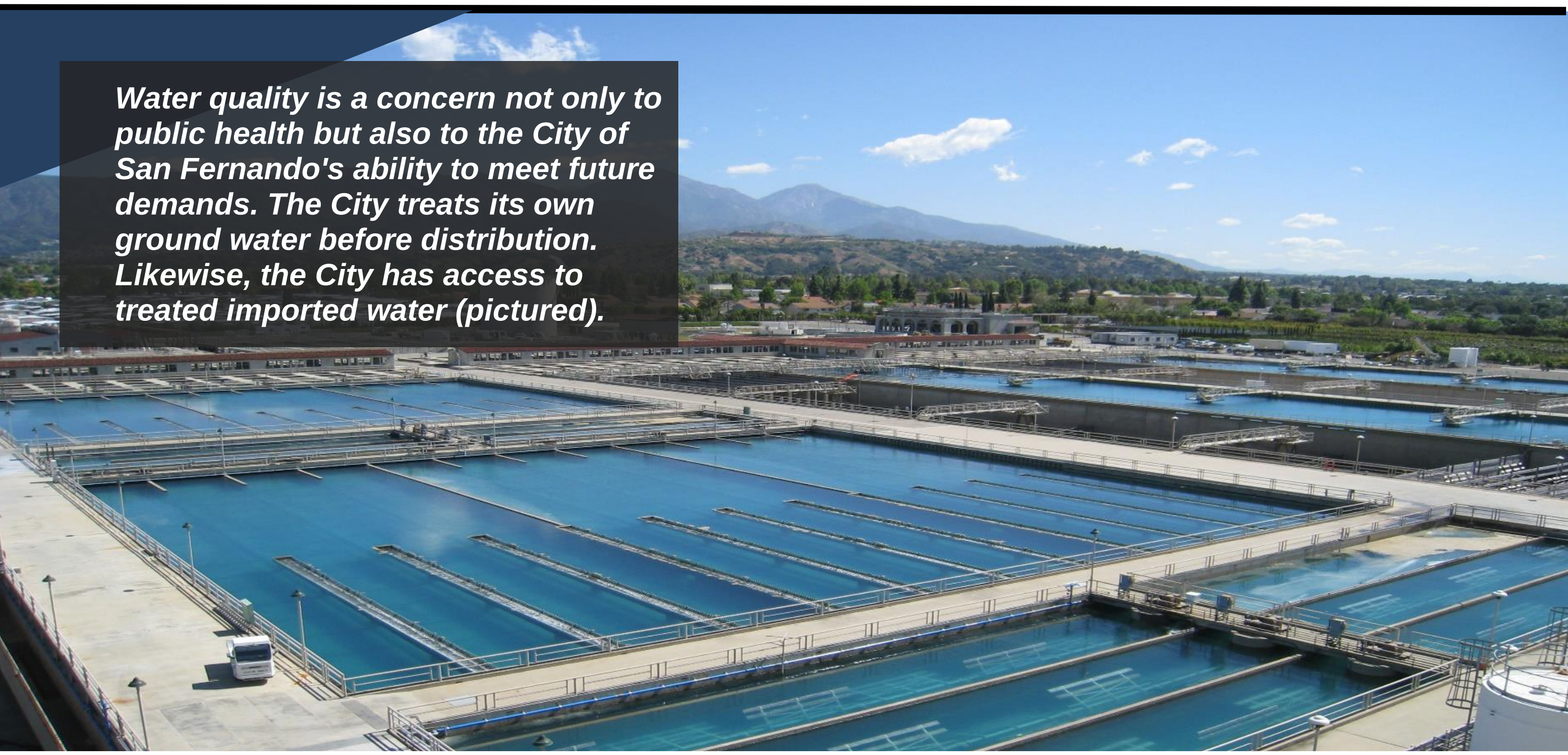
These amounts, in total, are so significant that one must also count the amount of GHGs from the fossil fuels that are burned to produce the oil, gas, coal and other combustibles which are then burned to produce the electricity. The City understands the water-energy nexus and aims to conserving water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

2.8.3 Energy Usage and Intensity

In order to determine energy use related to water supply processes under the City's operational control, the City collected billing and energy quantity data provided by Southern California Edison (SCE) 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 2.7** summarizes the energy intensity for the City. As shown, over 2.2 million kWh of energy was used to deliver over 2,800 AF of potable water. This equates to an energy intensity of 789 kWh/AF. DWR requires the reporting of energy intensity as kWh per million gallons (kWh/MG). Therefore, the City's energy intensity is 2,421.2 kWh/MG.

Table 2.7: City of San Fernando 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)		*2861.89*		*2861.89*
Energy Consumed (kWh)		*2257920*		*2257920*
Energy Intensity (kWh/vol. converted to MG)		*2421.2*	*#DIV/0!*	*2421.2*



Water quality is a concern not only to public health but also to the City of San Fernando's ability to meet future demands. The City treats its own ground water before distribution. Likewise, the City has access to treated imported water (pictured).

SECTION 3: WATER QUALITY

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 3 WATER QUALITY

3.1 WATER QUALITY SUMMARY

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, the City provides annual Water Quality Reports to its customers. Currently, all of the water that the City distributes to its customers meet federal Environmental Protection Agency (EPA) standards and the State Water Resources Control Board (State Water Board) standards.

The quality of water distributed to the City water system is directly related to the quality of the supply sources from which they obtain their water. This section explores the quality of the City's supply sources and examines important water contaminants that are actively monitored as part of its efforts to supply safe drinking water to its customers.

3.2 QUALITY OF SOURCES

The two main sources of the City's water supply as mentioned in **Section 2** are imported water from MWD and groundwater from the Sylmar Basin. Thus, the quality of water delivered to the City's customers is a result of the efforts of both the City and MWD.

3.2.1 Imported Water Overview

The City receives imported water from MWD on an as-needed basis for emergency purposes to meet federal and state standards. Imported water obtained from the SWP and the CRA contain specific contaminants that are characteristic of the Bay Delta and the Colorado River regions. Some of the contaminants of concern include: salinity, biological loads, disinfection by-products, perchlorate, uranium, and arsenic. MWD's 2020 UWMP discusses the water quality concerns of its supplies in detail.

Figure 3.1: Jensen Treatment Plant began Utilizing Solar Power in 2018

To provide safe drinking water to its customers, MWD treats its water supply at five separate treatment plants, three of which blend a mixture of SWP and CRA water. Of the five plants that serve Southern California, the City has access to treated effluent from the Jensen Treatment Plant.

Although MWD water meets all regulatory requirements, MWD understands the need for stringent testing and quality assurance for its customers. Water is analyzed and tested at one central, state-of-the-art treatment facility in addition to five satellite laboratories at each treatment facility to ensure the quality and safety of its water.

3.2.2 Imported Water Quality

MWD is responsible for providing the City with water that meets all drinking water regulations contained in California's Title 22 and federal regulations contained in the Code of Federal Regulations, Volume 40, Section 141. The City does not provide any additional treatment prior to delivery of water to its customers; however, the City operates its distribution system in a manner that maintains the water quality of the water received from MWD.

MWD's supplies originate from the CRA and from the SWP. Both supplies are generally of high quality; however, both supplies face water quality challenges.

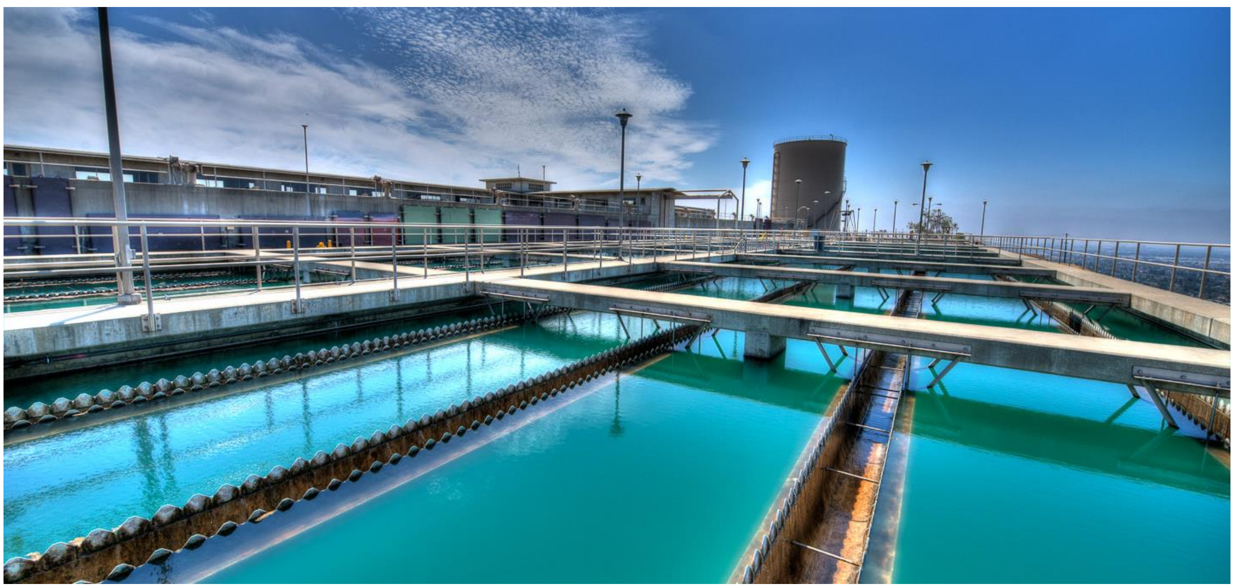


Figure 3.2: MWD's Weymouth Treatment Plant Provides a Safe Supply of Water

Salinity

Colorado River Aqueduct - Water imported from the Colorado River via the CRA has the highest level of salinity of all of MWD's sources of supply, averaging around 630 milligrams per liter (mg/L). The salts found in the Colorado River system are indigenous and pervasive, mostly resulting from saline sediments in the Basin and deposits from prehistoric marine environments. The salts are susceptible to erosion, and frequently dissolve and travel into the river system. To offset these salinity levels, CRA water often blends (mixed) with lower-salinity water from the SWP to meet MWD's flow-weighted TDS standard of 500 mg/L for imported water; however, due to limited availability during the recent drought, MWD treated lower blends of SWP supply resulting in TDS averages above MWD's goal of 500 mg/L.

Figure 3.3: Native Rock Adds to the Salinity of the Colorado River Water Supplies

State Water Project - SWP supplies have significantly lower TDS concentrations when compared to the Colorado River, averaging approximately 250 mg/L from the SWP East Branch and 325 mg/L from the SWP West Branch according to MWD's 2020 UWMP. Because of SWP's lower salinity level, MWD blends SWP water with CRA to reduce the salinity of the delivered water. MWD has set a salinity objective for delivered water in its Salinity Management Policy of less than of 500 mg/L of TDS.

Perchlorate

Perchlorate is both a naturally occurring and manmade contaminant increasingly found in groundwater, surface water, and soil. Perchlorate, known to inhibit the thyroid's ability to produce growth and development hormones, was first detected in Colorado River water in June of 1997 and traced back to the Las Vegas Wash.

Perchlorate, unlike other contaminants, does not tend to interact readily with soil and does not degrade in natural environments. Conventional drinking water treatment, used at MWD's water treatment facilities, is not effective in removing perchlorate. Mitigation efforts are the most viable option for removing perchlorate from drinking water. To facilitate perchlorate remediation of the Colorado River, MWD and other federal and state agencies collaborated to reduce and prevent perchlorate contamination issues in the Colorado River. According to MWD's Annual Report 2020, mitigation efforts have been successful in reducing perchlorate loading into the Las Vegas Wash by more 90 percent since 1998.

As of October 2007, the State Water Resources Control Board Division of Drinking Water (DDW) has established a perchlorate maximum contaminant level (MCL) of 6 micrograms per liter (μg/L). DDW is currently in the process of reviewing the updated public health goal MCL of 1 μg/L established in 2015 by EPA's Office of Environmental Health Hazard Assessment (OEHHA). MWD routinely monitors perchlorate within its system, and levels currently remain at non-detectable levels (below 2 μg/L). MWD has not detected perchlorate in the SWP since monitoring began in 1997.

Disinfection Byproducts Formed By Reacting With Total Organic Carbon & Bromide

Disinfection byproducts (DBPs) are contaminants affecting SWP supplies. When source water containing high levels of total organic carbon (TOC) and bromide meets disinfectants, such as chlorine, disinfection byproducts form. Elevated levels of DBPs may link to adverse health effects, including certain cancers.

While lower in salinity, SWP supplies are much higher in chemical content due to the agriculture of the Bay-Delta region.

TOC and bromide levels are significantly high throughout the Delta due to agricultural drainage and seawater intrusion. Because of these high levels of TOC and bromide, in August 2000, CALFED adopted water quality goals for the Bay-Delta region that specify standards of bromide and TOC for drinking water in order to protect public health. The federal government took action to regulate DBP contaminants in 2002 and 2006 when EPA introduced new regulations to protect against the risk of DBP exposure.

MWD has taken several steps to decrease DBP presence in SWP water supplies. In 2003 and 2005, MWD completed upgrading two of its water treatment plants, Mills and Jensen, to utilize ozone as the primary disinfectant, preventing the formation of DBPs that would normally form in chlorine treatment of SWP water. In 2010, 2015, and 2017, MWD completed ozone upgrades at Skinner, Diemer, and Weymouth water treatment plants, respectively.

Nutrients

Elevated nutrient levels in the SWP can adversely affect MWD's imported water quality by stimulating biomass growth such as algae and aquatic weeds. Nutrients can also provide a source of food leading to the growth of nuisance biological species. This can lead to taste and odor concerns and can impede normal treatment operations. MWD offsets the nutrient rich SWP water by blending it with CRA water in MWD's blend reservoirs. Although nutrient loading is a concern and is anticipated to have cost implications, with its comprehensive monitoring program and response actions to manage algal related issues, there should be no impact on availability of water supplies. MWD’s source water protection program will continue to focus on preventing future increases in nutrient loading as a result of urban and agricultural sources.

Arsenic

Arsenic is a naturally occurring element found in rocks, soil, water, and air. Arsenic typically has presence in wood preservatives, alloying agents, certain agricultural applications, semi-conductors, paints, dyes, and soaps. It can travel into water from the natural erosion of rocks, dissolution of ores and minerals, runoff from agricultural fields, and discharges from industrial processes. Long-term exposure to elevated levels of arsenic in drinking water may link to certain cancers, skin pigmentation changes, and hyperkeratosis (skin thickening).

In April 2004, OEHHA set a public health goal for arsenic of 0.004 µg/L. The MCL for arsenic in domestic water supplies lowered to 10 µg/L on January 2006 in the federal regulations and on November 2008 in the California regulations. The standard affects both groundwater and surface water supplies. Historically, MWD's water supplies have had low levels of this contaminant and did not require treatment changes or capital investment to comply with the standard.

The detection limit for purposes of reporting (DLR) for arsenic is 2 µg/L. Between 2010 and June 2020, arsenic levels in MWD's water treatment plant effluents ranged from non-detect (< 2 µg/L) to 3.3 µg/L. For MWD's source waters, levels in the Colorado River water have ranged from 2.2 to 2.8 µg/L, while levels in SWP water have ranged from non-detect to 4.8 µg/L. Increasing coagulant doses at water treatment plants can reduce arsenic levels for delivered water.

Uranium

Uranium is a naturally occurring radioactive material that has known cancer risks. Uranium can infiltrate a water source either directly or indirectly through groundwater seepage. Due to past uranium mill activities near the Colorado River, a 16-million-ton pile of uranium mill tailings exists that has the potential for contamination. Ongoing remediation actions are successful at removing the tailings and contaminated groundwater from the site. Although uranium levels measured at MWD's intake are below State MCL levels, MWD has only limited ability to remove uranium through traditional treatment, and thus mitigation methods are crucial to avoiding uranium contamination.

Chromium VI

Chromium VI is a drinking water contaminant of concern. Hexavalent chromium is used in electroplating stainless-steel production, tanning leather, manufacturing textiles, manufacturing dyes and pigments, and preserving wood as an anti-corrosion agent. Chromium VI is a health hazard to humans, causing cancer when inhaled; however, the long-term health effects of ingested chromium VI are currently being determined. In July 2014, an MCL of 10 µg/L for hexavalent chromium became effective for drinking water. California also regulates the total chromium (including chromium III and chromium VI) in drinking water as an MCL of 50 µg/L. In May 2017, the Superior Court of Sacramento County issued a judgment invalidating the MCL on the basis that CDPH (now DDW), had not properly considered the economic feasibility of complying with the MCL. DDW therefore rescinded the chromium VI MCL; however, chromium VI remains regulated as part of total chromium which does have an MCL. In February 2020, DDW released a white paper discussion on an updated economic feasibility analysis of chromium VI treatment for the consideration of a new chromium VI MCL. Over the past five years, the Colorado River water supply has contained levels of chromium VI that are mainly less than 0.03 µg/L but also ranging from 0.03 to 0.085 µg/L. SWP's water supply has contained levels ranging from 0.03 to 1.0 µg/L.

1, 2, 3 – Trichloropropane (1,2,3-TCP)

1,2,3-TCP is a chlorinated hydrocarbon with high chemical stability. It is a manmade chemical found at industrial or hazardous waste sites. It has been used as a cleaning and degreasing solvent and also is associated with pesticide products. In July 2017, SWRCB adopted an MCL of 5 parts per trillion (ppt) for 1,2,3-TCP and related requirements, including establishing a DLR, identifying the best available technology for treatment, and setting public notification and consumer confidence report language. The regulations also included a method for public water systems to substitute existing water quality data for initial monitoring requirements under certain circumstances. Under the new regulation, drinking water agencies are required to perform quarterly monitoring of 1,2,3-TCP. To this day, there have been no detections of 1,2,3-TCP in MWD's system.

N-Nitrosodimethylamine

N-Nitrosodimethylamine (NDMA) is an emerging contaminant of drinking water. NDMA forms as a disinfection byproduct when source waters containing certain organic material mix with chloramines at treatment plants. EPA and DDW consider NDMA to be a probable human carcinogen; however, neither has yet established an MCL. Since 1998, DDW has kept a notification level of 0.01 µg/L. In addition, in December 2006, OEHHA set a public health goal for NDMA of 0.003 µg/L. Since 1999, MWD has conducted voluntary monitoring of the five treatment plant effluents and representative distribution system locations semi-annually. NDMA is the only detected nitrosamine in MWD's treated water systems, and it is in the range of non-detect (<0.002 µg/L) to 0.006 µg/L.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and personal care products (PPCPs) have recently become contaminants of concern for water supplies. Discoveries of PPCPs include trace amounts found in treated wastewater, surface water, and sometimes even in finished drinking water. Currently, there is no detected health hazard associated with long-term exposure to low concentrations (low nanograms per liter (ng/L); parts per trillion) of PPCPs found in some drinking water. No state or federal regulations currently exist to regulate this contaminant.

Microplastics

In 2018, Senate Bill No. 1422 added section 116376 to the Health and Safety Code, which required the State Water Board to adopt a definition of microplastics in drinking water on or before July 1, 2020. On June 16, 2020, the SWRCB adopted a definition acknowledging the definition is a work in progress, and stated the State Water Board will re-visit the microplastic definition as knowledge in the field progresses. MWD is participating in a study with the Southern California Coastal Water Research Project to develop analytical methods for microplastics.

Per- And Polyfluoroalkyl Substances (Pfas)

Drinking water containing perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS) – and the larger family of per- and polyfluoroalkyl substances (PFAS) – has become an increasing concern due to the persistence of these chemicals in the environment and their tendency to accumulate in groundwater. In August 2019, DDW updated its guidelines for local water agencies to follow in detecting and reporting the presence of these chemicals in drinking water. The guidelines lower the notification levels from 14 ppt to 5.1 ppt for PFOA and from 13 ppt to 6.5 ppt for PFOS. These levels are based on updated health recommendations from OEHHA, which is part of the EPA. Notification levels are non-regulatory, precautionary health-based measures for concentrations of chemicals in drinking water that warrant notification and further monitoring and assessment. If a chemical concentration is greater than its notification level in drinking water that is provided to consumers, DDW recommends that the utility inform its customers and consumers about the presence of the chemical, and about health concerns associated with exposure to it.

Legislation that took effect on January 1, 2020 (California Assembly Bill 756), requires that water systems that receive a monitoring order from SWRCB and detect levels of PFAS that exceed their respective response level must either take a drinking water source out of use or provide specified public notification if they continue to supply water above the response level.

MWD has not detected PFOA or PFOS in its raw water. In 2019, NWD detected in its supplies low levels of perfluorohexanoic acid (PFHxA), which is not acutely toxic or carcinogenic and is not currently regulated in California or at the federal level. No other PFAS have been detected in MWD's imported or treated supplies; however, some of its member agencies have experienced detections in their groundwater wells. As DDW moves to establish an MCL for PFOA/PFOS, MWD's member agencies may be confronted with the choice of implementing treatment or inactivating their affected sources to remain in compliance with DDW regulations. This may cause those systems to supplement their water needs with increased purchases of MWD's water.

3.2.3 Groundwater Quality

In addition to imported water quality concerns, the City is also concerned with groundwater quality pumped from the Sylmar Basin. In general, groundwater in the main producing aquifers of the basins of the ULARA Basins has significant contamination issues. However, groundwater produced from the Sylmar Basin typically has better quality than groundwater produced form other ULARA Basins. Some of the main constituents of concern that have affected well production in the Sylmar Basin include perchlorate, nitrate and volatile organic compounds (VOCs), trichloroethylene (TCE) in particular, which have been detected in various wells over the past five years. Other ULARA constituents of concern include high total dissolved solids (TDS) and total hexavalent chromium. Currently, the City is undergoing well upgrades to include denitrification systems to increase pumping capabilities. In 2015, only 50 percent of the City's pumps were active (Wells 2A and 4A) while the remaining wells (Wells 3 and 7A) were inactive due to the high nitrate levels. In 2018, Well 7A completed construction of an ion-exchange system to treat the nitrate contaminants and has resumed pumping. The City is currently working on implementing the same system onto Well 3 and plan to reactivated by 2022.

3.3 WATER QUALITY EFFECTS

The previous subsection summarized the general water quality issues of MWDs imported water and the Basin's groundwater supplies. The same water quality concerns apply to the City's water supply. Groundwater that does not meet drinking water standards now must be provided wellhead treatment, since blending with imported water to meet state and federal standards is no longer in effect.

Due to the mitigation actions undertaken by the City and MWD, the City does not anticipate any reductions in its water supplies due to water quality issues. Future regulatory changes enacted by the EPA and/or the State legislature will be met through additional mitigation actions in order to meet the standards and to maintain water supply to the City's customers.

Additionally, during times of groundwater supply reduction due to water quality concerns, the City will import water to meet demand until mitigation actions are complete and the City is operating its groundwater facilities at full capacity. Thus, the City does not expect water quality to be a major factor in its overall supply reliability or management considerations.

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The City of San Fernando is committed to protecting statewide water sources by achieving water use targets and reducing water demand. The City's water demand is mostly residential with some commercial, landscape, and no industrial.

SECTION 4: WATER DEMANDS

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 4 WATER DEMANDS

4.1 INTRODUCTION

Water use within the City is variable and depends on a number of factors which range from irrigation to industrial use and from inefficient plumbing to water losses. Changes in residential plumbing fixtures and customer usage habits can significantly affect water usage for most agencies. This section explores the water usage trends within the City and quantifies total usage per customer type. In addition, the provisions of the SBx7-7 are explored in detail.

4.2 CURRENT CITY WATER NEEDS

The City of San Fernando, like many other cities of Southern California, began as an agricultural area and throughout the years has transformed into a suburban town. Initially the land uses in the City were primarily agricultural with some residential. By 1920, the City's population reached 3,204 persons and the City continued to grow at a rate of about 275 people per year until 1990, when the population growth rate began to level off.

Figure 4.1: Residential Irrigation

The City's population growth rate has decreased in the past 20 years and is currently at under 0.3 percent annually. The City is approaching ultimate "built-out" with remaining expected future water demands primarily attributable to possible land use changes in residential densities, such as multi-story residence complexes, and in-fill land development projects. Due in part to this slowed growth, the City's water use over the past 15 years has been fairly consistent and recent total water consumption reported for calendar year 2009 is slightly less than total water consumption reported for calendar years 1995 through 1997. As a result, the City’s local groundwater sources and imported supply capacity put the City in a position of providing a reliable source of quality water for its water users due to this consistency of water demands.

The City supports water conservation while maintaining the beauty of its community parks, schools, and recreational facilities both in the private and in the public sector. Since the City is zoned mainly for residential use and the majority of residential water consumption in the City is used for non-personal purposes (i.e., irrigation, car washing, etc.), the City has a significant number of residential lots which require consistent irrigation to maintain landscapes. Of the water used for personal purposes, the majority of water consumed is attributable to toilet flushing and clothes washing.

In the commercial and institutional sector, water needs vary as customers range from restaurants to offices and from retail stores to schools. Office buildings and retail stores require significantly less water than restaurants and schools and are not usually the key focus of water conservation efforts.


Figure 4.2: Las Palmas Park

In order to maintain civic pride and a sense of community, City parks and other City right of ways (medians, etc.) require consistent irrigation. To prevent water waste, the City follows an irrigation schedule that limits the length of irrigation to avoid overspray runoff and also eliminates evapotranspiration from daytime watering.

Overall water use characteristics within the City's service area reflect regional water use characteristics within Southern California. As a result of these water needs, the City has passed a conservation ordinance similar to other agencies which limits or restricts non-personal water use during periods of drought to conserve water use for the more important health and safety needs of its customers. The City's Conservation Ordinance is discussed in greater detail in **Sections 6** and **7**.

4.3 WATER USE STATISTICS

The City maintains records of water consumption and bills its customers on a monthly basis for its water service. **Table 4.1** shows a comparison of the City's service connections from 2015 and 2020. The City currently has over 5,200 service connections with a mixture of residential, commercial, institutional, industrial, and landscape irrigation customers. Over 83 percent of the total metered connections are residential (single & multi-family). Commercial & institutional accounts comprise nearly 10 percent of the City's metered connections. Industrial accounts make up about 3 percent of the total metered connections. Water sales data is compiled by City water staff and recorded on the eARDWP and submitted to DDW annually. **Tables 4.2** and **4.3** show the 2020 and past years water consumption, respectively.

Table 4.1: Service Connections Comparison (2015 – 2020)

Sector	2015	2020
Single Family Residential	3,837	3,920
Multi-Family Residential	459	457
Commercial/Institutional	599	549
Industrial	171	176
Landscape Irrigation	70	67
Other	6	69
Total Connections:	**5,142**	**5,238**

Table 4.2: 2020 Water Demands (AF) (DWR Table 4-1 Retail)

Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	1,411
Multi-Family		Drinking Water	451
Commercial		Drinking Water	171
Institutional/Governmental		Drinking Water	173
Landscape		Drinking Water	87
Other Potable		Drinking Water	52
Losses		Drinking Water	517
		TOTAL	2,862

Table 4.3: Historic Water Demand by Sector (AF)

Sector	2015	2016	2017	2018	2019	2020
Single Family Residential	1,341	1,333	1,348	1,415	1,311	1,411
Multi-Family Residential	420	427	416	419	418	451
Commercial/Institutional	337	213	219	225	234	344
Industrial	188	-	-	-	-	-
Landscape Irrigation	100	99	87	95	81	87
Other	123	26	30	33	50	52
Total Water Sales:	**2,509**	**2,098**	**2,100**	**2,186**	**2,094**	**2,344**

Table 4.4: City's Past Water Losses (AF) (DWR Table 4-4 Retail)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
05/2015	152.475
01/2017	288.573
01/2018	285.236
01/2019	159.846
01/2020	517.000

Table 4.4 shows the water losses in the past five years. Unaccounted for water contributes to a significant portion of the City's overall water use of the total water supply into the City's distribution system. Unaccounted for water consists of routine flushing, unmetered use, and water losses. The reasons for water losses may be from a difference in accuracy of the meter at the production side compared to the service meters, periodic main line flushing, reservoir and other water system maintenance that is typical in the operation and maintenance of a water system. Water losses are calculated based on the water system balance methodology developed by the American Water Works Association (AWWA) through water loss audit forms. These forms are required to be validated and submitted to DWR on an annual basis. Note that the losses for 2020 are estimates and not the actual amount to be validated and submitted on the AWWA Water Loss Audit.

Recently, the City has identified a leak in Reservoir No. 4, and is planning rehabilitation of this reservoir following the completion of the denitrification treatment plant for Well No. 3.

Although water losses have cost impacts on water agencies, they cannot be prevented entirely. Instead, effort is given to controlling the quantity of water losses (to a cost-effective extent) in order to reduce the cost impact of water losses on water operations.

4.4 WATER CONSERVATION ACT

4.4.1 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 4.4.3**. 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, 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 City of San Fernando, in attaining their reduction goals and targets.

4.4.2 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 4.3.** Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. The City 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 4.4**.

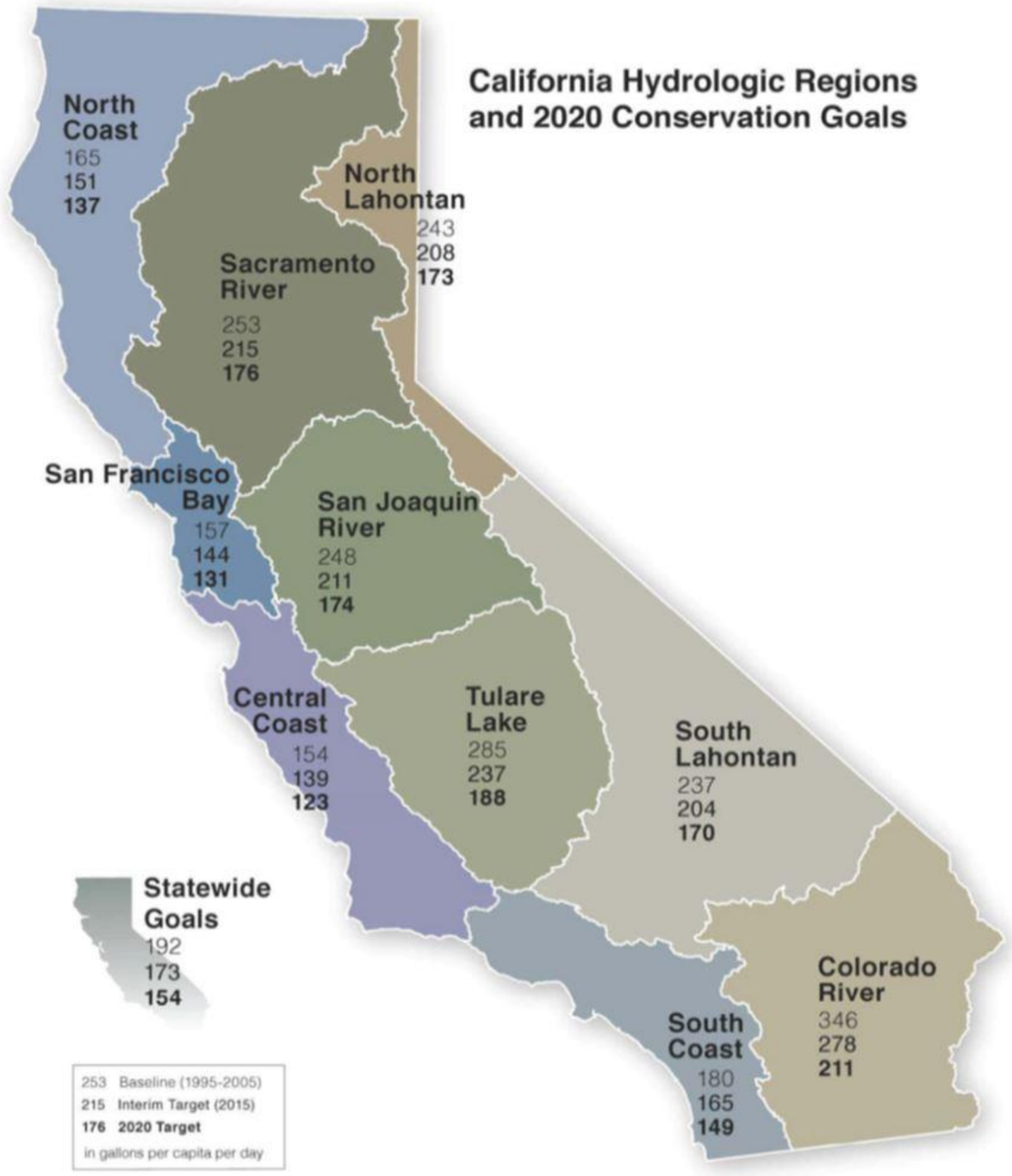

Figure 4.3: California's 10 Hydrologic Regions (with Baselines by Region)

Figure 4.4: South Coast Hydrologic Region

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.

4.4.3 SBx7-7 Methodologies

To satisfy the provisions of SBx7-7, the City 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. In the 2010 UWMP, the City's baseline water use was determined based on the City's historic water use by the procedure shown in **Figure 4.5**.

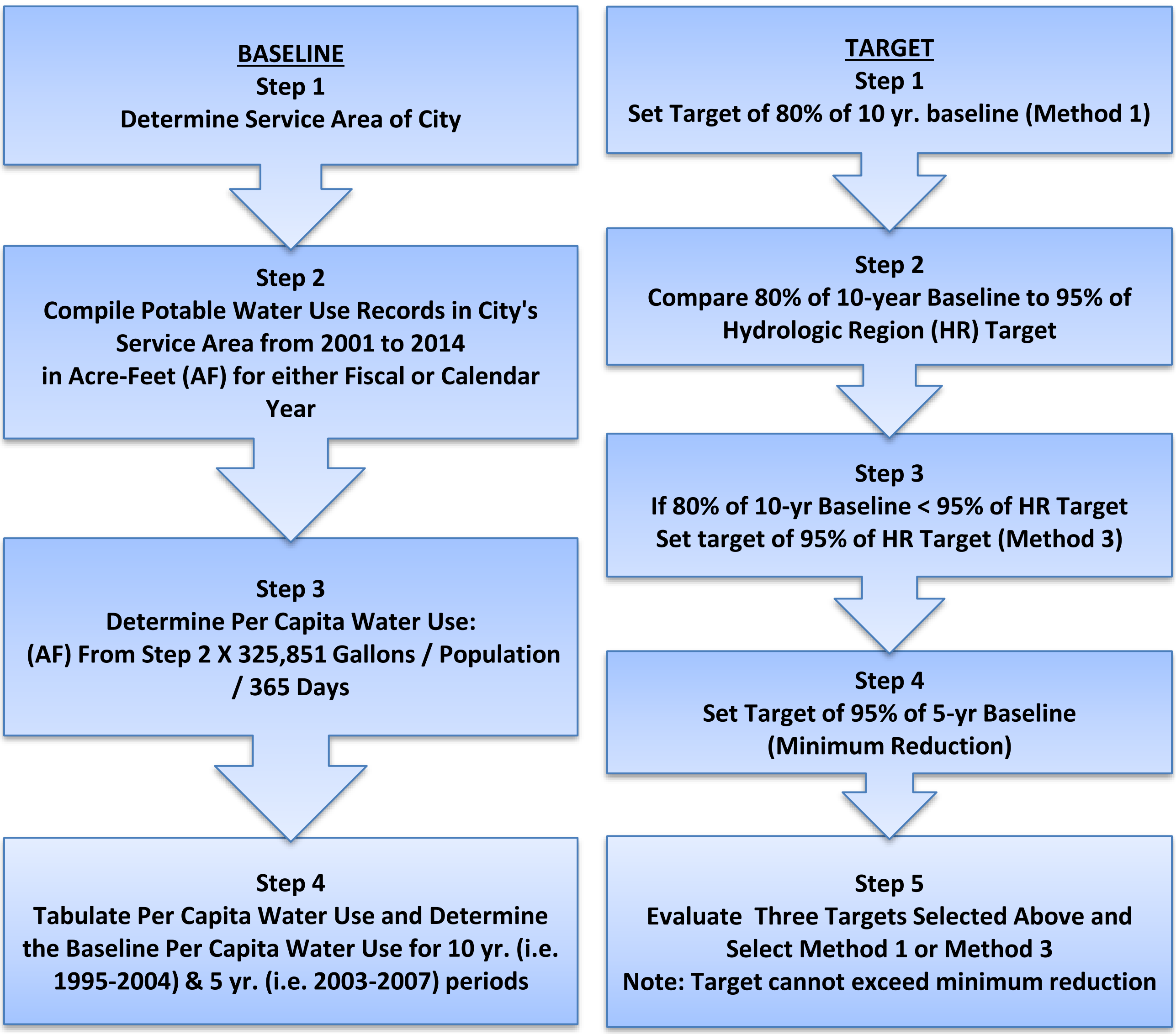

Figure 4.5: Procedure for Determining Baseline and Per Capita Water Use

In the same fashion, the City was responsible for determining a 5-year baseline water use in accordance with DWR's guidelines. The Methodologies guidebook made provisions that allowed a water supplier to meet the target requirements by achieving any one of a number 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. 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 4.5**.

Table 4.5: 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

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 4.5**. 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.

4.4.4 SBx7-7 Water Use Targets

During the development of the 2015 UWMP, it was observed that the service area populations for 1995 to 2009 calculated in the 2010 UWMP were not obtained from the U.S. Census. According to Methodology 2: Service Area Population of DWR's *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, if a water supplier did not use Census data to calculate baseline population in the 2010 UWMP, the water supplier must recalculate the values for the 2015 UWMP using Census data. Therefore, the City of San Fernando revised their baseline water use and SBx7-7 targets for the 2015 UWMP.

Table 4.6 provides the base period ranges used to calculate the baseline water use for the City 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. Since the City does not use recycled water, a 10-year instead of a 15-year rolling average was calculated. The City's baseline water use is **141 GPCD**, which was obtained from the 10-year period January 1, 1995 to December 31, 2004.

Table 4.6: Past GPCD Water Use

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
1995	22,811	3,460	135
1996	22,774	3,564	140
1997	22,869	3,575	140
1998	23,005	3,324	129
1999	23,193	3,996	154
2000	23,477	3,735	142
2001	23,725	3,649	137
2002	23,843	3,786	142
2003	23,915	3,791	142
2004	23,965	3,894	145
2005	23,867	3,650	137
2006	23,846	3,699	138
2007	23,677	3,757	142
10-Year Average (1996-2005) Base Daily per Capita Water Use:			**141**
5-Year Average (2003-2007) Base Daily per Capita Water Use:			**141**
South Coast Hydrologic Region			**180**

As determined previously in the City's 2015 UWMP, the City's 10-yr and 5-yr baselines were determined to be both 141 GPCD. Thus, the same SBx7-7 targets apply.

In order to determine the correct compliance target, the City's baseline water use was compared to the regional compliance target in order to determine the applicable reduction amounts per the SBx7-7 additions to the water code. The legal stipulations applicable to the City and the required target to be enforced by DWR are shown in **Table 4.7.**

As indicated, the City can select an SBx7-7 target of 134 GPCD (five percent from its five-year baseline) as this amount is less than 142 GPCD (five percent reduction from the South Coast HR's target). Therefore, SB7: 10608.22 applies to the City. In addition, since the City's 20 percent reduction target (112 GPCD) far exceeds the minimum reduction requirement of 134 GPCD, it is feasible for the City to select 134 GPCD as its 2020 water use target. Therefore, the City's compliance target for 2020 per capita water consumption is 134 GPCD in accordance with SB7: 10608.22.

Table 4.7: City of San Fernando SBx7-7 2020 Water Use Targets

Min. Reduction Requirement (10608.22)	20% Target (10608.20) (b)(1)	5% Reduction from Regional Target (10608.20) (b)(3)
134	**112**	**142**
	2020 Per Capita Target:	**134**
	Interim (2015) Target:	**137**

Although the requirements of SBx7-7 seem stringent, it is noteworthy to mention that the City has seen an increase in water efficiency. **Table 4.8** shows the water use efficiency from 2008 to 2020. This is due in part to a greater achievement of conservation measures, saturation of water-saving plumbing fixtures, and overall water conservation awareness. Altogether, the City is not only meeting its SBx7-7 requirements, but also exceeding them.

Table 4.8: City GPCD from 2008 - 2020

Calendar Year	Service Area Population	Gross Water use (AF)	Daily Per Capita Water use (GPCD)
2008	23,677	3,653	138
2009	23,680	3,395	128
2010	23,671	3,121	118
2011	23,686	3,141	118
2012	23,803	3,329	125
2013	24,121	3,406	126
2014	24,232	3,225	119
2015	24,558	2,768	101
2016	24,590	2,766	100
2017	24,566	2,842	103
2018	24,532	2,845	104
2019	24,798	2,725	98
2020	25,207	2,862	101

4.4.5 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, the County of Los Angeles 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, Executive Order N-33-20 ("Safter at Home, Stay at Home" order) and a Public Health Order directed all Californians to stay home with the exception of going 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. However, the City observed minimal impacts due to this event as shown in Table 4.8 as water demands remained at slightly above average. In 2020, the water usage was 2,862 AF and the average from 2015 to 2019 was 2,789 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 slight impact resulted in no issues for the City to achieve their 2020 targets as shown in **Table 4.9**.

Table 4.9: City's 2020 Compliance (DWR Table 5-2)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD		
101	*0*	*101*	*134*	*YES*

4.5 WATER USE REDUCTION PLAN

In order to remain below the SBx7-7 targets, the City will continue to implement the water use efficiency measures described in **Section 7** 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 City.

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 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.

Figure 4.6: SBx7-7 Seeks to Preserve the Waters of the Bay-Delta

Through financial incentive programs and various public outreach campaigns and events, the City has met its SBx7-7 target as shown previously in **Table 4.9**.

4.5.1 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:

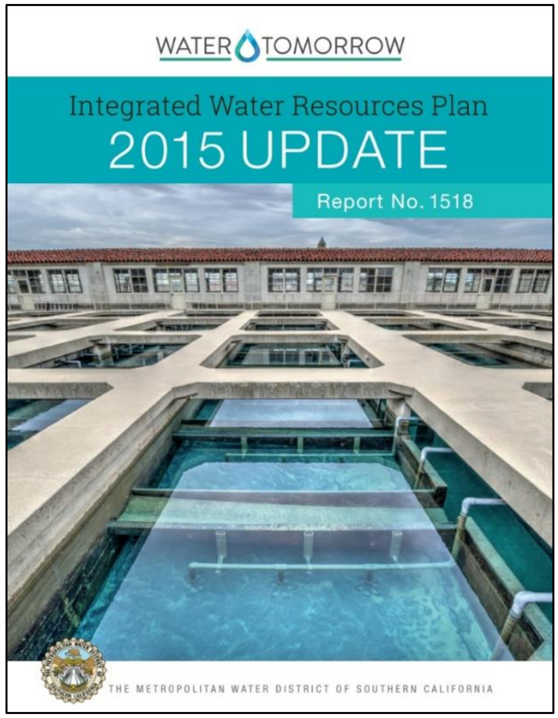

Figure 4.7: MWD's Integrated Water Resources Plan

- **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.
- **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 currently in the process of updating its IRP once again. The 2020 IRP is expected to be completed sometime in 2021.

4.6 PROJECTED WATER DEMAND

Future water use projections must consider significant factors on water demand, such as development and/or redevelopment, and climate patterns, among other less significant factors that affect water demand. Although redevelopment is expected to be an ongoing process, it is not expected to significantly impact water use since the City is already in a near "built-out" condition.

Rainfall and warmer temperatures, however, will continue to extend a major influence on demand as drought conditions and climate change could increase demand at a time when these supplies are limited. Therefore, it is imperative to continue implementing water conservation policies and programs to ensure permanent water savings not just short-term behavior change.

For planning purposes, the City's projected water use for 2025-2045 is broken down by sector, these water demands are included in future water demand projections for single and multi-family homes and listed in **Table 4.10**. Demand projections were determined using 101.3 GPCD, based on the past five-year average and projection population growth. Per capita consumption rates should be expected to remain under 101.3 GPCD and trend further below that rate to continue water conservation efforts to combat climate change. The projections also include low-income households within the City. The residential sector includes low-income housing units as the Housing Element for the City (2013-2021) lists 87 low to very low-income housing units to meet the City's Housing Needs Assessment. These water demands are included in future water demand projections for single family and multi-family homes listed in **Table 4.10** below. **Table 4.11** shows the overall projected demands.

Table 4.10: Projected Water Demand by Sector (AF) (DWR Table 4-2 Retail)

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		1,435	1,459	1,484	1,510	1,535
Multi-Family		458	466	474	482	490
Commercial	w/ Institutional	174	176	179	183	186
Landscape		88	90	92	93	95
Other Potable		53	54	55	56	57
Losses		702	714	727	739	752
	TOTAL	**2,910**	**2,960**	**3,011**	**3,062**	**3,114**

Table 4.11: Total Current & Projected Water Demands for 2020 – 2045 (AF) (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	2,862	2,910	2,960	3,011	3,062	3,114
Recycled Water Demand	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage	0	0	0	0	0	0
TOTAL WATER USE	**2,862**	**2,910**	**2,960**	**3,011**	**3,062**	**3,114**

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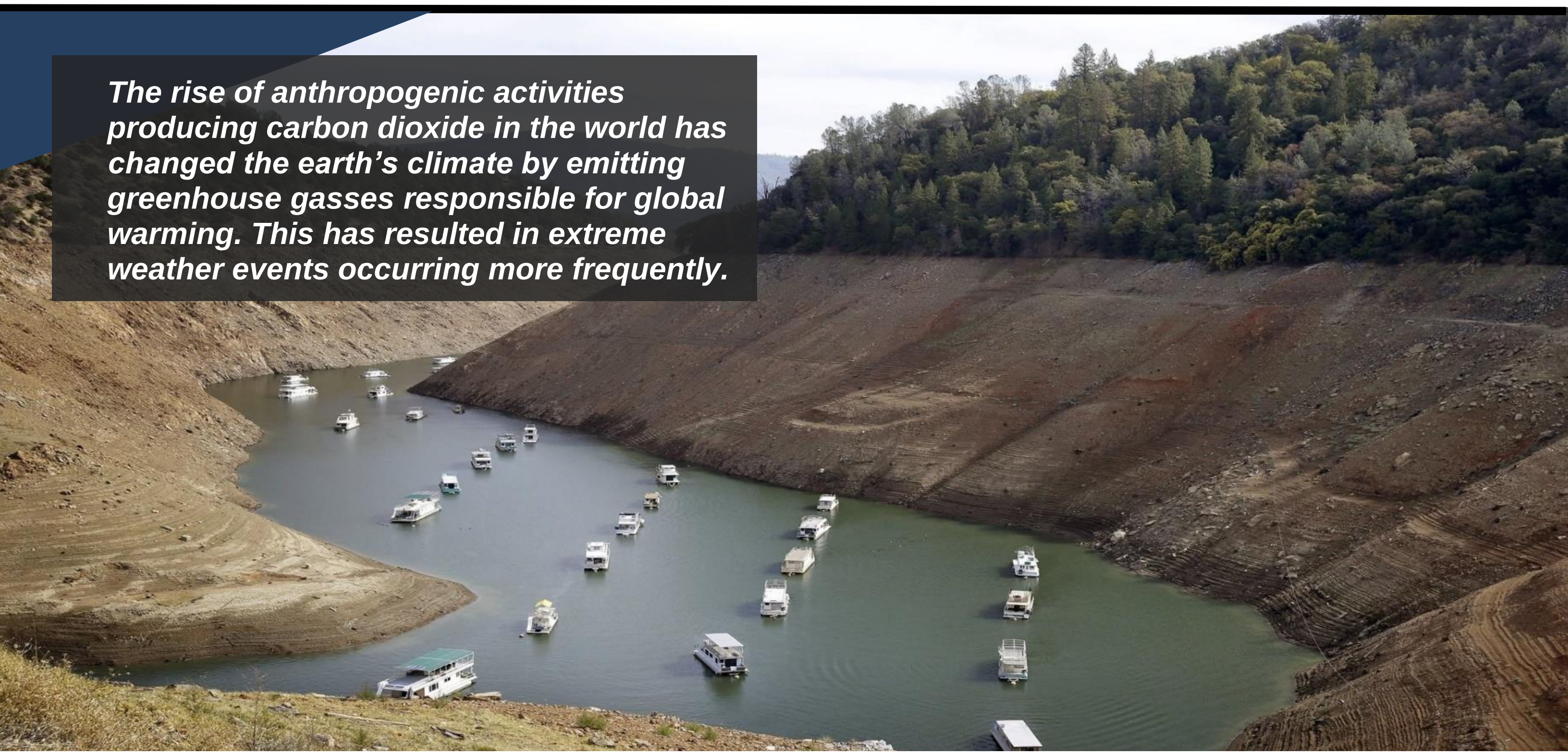

The rise of anthropogenic activities producing carbon dioxide in the world has changed the earth's climate by emitting greenhouse gasses responsible for global warming. This has resulted in extreme weather events occurring more frequently.

SECTION 5: CLIMATE CHANGE

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 5 CLIMATE CHANGE

5.1 INTRODUCTION

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, the City is already planning ahead to ensure long lasting reliability of its source for their customers.

5.2 PROJECT 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 (California 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. Alongside with the California Assessment, released regional assessments as well. The California Assessment for the Los Angeles Region detail the major impacts of climate change in Los Angeles County as well as Ventura, Orange, San Bernardino, and Riverside County. The LA Region report outlines the key projected climate change impacts:

- Continued future warming over the LA region (max temperatures to increase by 4-5°F by mid-century and 5-8°F by late century)
- Extreme temperatures and number of extreme hot days is expected to increase
- Dry and wet extremes expected to increase
- Sea level projected to rise by 1-2 feet by mid-century and 8-10 feet by end of century based on most extreme projections
- Increased likelihood of wildfires throughout southern California

5.2.1 Temperature

The LA Region report of the California Assessment anticipates temperatures to increase throughout southern California. Studies indicated that based on historic records from 1896 – 2015 from the National Oceanic and Atmospheric Administration (NOAA) shows a trend of annual average, maximum, and minimum temperature increase of around 0.16℃ per decade. In recent years, the top five warmest years in terms of annual average temperatures have occurred since 2012 where 2014 was the warmest followed by 2015, 2017, 2016, and 2012. Based on computer models (RCP4.5 and RCP8.5), the number of extremely hot days is expected to increase. For instance, historical records at the Los Angeles International Airport experiences nearly 15 days per year of temperatures equal to or greater than 90°F. Models project that the number of days may increase to 50-90 of such days per year by the end of the century.

5.2.2 Precipitation & Stormwater Runoff

Precipitation for the LA region is also impacted by climate change. Based on historical records, precipitation is flexible from year to year and only five storms are typically observed per year making up roughly 50 percent of the annual precipitation total. As a result, precipitation in the LA region shows no typical trend. Based on the LA Region report of the California Assessment, dry and wet extremes are both expected to increase in the future. Based on computer models (RCP8.5), some areas are expected to have increased precipitation by 25-30 percent. Similarly, computer models also project increased periods of extremely dry years by double or more by the end of the century. The extreme dry years can lead to prolonged drought periods, significantly impacting water supplies within the region.

5.3 CLIMATE CHANGE IMPACTS TO CITY'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 2011-16 brought a significant hit to the state's water supplies. The drought strained reservoir levels all across the state. **Table 5.1** 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 5.1: 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.

In contrast, current groundwater supplies does not show significant impacts caused climate change. ULARA utilizes monitoring wells to monitor groundwater elevations as shown in **Figure 5.1** (yellow). **Figures 5.2** and **5.3** show the well hydrographs within the Sylmar Basin (Wells 9 and 10). Groundwater levels remained relatively constant throughout the recent drought periods and the City continues to solely rely on this source as their supply.

5.4 CLIMATE CHANGE CONSIDERATIONS TO SUPPLY & DEMAND PROJECTIONS

Climate change considerations when projecting supply and demand is crucial to ensure that the reliability on the City's water supply meets the future demands. For demand projections, the recent five-year GPCD average of 101.3 is utilized alongside with a steady annual population growth. Per capita consumption rates should be expected to remain under 101.3 GPCD and trend further below that rate to continue water conservation efforts to combat climate change. Climate change considerations for the City's supply offers challenges as supply availability is dependent on climatological conditions. Currently, the City primarily utilizes local supplies from groundwater. The City utilizes imported supplies as an emergency basis and is always available when needed.

Projections for water supply and demand will be analyzed through normal, single dry, and multiple dry year scenarios. Section 6: Reliability Planning outlines the projections under those scenarios for 2021 – 2045. Section 8: Water Shortage Contingency Plan discusses the five-year Drought Risk Assessment (DRA) for 2021 – 2025. This DRA analyzes water demands under normal conditions and supply under multiple dry year conditions. These assessments and analysis is necessary to ensure the City supply is reliable under these scenarios.

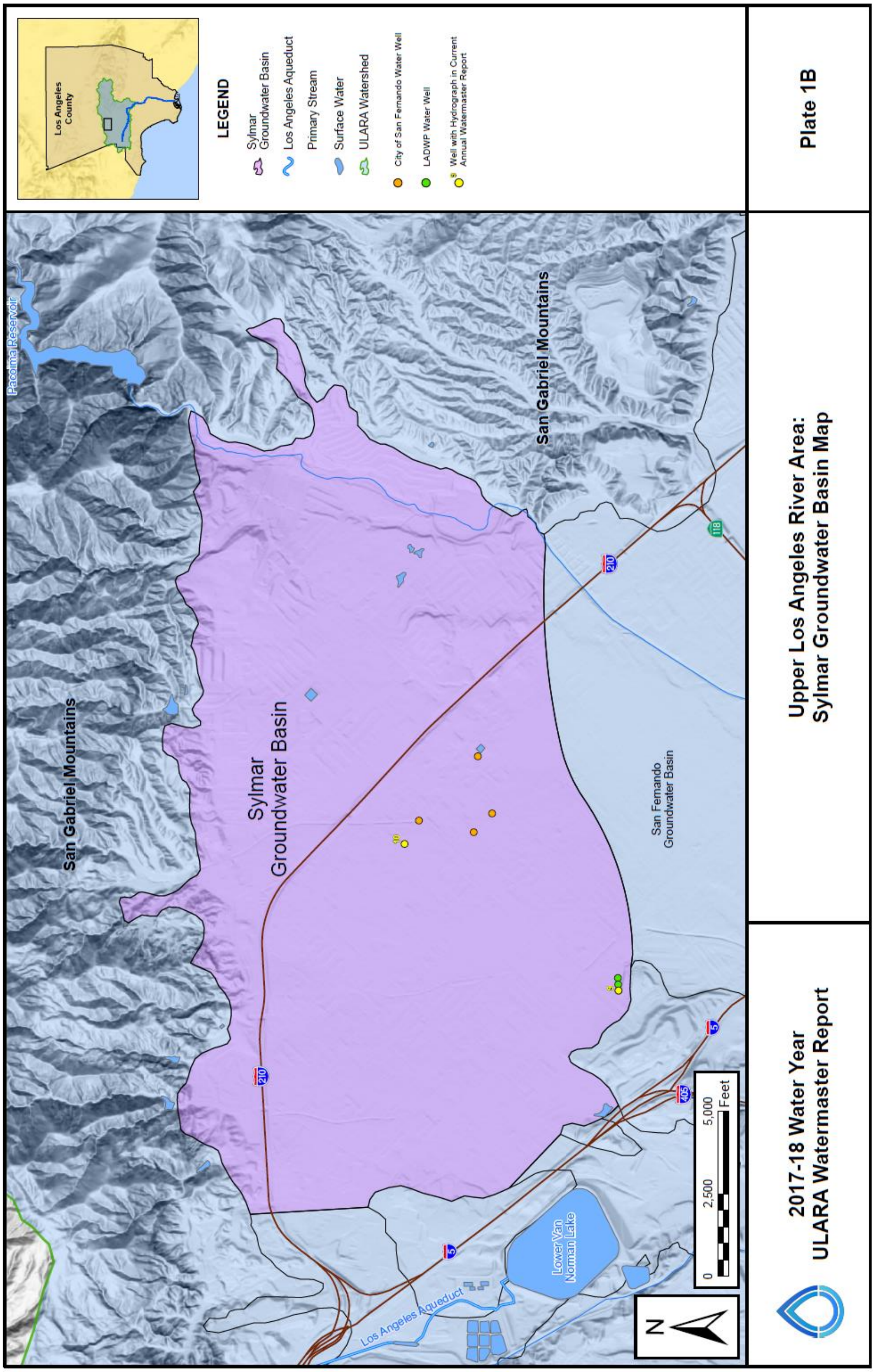

Figure 5.1: Sylmar Basin Well Map

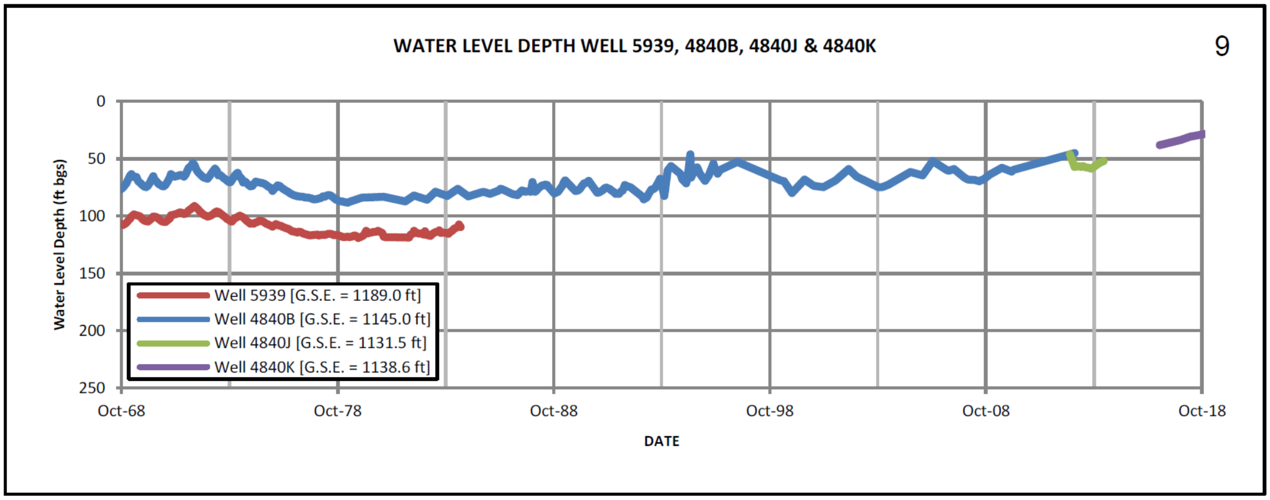

Figure 5.2: ULARA Well #9 Monitoring Well Hydrograph

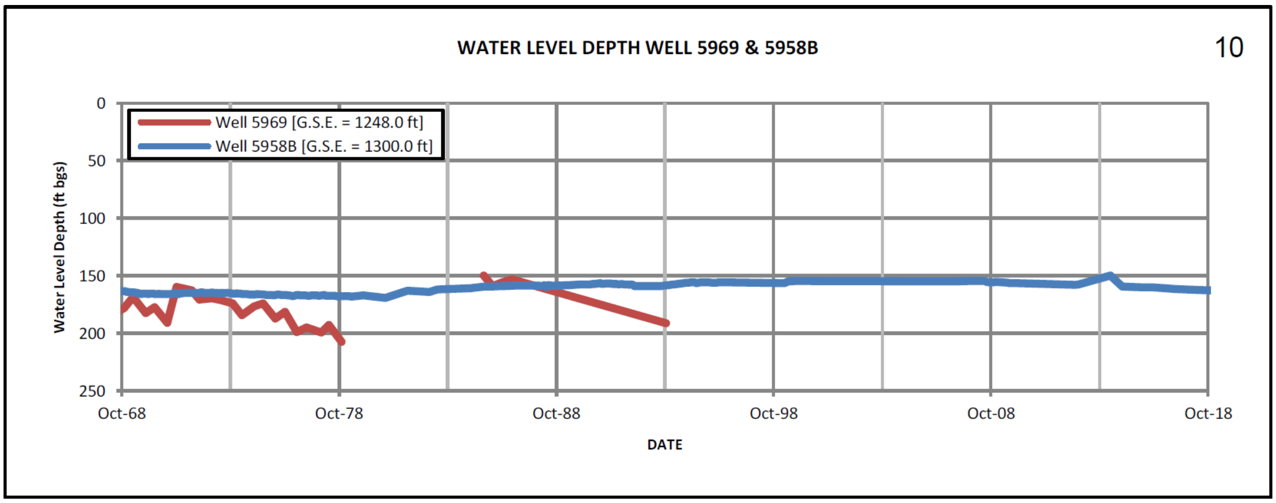

Figure 5.3: ULARA Well #10 Monitoring Well Hydrograph

SECTION 6: RELIABILITY PLANNING

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 6 RELIABILITY PLANNING

6.1 INTRODUCTION

Drought conditions continue to be an issue for Southern California's water supply. As the population of Southern California continues to increase and as environmental regulations restrict imported and local water supplies, it is important that each agency manage its water consumption in the face of drought. Even during times of seasonal drought, each agency ought to anticipate a surplus of supply. This can be accomplished through conservation and supply augmentation, and additionally through prohibitions under penalty of law during times of seasonal or catastrophic shortage in accordance with local ordinances.

This section discusses local and regional efforts to ensure a reliable supply of water and compares projected supply to projected demand. Demand and supply projections are provided in **Tables 6.3** to **6.9**.

6.2 HISTORIC DROUGHTS

Figure 6.1: Lake Oroville during 2011-2016 Drought

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 2012-16. California has also experienced several periods of less severe drought. According to DWR, water year 2014 is ranked as the third driest year on record in terms of statewide precipitation, with the five-year period of water years 2012-16 ranking as the driest consecutive three-year period on record in terms of statewide precipitation. The year 1977 is considered to be the driest year on record; however, Southern California sustained few adverse impacts from the 1976-77 drought, while the 1987-91 drought created considerably more concern.

As a result of previous droughts, the State legislature has enacted, among other things, the Urban Water Management Planning Act, which requires the preparation of this plan. Subsequent amendments to the Act have been made to ensure the plans are responsive to drought management. In 1991, several water agencies came together to form the California Urban Water Conservation Council (CUWCC) to manage the impacts of drought through the promotion of water conservation. Eventually, the CUWCC disbanded, and members of the CUWCC worked together to form the California Water Efficiency Partnership (CalWEP).

The drought of 2007-09 resulted in significant impacts on the State's water supplies, and in November 2009, SBx7-7 was signed into law by Governor Schwarzenegger. SBx7-7, also known as the Water Conservation Act of 2009, requires mandatory water conservation up to 20 percent by 2020.

At the local level, water agencies have enacted their own ordinances to deal with the impacts of drought. The City has enacted several water conservation policies as part of the City's municipal code that manage water supply during droughts. Compliance ranges from voluntary to mandatory depending on the drought severity.

6.3 RECENT DROUGHT (2011-2016) AND CURRENT STATE

The recent drought of 2011 – 2016 was one of the most severe and lengthiest droughts in state history. The drought has depleted reservoir levels all across the state, as reflected by **Figure 6.2**. 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 2016, to help cope with the drought, Governor Brown gave an executive order in April 2015 which mandated a statewide 25 percent reduction in water use.

Figure 6.2: Effects of Recent Drought on California's Reservoirs

In January of 2016, the DWR and the U.S. Bureau of Reclamation have finalized the 2016 Drought Contingency Plan that outlines State Water Project and Central Valley Project operations for February 2016 to November 2016. The plan was developed in coordination with staff from State and federal agencies. One of the key purposes of this plan is to communicate goals for 2016 water management and the potential operations needed to achieve those goals for water resources stakeholders and the public. The plan was updated in 2020 to reflect the recently dry conditions of 2019-2020.

Although the drought has more significantly impacted surfaces waters and other agencies that use water for agriculture, ALW is still affected by the drought, primarily due to reduced reliability of imported water.

During 2017, the state received an above average amount of rainfall in which significantly aided in the replenishment of the state's water supplies. As a result, in April 2017, Governor Brown ended the drought state of emergency in most of California, however, retains prohibition over water waste practices. This is to ensure the continued efforts for water conservation and to maintain supply reliability for the future.

6.3.1 Current State

As of 2021, the state is experiencing severe to exceptional drought and is in a second consecutive year of dry conditions. Furthermore, on April 21, 2021, Governor Gavin Newson visited Lake Mendocino and declared drought emergency for Sonoma and Mendocino Counties. An Executive Order was signed, which officially declared a drought emergency for these two counties. The executive order did not enact any mandates, but allows for mandates to follow should the conditions persist.

This declaration signifies a high probability of another prolonged drought in the near future. Although numerous reports indicate improvements in water supplies throughout the state since previous drought, water agencies across the state have plans in place in the event another prolonged drought period occurs.

6.4 REGIONAL SUPPLY RELIABILITY

Figure 6.3: Diamond Valley Lake, MWD's 800,000 AF Reservoir

As a result of continued challenges to its water supplies, MWD understands the importance of reliable water supplies. MWD strives to meet the water needs of Southern California by developing new projects to increase the capacity of its supplies while encouraging its member agencies to develop local supply project to meet the needs of its customers. Also, MWD is committed to developing and maintaining high-capacity storage reservoirs, such as Diamond Valley Lake, to meet the needs of the region during times of drought and emergency.

MWD operates Diamond Valley Lake, an 800,000 AF reservoir to avoid the repercussions of reduced supplies from the SWP and CRA. In addition, MWD operates several additional storage reservoirs in Riverside, San Bernardino, and San Diego Counties to store water obtained from the SWP and the CRA. Storage reservoirs like these are a key component of MWD's supply capability and are crucial to MWD's ability to meet projected demand without having to implement the Water Supply Allocation Plan (WSAP). This is crucial since the SWP and CRA have become more restricted, which could render the City's supplies more vulnerable to shortage.

6.4.1 Colorado River Aqueduct Reliability

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 per year, 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) was signed, which facilitated the transfer of water from agricultural agencies to urban uses. This historic agreement provides California the means to implement transfers and supply programs that will allow California to live within the State's 4.4 MAF basic annual apportionment of Colorado River water.

6.4.2 State Water Project Reliability

The reliability of the SWP impacts MWD’s member agencies’ ability to plan for future growth and supply. In August 2020, SWP released the 2019 Delivery Capability Report, providing information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns.

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, the SWP annual delivery of water to contractors has ranged from 1.4 MAF in dry years to almost 4.0 MAF in wet years. 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 the 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.

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, and SGVMWD’s initial request of 28,800 AF to 1,440 AF.

6.4.3 Current Reservoir Levels

Statewide, storage reservoir levels rise and fall due to seasonal climate changes, which induce increase in demand. During periods of drought, reservoir levels can drop significantly and can limit the amount of supplies available. As a result, both DWR and MWD monitor their reservoir levels regularly. In 2016, conditions of several key reservoirs indicated drought conditions. Currently, several reservoir levels are below historical average levels as indicated by **Figures 6.4** and **6.5** on the following pages.

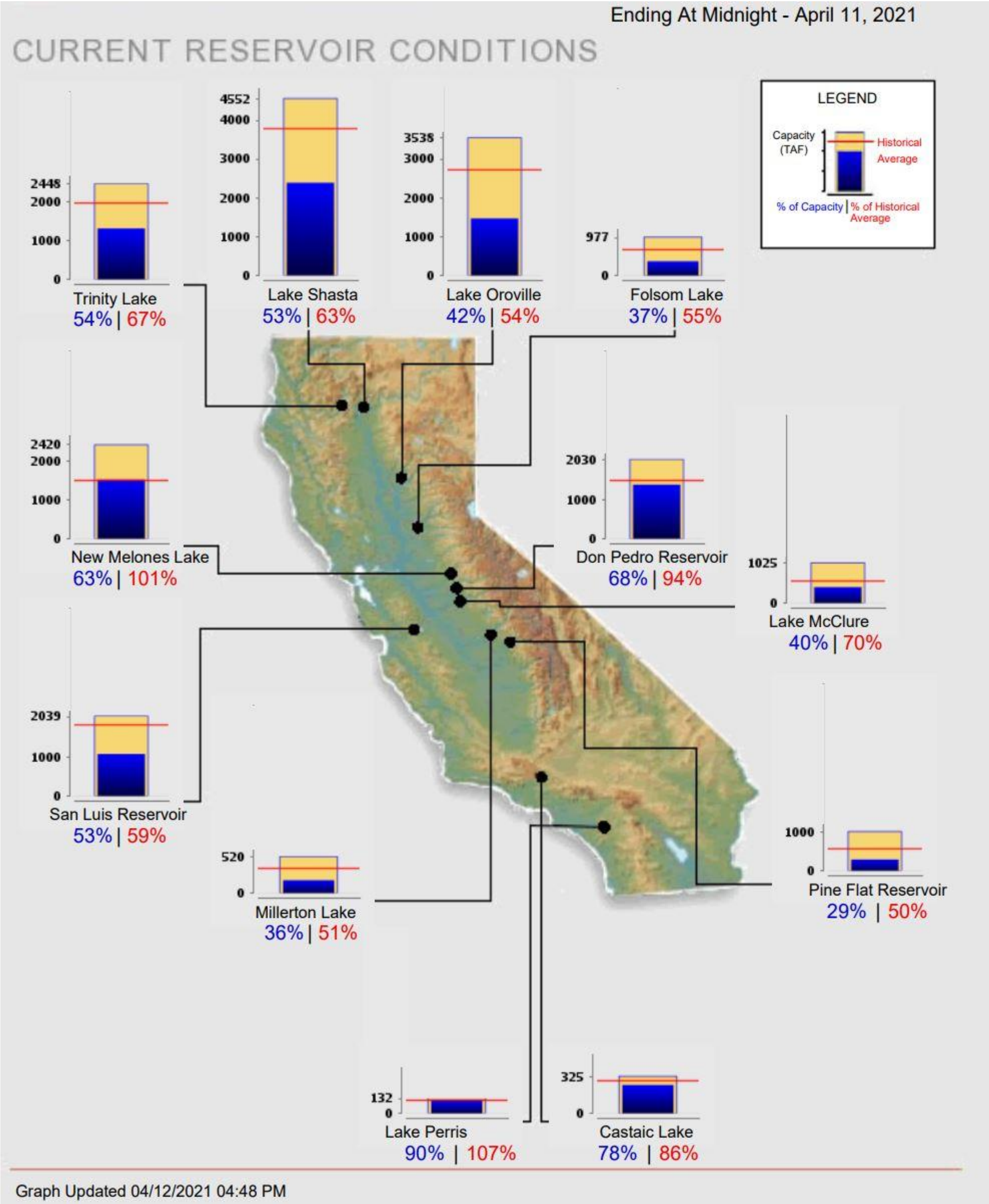

Figure 6.4: California State Reservoir Levels

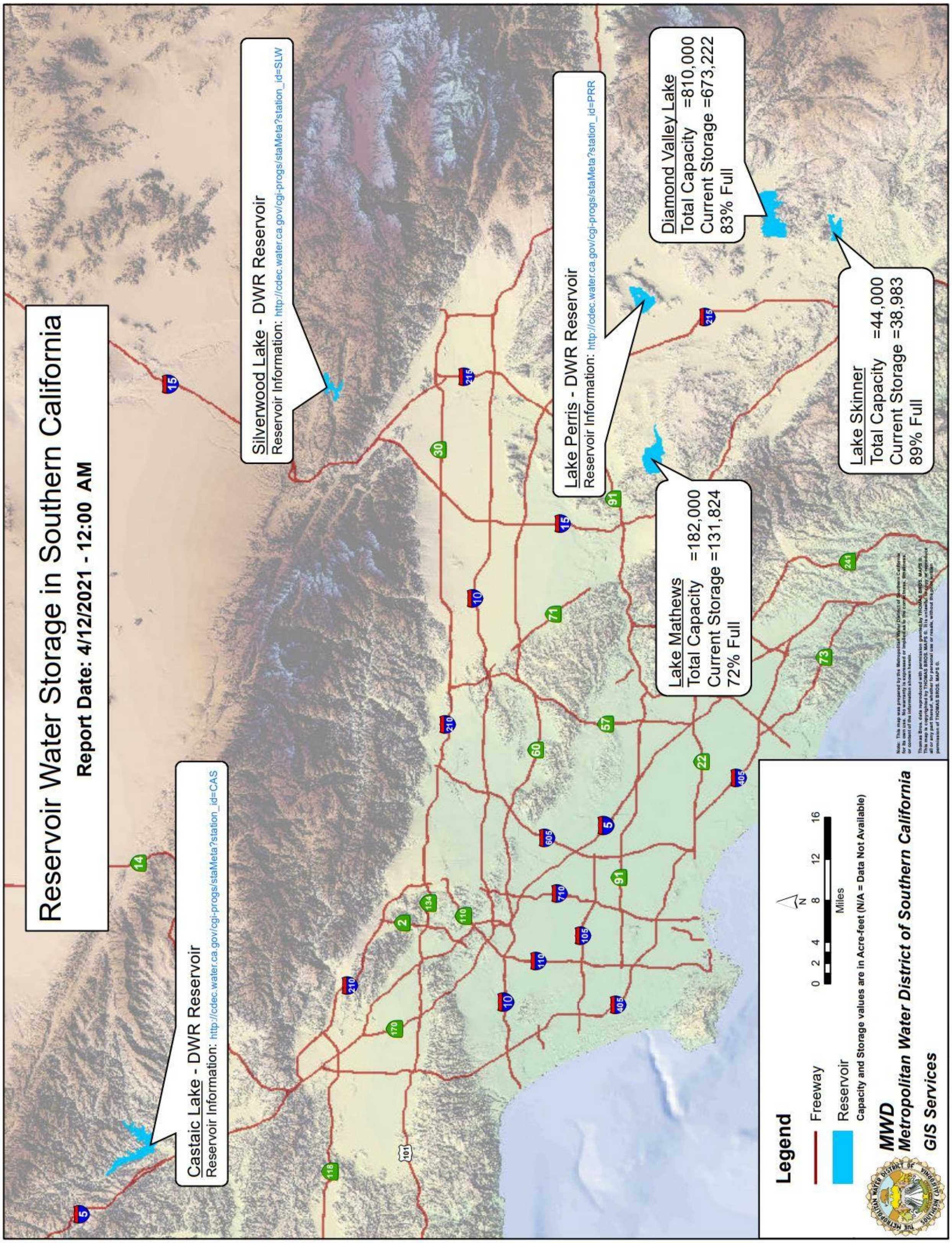

Figure 6.5: MWD Reservoir Levels

6.5 SUPPLY VS. DEMAND

As the City obtains its water sources from local groundwater and imported water the City's water supply reliability is based on the capacity and vulnerability of its infrastructure in addition to the seasonal demand changes brought about by periods of drought. MWD's reliability of supply has direct impact on the City. Population growth will also continue to be a factor in future reliability projections. Since the City is pursuing 100 percent local groundwater sustainability, having continued access to imported water increases the City's supply reliability.

6.5.1 Regional Supply Reliability

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, they are limited due to the requirements of SBx7-7, which provides a cap on water consumption rates (i.e., per capita water use). It can be reasonably expected that the majority of agencies have met or were near their compliance targets by 2020 and thereafter as conservation measures are more effectively enforced.

Figure 6.6: Lake Matthews, MWD Reservoir Storage

Tables 2.8 to 2.10 of MWD's 2020 UWMP shows supply reliability projections for average and single dry years through the year 2045. The data in these tables is important to effectively project and analyze supply and demand over the next 25 years for many regional agencies. It is noteworthy that Projected Supplies During a Single Dry Year and Multiple Dry Years indicates MWD's projected supply will exceed its projected single dry year and multiple dry year demands in all years. Likewise, for average years, MWD supply exceeds projected demands for all years. The data contained in these tables has an indirect effect on the City's imported supply capacity, and thus this data will also be used to develop the City's projected supply and demand over the next 25 years.

6.5.2 City Supply Reliability

To project future supply and demand comparisons, it will be assumed that demand will increase annually based on population growth and a constant of 101.3 GPCD in accordance with SBx7-7 requirements. During times of drought, however, demand will increase at a time when supply will decrease. **Table 6.1** outlines the various base years and demand increases to project during single and multiple dry drought periods.

Table 6.1: City's Demand during Single & Multiple Dry Years

		Base Year	Percent Increases
Single Dry Year		2013-2015	111%
Multiple Dry Years	Year 1	2011	116%
	Year 2	2012	122%
	Year 3	2013	123%
	Year 4	2014	115%
	Year 5	2015	95%

Tables 6.2 to **6.10**, shown on the following pages, provide an analysis of MWD and City supply and demand projections.

**Table 6.2: 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 6.3: 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%**

Table 6.4: City of San Fernando's Water Supply Availability & Demand Projections - Normal Water Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		25,637	26,075	26,521	26,974	27,434
Supply	Imported Water	629	629	629	629	629
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**4,199**	**4,199**	**4,199**	**4,199**	**4,199**
Demand	Total Normal Demand	**2,910**	**2,960**	**3,011**	**3,062**	**3,114**
	% of 2015-2020 Avg. Demand (3,843)	104%	105%	107%	109%	111%
Supply/Demand Comparison	Supply/ Demand Difference	1,289	1,239	1,188	1,137	1,085
	Supply/Demand (%)	144%	142%	139%	137%	135%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above.

2. Imported Water Supply based on maximum tier 1 limit with MWD.

3. Groundwater Supplies based on the City's adjudicated groundwater basin pumping right of 3,570 AFY.

**This Table is not intended to be a projection of City's actual groundwater production. City may pump amounts different (above or below) from its adjudicated right of 3,570 AFY based on leases to or from other agencies.*

**This Table is not intended to be a projection of City's actual demand. Demand of 101.3 GPCD was used based on the past 5-year average GPCD.*

Table 6.5: City of San Fernando's Water Supply Availability & Demand Projections - Single Dry Year (AF)

		2025	2030	2035	2040	2045
Water Service Area Population		25,637	26,075	26,521	26,974	27,434
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,273**	**3,329**	**3,386**	**3,444**	**3,503**
	Normal Year Demand	2,910	2,960	3,011	3,062	3,114
	% of Normal Year	112%	112%	112%	112%	112%
Supply/Demand Comparison	Supply/Demand Difference	297	241	184	126	67
	Supply/Demand (%)	109%	107%	105%	104%	102%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by single dry year increase of 112%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Table 6.6: City of San Fernando's Water Supply Availability & Demand Projections - Multiple Dry Years (2021 – 2025) (AF)

		2021	2022	2023	2024	2025
Water Service Area Population		25,293	25,378	25,464	25,551	25,637
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,238**	**3,443**	**3,535**	**3,358**	**2,892**
	Normal Year Demand	2,871	2,881	2,891	2,900	2,910
	% of Normal Year	113%	120%	122%	116%	99%
Supply/Demand Comparison	Supply/Demand Difference	332	127	35	212	678
	Supply/Demand (%)	110.3%	103.7%	101.0%	106.3%	123.4%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by multiple dry year increases of 113%, 120%, 122%, 116%, and 99%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Table 6.7: City of San Fernando's Water Supply Availability & Demand Projections - Multiple Dry Years (2026 – 2030) (AF)

		2026	2027	2028	2029	2030
Water Service Area Population		25,724	25,812	25,899	25,987	26,075
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,293**	**3,502**	**3,595**	**3,416**	**2,942**
	Normal Year Demand	2,920	2,930	2,940	2,950	2,960
	% of Normal Year	113%	120%	122%	116%	99%
Supply/Demand Comparison	Supply/Demand Difference	277	68	-25	154	628
	Supply/Demand (%)	108%	102%	99%	105%	121%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by multiple dry year increases of 113%, 120%, 122%, 116%, and 99%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Table 6.8: City of San Fernando's Water Supply Availability & Demand Projections - Multiple Dry Years (2031 – 2035) (AF)

		2031	2032	2033	2034	2035
Water Service Area Population		26,164	26,253	26,342	26,431	26,521
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,349**	**3,562**	**3,656**	**3,474**	**2,992**
	Normal Year Demand	2,970	2,980	2,990	3,000	3,011
	% of Normal Year	113%	120%	122%	116%	99%
Supply/Demand Comparison	Supply/Demand Difference	221	8	-86	96	578
	Supply/Demand (%)	107%	100%	98%	103%	119%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by multiple dry year increases of 113%, 120%, 122%, 116%, and 99%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Table 6.9: City of San Fernando's Water Supply Availability & Demand Projections - Multiple Dry Years (2036 – 2040) (AF)

		2036	2037	2038	2039	2040
Water Service Area Population		26,611	26,701	26,792	26,882	26,974
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,406**	**3,623**	**3,719**	**3,533**	**3,043**
	Normal Year Demand	3,021	3,031	3,041	3,052	3,062
	% of Normal Year	113%	120%	122%	116%	99%
Supply/Demand Comparison	Supply/Demand Difference	164	-53	-149	37	527
	Supply/Demand (%)	105%	99%	96%	101%	117%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by multiple dry year increases of 113%, 120%, 122%, 116%, and 99%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Table 6.10: City of Fernando's Water Supply Availability & Demand Projections - Multiple Dry Years (2041 – 2045) (AF)

		2041	2042	2043	2044	2045
Water Service Area Population		27,065	27,157	27,249	27,342	27,434
Supply	Imported Water	0	0	0	0	0
	Groundwater	3,570	3,570	3,570	3,570	3,570
	Total Supply	**3,570**	**3,570**	**3,570**	**3,570**	**3,570**
	Normal Year Supply	4,199	4,199	4,199	4,199	4,199
	% of Normal Year	85%	85%	85%	85%	85%
Demand	**Total Dry Demand**	**3,465**	**3,684**	**3,782**	**3,594**	**3,095**
	Normal Year Demand	3,072	3,083	3,093	3,104	3,114
	% of Normal Year	113%	120%	122%	116%	99%
Supply/Demand Comparison	Supply/Demand Difference	105	-114	-212	-24	475
	Supply/Demand (%)	103%	97%	94%	99%	115%

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

1. Total Demand based on 101.3 GPCD multiplied by population projections shown above and by multiple dry year increases of 113%, 120%, 122%, 116%, and 99%.

2. All other items derived in similitude to Table 6.4.

**See notes below Table 6.4 for explanation of groundwater supply / overall demand.*

Based on the data contained in **Tables 6.4** to **6.10**, the City 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, the City's imported water supply capacities may potentially be reduced significantly due to reductions in MWD's storage reservoirs resulting from increases in regional demand.

For years where there is a shortfall in groundwater supplies, the City may supplement by using imported water from MWD. The City may also consider a groundwater lease agreement with the City of Los Angeles to lease additional ground water pumping rights in times of supply shortage.

6.6 VULNERABILITY OF SUPPLY

Due to the semi-arid nature of the City's climate and as a result of past drought conditions, the City is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. While the data shown in **Tables 6.4** through **6.10** identifies water availability during single and multiple dry year scenarios, response to a future drought would follow the water use efficiency mandates of the City's Water Conservation Plan (Ordinance No. 1638, see **Appendix G**) along with implementation of the appropriate stage of regional plans, such as the WSDM Plan (MWD). These programs are discussed in **Section 8**.

6.7 WATER SUPPLY OPPORTUNITIES

6.7.1 City Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Recently, the City completed construction of an ion exchange treatment plant for Well No. 7A to treat for the high nitrate levels found in the well. A similar treatment plant for Well No. 3 is in the planning stages, with construction expected to begin sometime after the completion of Well No. 7A's plant. In addition, a 1 MG round reservoir next to Reservoir #3A will be replaced with a 1.1 MG square reservoir and will be named Reservoir #4.

In general, the City is always looking into possibilities for upgrades to its distribution infrastructure in order to ensure a reliable supply and to prevent system losses.

6.7.2 Regional Projects (MWD)

MWD is implementing water supply alternative strategies for the region and on behalf of member agencies to ensure available water in the future. Some of these strategies include:

- Conservation
- Water recycling & groundwater recovery
- Storage/groundwater management programs within the region
- Storage programs related to SWP and 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 IRP to include many supply sources. A brief description of the various programs implemented by MWD to improve reliability is included in **Table 6.11** on the following page.

Table 6.11: MWD IRP Regional Resources Status

Supply	Description	
Colorado River Aqueduct (CRA)	MWD holds a basic apportionment of Colorado River water and has priority for an additional amount depending on availability of surplus supplies. Water management programs supplement these apportionments.	
State Water Project (SWP)	MWD receives water delivered under State Water Contract provisions, including Table A contract supplies, use of carryover storage in San Luis Reservoir, and Article 21 interruptible supplies.	
Conservation	MWD and the member agencies sponsor numerous conservation programs in the region that involve research and development, incentives, and consumer behavior modification.	
	Code-Based Conservation	Water savings resulting from plumbing codes and other institutionalized water efficiency measures.
	Active Conservation	Water saved as a direct result of programs and practices directly funded by a water utility, e.g., measures outlined by the CUWCC BMPs. Water savings from active conservation completed through 2008 will decline to zero as the lifetime of those devices is reached. This will be offset by an increase in water savings for those devices that are mandated by law, plumbing codes or other efficiency standards.
	Price Effect Conservation	Reductions in customer use attributable to changes in the real (inflation adjusted) cost of water.
Local Resources	*Groundwater*	Member-agency produced groundwater from the groundwater basins within the service area.
	Groundwater Recovery	Locally developed and operated, groundwater recovery projects treat contaminated groundwater to meet potable use standards. MWD offers financial incentives to local and member agencies through its Local Resources Program for recycled water and groundwater recovery. Details of the local resources programs are provided in Appendix 5.
	Los Angeles Aqueduct (LAA)	A major source of imported water is conveyed from the Owens Valley via the LAA by Los Angeles Department of Water and Power (LADWP). Although LADWP imports water from outside of MWD's service area, MWD classifies water provided by the LAA as a local resource because it is developed and controlled by a local agency.
	Recycling	Recycled water projects recycle wastewater for M&I use.
	Surface Water	Surface water used by member agencies comes from stream diversions and rainwater captured in reservoirs.
Groundwater Conjunctive Use Storage Programs	MWD sponsors various groundwater storage programs, including, cyclic storage programs, long-term replenishment storage programs, and contractual conjunctive use programs. Details of the groundwater storage programs are provided in Appendix 4.	
Surface Water Storage	MWD reservoirs (Diamond Valley Lake, Lake Mathews, Lake Skinner) and flexible storage in DWR reservoirs (Castaic Lake, Lake Perris). Details of the surface storage reservoirs are provided in Appendix 4.	
Central Valley Storage & Transfers	Central Valley storage programs consist of partnerships with Central Valley water districts to allow MWD to store SWP supplies in wetter years for return in drier years. MWD's Central Valley transfer programs consist of partnerships with Central Valley Project and SWP settlement contractors to allow MWD to purchase water in drier years. Details of the Central Valley Storage and Transfer programs are provided in Appendix 3.	

6.8 REDUCED DELTA RELIANCE REPORTING

6.8.1 Introduction

Figure 6.7: Delta Plan Aims to Protect Bay-Delta's Fragile Ecosystem

An urban water supplier that anticipates participating in or receiving water supply benefits from a proposed project ("covered action") such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta, should provide information in their 2015 and 2020 UWMPs that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A "covered action" is an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, directly undertaken by any public agency that will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh.

6.8.2 Infeasibility of Accounting Supplies from the Delta Watershed for MWD's Member Agencies and Their Customers

MWD's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. MWD's member agencies coordinate reliance on the Delta through their membership in MWD, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally, not by individual MWD member agencies and not by the customers of those member agencies.

MWD's member agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. MWD's member agencies do not control the amount of Delta water they receive from MWD. MWD manages a statewide integrated conveyance system consisting of its participation in the SWP, its CRA including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and MWD's conveyance and distribution facilities, demand management programs increase the future reliability of water resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the MWD's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

MWD's costs are funded almost entirely from its service area, with the exception of grants and other assistance from government programs. Most of MWD's revenues are collected directly from its member agencies. Properties within MWD's service area pay a property tax that currently provides approximately 8 percent of the fiscal year 2021 annual budgeted revenues. The rest of

MWD's costs are funded through rates and charges paid by MWD's member agencies for the wholesale services it provides to them. Thus, MWD's member agencies fund nearly all operations MWD undertakes to reduce reliance on the Delta, including Colorado River Programs, storage facilities, Local Resources Programs and Conservation Programs within MWD's service area.

Because of the integrated nature of MWD's systems and operations, and the collective nature of MWD's regional efforts, it is infeasible to quantify each of MWD member agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system that were designed to work as an integrated regional cooperative.

In addition to the member agencies funding MWD's regional efforts, they also invest in their own local programs to reduce their reliance on any imported water. Moreover, the customers of those member agencies may also invest in their own local programs to reduce water demand. However, to the extent those efforts result in reduction of demands on MWD, that reduction does not equate to a like reduction of reliance on the Delta. Demands on MWD are not commensurate with demands on the Delta because most of MWD member agencies receive blended resources from MWD as determined by MWD, not the individual member agency. For most member agencies, the blend varies from month-to-month and year-to-year due to hydrology, operational constraints, use of storage, and other factors.

SECTION 7: DEMAND MANAGEMENT

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 7 DEMAND MANAGEMENT

7.1 INTRODUCTION

As a result of diminished existing supplies and difficulty in developing new supplies, water conservation is important to Southern California's sustainability. Therefore, the City acknowledges that efficient water use is the foundation of its current and future water planning and operations policies. The City implements water conservation through a combination of programs, resources, and policies.

Figure 7.1: Water Waste Is Prohibited by City Code

In March 2018, the CUWCC disbanded, and members of the CUWCC worked together to form the 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 7.1.1**.

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

7.1.1 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*

7.2 CONSERVATION MEASURES

As signatory to the CalWEP MOU, the City has committed to use good-faith efforts to implement all applicable BMPs. In addition, the City has continued to work with MWD to increase the effectiveness of its DMM programs and educate people on the importance of water conservation.

Overall, the City's conservation efforts as a member of CalWEP have led to efficient water use. To this end, the City established a Water Conservation Program, which was adopted by the City Council in October 2014 as Ordinance No. 1638 (**Appendix G**), originally derived from the Code of 1957. To this day, the City is continuously working with MWD towards implementing the BMPs through means of various conservation measures.

Table 7.1 on the following page provides a status overview of the City's Conservation Measures. It also includes the list of DMMs

Table 7.1: List of Current BMPs (for CUWCC Members) Relative to Current and Previous DMMs

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 the City.*

7.2.1 BMP 1: Utility Operations

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

Water Waste Prohibition Ordinance

Under City Ordinance No. 1638 (Section 4 – Water Conservation, 10-20-2014), "No person shall cause or permit water under his or her control to be wasted." A number of additional prohibition ordinances are summarized in **Section 8** with the complete list found in **Appendix G**.

Additionally, MWD supports its member agencies and cities to adopt ordinances that will reduce wasting water.

Metering

All of the City water accounts are metered and billed according to commodity rates and meter consumption. In addition, the City encourages the installation of dedicated landscape meters, which allows the City to recommend the appropriate irrigation schedules through future landscape programs. Meter calibration and periodic replacement ensures that customers are paying for all of the water they consume, and therefore encourages conservation.

Figure 7.2: Water Meter

Metering allows the City to conserve a total of 20 to 30 percent of the water demand overall and up to 40 percent savings during peak demand periods as estimated by the CalWEP's BMP Costs and Savings Study. The measure of effectiveness will include a comparison of water use before and after meter calibration.

Conservation Pricing

Figure 7.3: Water Waste

The City's water rate structure consists of two components: a commodity charge and a fixed service charge. The fixed service charge is a fixed monthly charge, included in each customer's water bill that is based on the size of the customer's connection. As the service size increases, so does the amount of the service charge. The monthly service charge applies to domestic, commercial, agriculture, and municipal users, and was set to increase incrementally every year.

In addition to the fixed service charge, the City utilizes a three-tier water commodity charge rate structure to provide financial incentives for residential customers that conserve water. Residential customers who consume 0 – 18 hundred cubic feet (ccf) are charged at the Block 1 Rate (the lowest rate). While those who consume 19 – 36 ccf are charged at the Block 2 Rate, which is more than double the Block 1 Rate. Finally, those who consume 36+ ccf are charged at the highest rate: Block 3 Rate. A copy of the current rates is shown in **Appendix XX**.

The measure of effectiveness of the rate structure in terms of acting as a catalyst for water conservation will be assessed based on decreases in the total amount of consumption since the charges are based on total consumption rates.

Programs to Assess and Manage Distribution System Real Loss

The City's surveillance of its water system to detect leaks is an on-going operation. The City recognizes the urgency of repairing leaks and responds to any leak in an expedient manner. Field employees are trained in detection of leaks and signs of unauthorized uses of water. In addition, the customer billing system flags high or unusual water bills, which are then investigated for possible leaks in customer piping. When a leak is first noticed, the pipeline is inspected and promptly repaired. The City's system inspection and field reviews are triggered when pressure losses are experienced within the same locations of the distribution line.

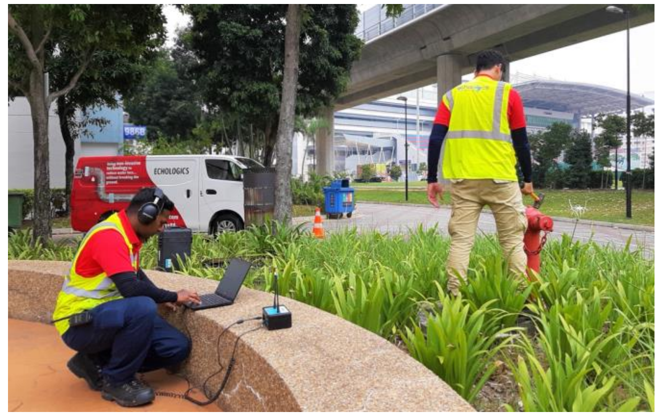

Figure 7.4: Leak Detection

To evaluate the effectiveness of these conservation measures, staff will review the data records to confirm that the unaccounted-for water losses remain low and consistent.

Water Conservation Program Coordination and Staffing Support

The City's Public Works (Water) Superintendent serves as the City's Conservation Coordinator for the water service area. Currently, the role of the Public Works Superintendent entails consistent water, street, and tree code enforcement, and as a result, regular communication with customers is provided. In addition, responsibilities of the Public Works Superintendent include conservation coordinator duties.

Figure 7.5: The City's Water Department Staff

7.2.2 BMP 2: Public Education & Outreach

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

The City's Water Department Staff actively provides the community with educational opportunities through public events outreach.

School Programs

The City provides school education programs through MWD's Education Unit for teachers and students from pre-Kindergarten through college. These programs help to promote water conservation and awareness.

In 2014 and 2015 during a National Public Works Week event, the City coordinated with after-school programs which bussed in approximately 200 school children. The City's Water Department set up a booth where staff explained the origins of water, the importance of water conservation, and also passed out literature such as activity books, coloring books, and posters.

Figure 7.6: School Programs Promote Water Awareness

"Water is Life" Art Contest

Each year in the spring MWD sponsors an annual art contest that encourages youth to express the value of water through their artwork. Students in grades K-12 submit artwork through participating Member and Retail Agencies by March every year. This is a great way for students to remind us through art to consider how we use water today and whether there will be water available for the future.

Figure 7.7: MWD's "Water is Life" Art Contest

MWD's World Water Forum

Ten years ago, in 2006, the "International Decade of Fresh Water" was proclaimed by the United Nations to raise awareness about global water issues. To underscore the importance of water quality and conservation issues, MWD partnered with the U.S. Bureau of Reclamation – U.S. Dept. of the Interior, Friends of the United Nations, Sanitation Districts of Los Angeles County and Water for People to create a grant competition for local colleges and universities that would promote new water conservation technologies and policies or communications programs. The Forum also helps to generate student interest in engineering, environmental science and related careers in the water industry, promoting economic and workforce development in Southern California.

Figure 7.8: Public Outreach during Public Works Day

MWD's Community Partnering Program

As a retail member, the City is able to participate in MWD's Community Partnering Program. MWD created the Community Partnering Program in 1999. It provides sponsorships for community-based organizations including nonprofit groups, professional associations, educational institutions and public agencies.

Applications should promote discussion and educational activities for regional water conservation and water-use efficiency issues. MWD provides support for community water awareness programs, water-related education outreach programs, and public policy water conferences.

7.2.3 BMP 3: Residential Programs

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

Water Survey Assistance

As a member agency of MWD, the City receives funding for residential survey devices through MWD.

The City also responds to customer inquiries to high water bills that prompt informal water surveys to be completed by trained City water staff. A high-water bill triggers the City to inspect the accuracy of the water meter, conduct a flow test, and then suggest possible sources of water leaks or excessive water use.

Figure 7.9: Residential Water Survey

The City will measure the effectiveness of water survey programs through analyzing the number of surveys distributed and the difference in water consumption for the families after the surveys are conducted.

Other Residential Programs from MWD

The City also participates in various 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 (HECW), 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 (WBIC) 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 $75 per barrel or $300 per cistern. The barrels and cisterns must adhere to specified design guidelines.

- ***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.

Figure 7.10: Rain Barrel

- ***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. Currently, Turf Removal incentives are no longer being offered throughout the MWD region due to high popularity that led to the exhaustion of funds.

Residential Plumbing Retrofit

The City offers rebates through MWD's SoCal Water$mart program for high-efficiency clothes washers (HECWs) and premium high-efficiency toilets (PHETs) that use less than 1.1 gpf. Through this program, water-wasting plumbing fixtures are replaced with highly efficient ones with a rebate incentive for qualifying models.

7.2.4 BMP 4: Commercial, Institutional, & Industrial Programs

The City has a relatively small number of commercial, industrial, and institutional (CII) accounts; however, the City still offers financial incentives under MWD's SoCal Water$mart Program, which offers rebates for various water efficient devices to qualifying 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 7.2** on the following page. 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.

Table 7.2: SoCal Water $mart Program Rebates

Retrofit Device	Rebate Amount
High Efficiency Toilet	$40
Ultra-Low-Water or 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 & Computer Irrigation Controller	$35 per station
Rotating Nozzles for Pop-up Spray Head Retrofits	$2 (minimum of 30 per rebate)
Large Rotary Nozzles	$13 per set

7.2.5 BMP 5: Landscape Programs

The City supports large landscape conservation through MWD's regional programs including:

SoCal Water$mart Program – The City, through MWD, also offers rebates through SoCal Water$mart program for landscape plumbing retrofitting. Landscape rebates are available for Weather- Based Irrigation Controllers (WBIC), Soil Moisture Sensor System Program (SMSS), rotating sprinkler nozzles, and turf removal. The available landscape programs are listed below:

- WBIC Program
- SMSS Program
- Rotating Nozzle Rebate Program
- Rain Barrels & Cisterns Program
- Turf Removal Programs

7.3 REBATE PROGRAM PARTICIPATION

Over the past six years (2015-2020), the City has found success in offering rebates through MWD's SoCal Water$mart program. Since the beginning of 2015, there have been residents that have qualified and received rebates through the rebate program.

SECTION 8: WATER SHORTAGE CONTINGENCY PLAN

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 8 WATER SHORTAGE CONTINGENCY PLAN

8.1 INTRODUCTION

Water supplies may be interrupted or reduced significantly in a number of ways including droughts, earthquakes, and power outages, which can hinder a water agency's ability to effectively delivery water. Drought impacts increase with the length of a drought as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline. The ability to manage water supplies in times of drought or other emergencies is an important part of water resources management for a community. Although the majority of the City's water supply is produced locally, response to an emergency will be a coordinated effort between its own staff and other local and regional water agencies.

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 (WSCP) describing new and existing policies that MWD and the City have in place to respond to water supply shortages, including a catastrophic interruption and a greater than 50 percent mandatory reduction in total potable water supply. The City will also coordinate with MWD to implement water shortage plans on a regional level.

8.2 WATER SUPPLY RELIABILITY ANALYSIS

8.2.1 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 the City's climate and as a result of past drought conditions, the City is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. **Section 6** describes the water availability during single and multiple dry year scenarios. **Tables 8.1**, **8.2**, and **8.3** summarize the supply and demand comparisons during normal, single-dry year, and multiple dry year, respectively.

Table 8.1: Normal Year Supply & Demand Comparison (AF) (DWR Table 7-2 R)

	2025	2030	2035	2040	2045
Supply totals	4,199	4,199	4,199	4,199	4,199
Demand totals	2,910	2,960	3,011	3,062	3,114
Difference	1,289	1,239	1,188	1,137	1,085

Table 8.2: Single Dry Year Supply & Demand Comparison (AF) (DWR Table 7-3 R)

	2025	2030	2035	2040	2045
Supply totals	3,570	3,570	3,570	3,570	3,570
Demand totals	3,273	3,329	3,386	3,444	3,503
Difference	297	241	184	126	67

Table 8.3: Multiple Dry Year Supply & Demand Comparison (AF) (DWR Table 7-4 R)

		2025	2030	2035	2040	2045
First year	Supply totals	3,570	3,570	3,570	3,570	3,570
	Demand totals	3,238	3,293	3,349	3,406	3,465
	Difference	332	277	221	164	105
Second year	Supply totals	3,570	3,570	3,570	3,570	3,570
	Demand totals	3,443	3,502	3,562	3,623	3,684
	Difference	127	68	8	(53)	(114)
Third year	Supply totals	3,570	3,570	3,570	3,570	3,570
	Demand totals	3,535	3,595	3,656	3,719	3,782
	Difference	35	(25)	(86)	(149)	(212)
Fourth year	Supply totals	3,570	3,570	3,570	3,570	3,570
	Demand totals	3,358	3,416	3,474	3,533	3,594
	Difference	212	154	96	37	(24)
Fifth year	Supply totals	3,570	3,570	3,570	3,570	3,570
	Demand totals	2,892	2,942	2,992	3,043	3,095
	Difference	678	628	578	527	475

As shown in **Tables 8.1** to **8.3**, the City can meet the majority of future demands through 2045; however, the City service area indicates supply deficits in the analysis. Because the City has access to MWD water, a shortfall of groundwater supplies may be supplemented by imported water supply from MWD. Furthermore, these projections do not include groundwater right agreements with outside agencies. The City may consider groundwater lease agreements with the City of Los Angeles to pump additional groundwater if they anticipate to exceed their adjudicated groundwater rights within the Sylmar Groundwater Basin.

8.2.2 Five-Year Drought Risk Assessment

Due to the surface and subsurface inflows from the Santa Susana and San Gabriel Mountains and natural percolation, the Sylmar Basin has moderate dry season groundwater supply protection. Additionally, due to the stipulations of the Sylmar Judgment, the City may extract up to 10 percent in excess of its adjudicated right of 3,570 AFY. If the City leases additional groundwater from the City of Los Angeles, this will result in even greater supply reliability benefits during dry seasons that may occur during the course of the City's lease. Furthermore, since the City will continue to have access to imported water, the City may import water to meet demand, if 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 6.2** to **6.3** in **Section 6**, results in 100 percent reliability for full-service demands through the year 2045 for all climatic conditions. Based on the conditions described above, the City 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 the City’s water supplies. **Table 8.4** 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 the City’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) and supply augmentations are further discussed in the WSCP. As shown, the City is capable to meet the projected demands based on the estimated water supplies during drought conditions without the need for WSCP stage implementation.

Table 8.4: Five-Year Drought Risk Assessment (AF) (DWR Table 7-5)

	2021	2022	2023	2024	2025
Total Water Use	2,871	2,881	2,891	2,900	2,910
Total Supplies	3,570	3,570	3,570	3,570	3,570
Surplus/Shortfall w/o WSCP Action	699	689	679	670	660
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	699	689	679	670	660
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Figure 8.1: Severe Droughts Highlight the Importance of Conservation Ordinances (Lake Oroville in 2014)

Response to a future drought would follow the water use efficiency mandates of the City's phased 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.

8.3 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 the City'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.

8.3.1 Decision-Making Process

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

Starting in 2022, City staff will submit and present a finalized Annual Water Shortage Assessment Report to the City Council for approval by June each year. City staff will also present determination of recommended water shortage response actions deemed appropriate as a result of the Annual Assessment. Following approval, City 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 8.2**.

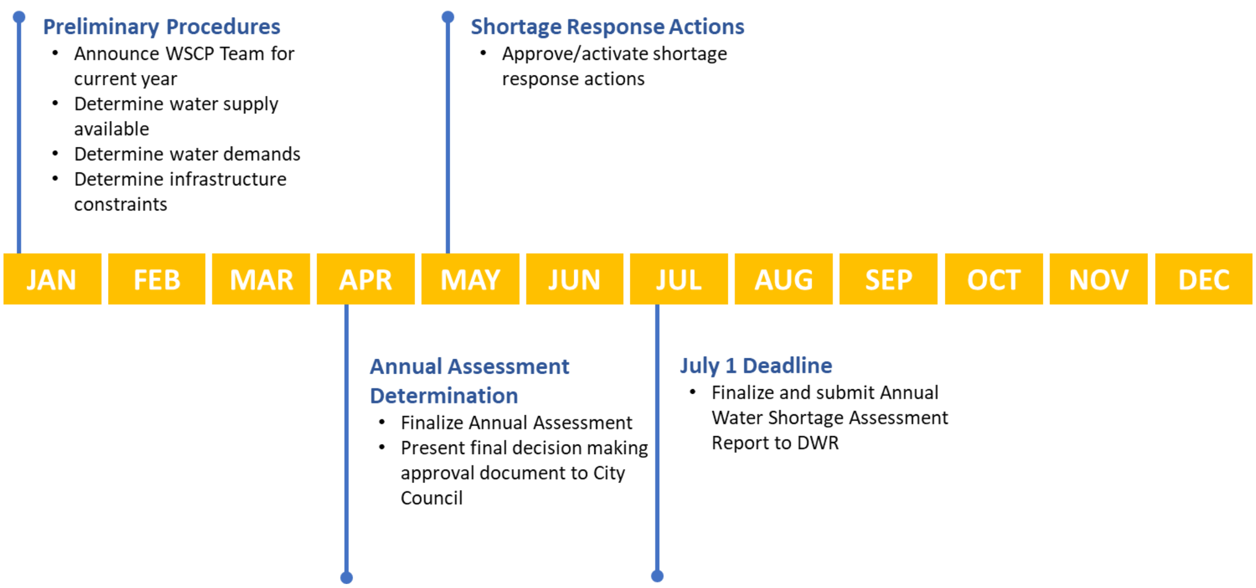

Figure 8.2: Sample Annual Assessment Decision-Making Process Timeline

8.3.2 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 the City's water supply sources as shown and quantified in **Tables 8.5** and **8.6**.

Table 8.5: 2020 Water Supply (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	MWD	0	Drinking Water	629
Groundwater (not desalinated)	Sylmar Groundwater Basin	2,862	Drinking Water	3,570
	Total	2,862		4,199

Table 8.6: Projected Water Supply Availability (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	629	629	629	629	629
Groundwater (not desalinated)	Sylmar Groundwater Basin	3,570	3,570	3,570	3,570	3,570
	Total	4,199	4,199	4,199	4,199	4,199

Imported Water Purchases

The City receives its imported water supply from MWD. Supply from MWD originates from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. From 2015 to 2020, imported water has accounted for 0 percent of the City's potable water supply total. This independence from imported water is the result of the City's groundwater pumping ability. The City is projected to be able to have access to its full Tier 1 limit supply with MWD of 629 AFY as shown in **Table 8.6**.

Groundwater Supply

The City uses its groundwater wells to extract groundwater from the Sylmar Groundwater Basin and has an adjudicated right of about 3,570 AFY. The City currently maintains three active wells (Well Nos. 2A, 4A, and 7A) and one standby well (Well No. 3) for groundwater extraction.

8.4 SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

8.4.1 MWD Stages of Action

Water Surplus & Drought Management Plan (WSDM)

In addition to the provisions of the City's Conservation Ordinance, the City will also work in conjunction with MWD to implement conservation measures within the framework of MWD's WSDM Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input with its member agencies. The plan addresses both surplus and shortage contingencies.

The WSDM Plan guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. 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 that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable; however, in the event of an extreme shortage, an allocation plan will be implemented.

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

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, the City's imported water supplies will be allocated based on the methodology documented in MWD's allocation plan.

The following description of shortage stages is from MWD's 2020 UWMP, page 2-29:

> *"**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.*

Figure 8.3: Lake Mead "Bathtub Ring" (December 20, 2020)

> *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)

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

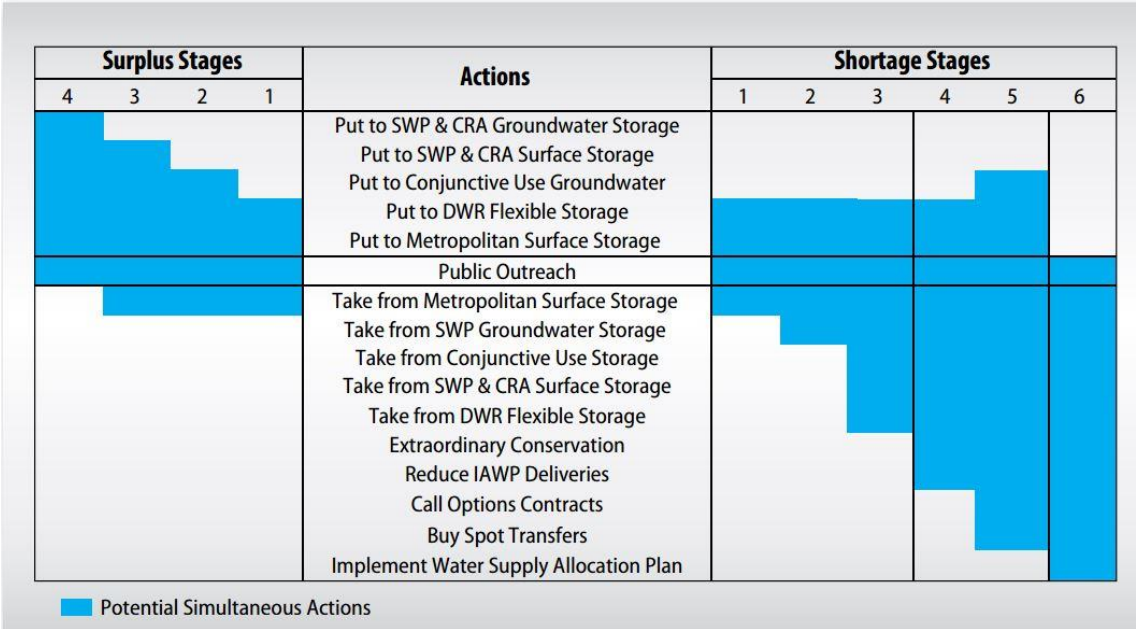

Figure 8.4: MWD WSDM Surplus & Drought Stages

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:

When a WSDM Shortage Stage 7 is triggered, MWD's WSAP helps to assess resources in the most equitable way possible.

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?*")

Figure 8.5: MWD's Diamond Valley Lake (Potential Reserves for WSAP Allocations)

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.

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

Table 8.7: 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%

8.4.2 City of San Fernando Response Plan

The City has implemented a water conservation program to reduce water demands since the drought period of the early 1990s. On October 20, 2014, the City Council adopted a revised version Water Conservation Ordinance (Ordinance No. 1638, see **Appendix G**), which establishes three phases of water shortage severity based on predicted or actual water supply reductions. The City implements certain initiatives to optimize water supply during water shortages or drought conditions. In the event of a water shortage, the director of utilities will declare the appropriate water conservation stage by resolution.

The objectives of the response plan are to:

1. Prioritize essential uses of available water
2. Avoid irretrievable loss of natural resources
3. Manage current water supplies to meet ongoing and future needs
4. Maximize local municipal water supplies
5. Eliminate water waste city-wide
6. Create equitable demand reduction targets
7. Minimize adverse financial effects

The following priorities for uses of available water are listed in order from highest to lowest priority:

1. Health and Safety including: consumption and sanitation for all water users; fire suppression; hospitals, emergency care, nursing/convalescent homes and other similar health care facilities; shelters and water treatment

2. Institutions, including government facilities and schools such as public safety facilities, essential government operations, public pools and recreation areas
3. All non-essential commercial and residential water uses
4. Landscaped areas of significance, including parks, cemeteries, open spaces, government-facility landscaped areas and green belt areas
5. New water demand

City of San Fernando Stages of Action

During water shortages, the City has the ability to meet its demands by applying a Phased Water Conservation Plan. This plan imposes phases of mandatory water reduction of water use up to and greater than 50 percent and consists of three phases that help reduce water use within the City's system in order to meet a water supply reduction target based on the severity of the drought conditions or supply shortage. The City's two potable water sources are local groundwater and imported deliveries through MWD. Rationing stages may be triggered by a shortage in one source or a combination of sources, and shortages may trigger a stage at any time. **Table 8.8** shows the stages of action of the ordinance.

Per CWC Section 10632(a)(3)(B), a supplier may continue using their own water shortage levels that were previously used. In accordance with this allowance, the City has chosen to continue to use its current water shortage levels in its new WSCP and has included a graphic (**Table 8.8**) to correlate its water shortage levels to the six standard water shortage levels mandated by CWC Section 10632(a)(3)(A).

Table 8.8: Water Supply Shortage Stages and Conditions – Rationing Stages

City Shortage Levels			Mandated Standard Shortage Levels	
Stage Phase	Restriction Type	% Shortage	Shortage Level	% Shortage
I	Voluntary	Up to 10%	1	Up to 10%
II	Mandatory	Up to 20%	2	Up to 20%
III	Mandatory	Up to 50% or greater	3	Up to 30%
			4	Up to 40%
			5	Up to 50%
			6	>50%

As reflected in **Table 8.8**, the mandatory prohibitions applied by Phase 3 will curtail water use more than 50 percent below the projected water consumption level. Correspondingly, the City's shortage levels depicted in **Table 8.8** are bundled in such a way that if a conservation stage to reduce water consumption by 40 percent were mandated (CWC standard shortage level 4), the prohibitions and additional conservation measures activated by the City's Phase 3 will provide more than enough shortage responses to exceed the conservation goal.

The City Council will implement the provisions of the Phased Water Conservation Plan, following a public hearing, upon determination that the projected water shortage and the appropriate measures should be implemented. Any provision requiring curtailment in the use of water shall become effective no sooner than the first billing period commencing on or after the date of publication of the measures adopted.

The type of event that may prompt the City Council to declare a water shortage and implement the Water Conservation Plan includes a drought, a state or local emergency, a natural disaster that critically impacts the supply or water conveyance system, and a localized event that critically impacts the water supply. The water supply can be impacted due to deficient water treatment and/or water quality, and problems with storage, transmission, or the water distribution system. Also, restricted use could be triggered by the City's wholesale water agency requesting extraordinary water conservation efforts in order to avoid mandatory water allocations in accordance with the WSAP.

8.4.3 Prohibitions

Mandatory Prohibitions

In accordance with the City's conservation policies, the City has enacted several water use restrictions which are enacted during times of shortage as part of the City's Ordinance Code 1638 (see **Appendix G**). In addition, the City has planned to review its current conservation plan in the near future.

Prohibitions of the current conservation plan include, but are not limited to:

- *Gutter flooding* – No person shall cause or permit any water furnished to any property to run or escape into any gutter if such running can be reasonably prevented.
- *Washing hard-surfaced areas* – No person shall use any water furnished to any property within the city to wash sidewalks, driveways, etc. by hosing.
- *Irrigation* – No person shall water any type of vegetation or landscaping during the hours of 10:00 am and 5:00 pm.
- *Ornamental facilities* – No person shall refill any fountain, pool or other facility containing water solely for ornamental purposed.
- *Leaks* – No person shall permit leaks of water which he/she has the authority to eliminate.
- *Restaurants* – Restaurants shall only serve water to customers upon request.
- *Washing vehicles* – Washing of vehicles, trailers, boats, etc. shall be done only with a hand-held buckets or hose equipped with a shut-off nozzle for quick rinses, except that washing may be done with reclaimed water or a commercial car wash using recycled water.
- *Watering lawns and landscape* – All lawns and landscape shall be watered not more than every other day, on the assigned day (either an odd-numbered or even-numbered day).
- *Wasting generally* – No person shall cause or permit water under his or her control to be wasted.

8.4.4 Consumption Reduction Methods

In addition to the City's demand management measures, the following is a list of some of the consumption reduction methods that the City may implement during a water shortage:

- Reduced pressure in water mains
- Flow & water use restrictions
- Restrict building permits
- Restrict for only priority uses
- Water Shortage pricing
- Mandatory rationing

8.4.5 Catastrophic Supply Interruption

Given the great distances imported water supplies travel to reach the City 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 that would 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.

City of San Fernando

A water shortage emergency could be caused by a catastrophic event such as result of drought, failures of transmission facilities, a regional power outage, earthquake, flooding, supply contamination from chemical spills, and other adverse conditions.

The City has an Emergency Operations Center (EOC) that can be activated in times of local and regional emergencies. The City is also a part of the Member Agency Response System (MARS), a radio communication system developed by MWD, which allows the City to contact other water member agencies during an emergency or disaster for assistance. In addition, the City maintains its equipment and vehicles in good repair in preparation for responding to emergency conditions. The water system is designed with redundant features in its production, storage and distribution systems, and it has been recently automated by the installation of a telemetry and control system.

Figure 8.6: Reservoirs Provide Emergency Supplies (Lake Skinner)

The City is currently updating its Emergency Response Plan (ERP), which describes the actions the City will take during a catastrophic interruption of water supplies including, a regional power outage, an earthquake, a fire, emergency chlorination, damage or destruction to its facilities and other disaster.

Due to the planning efforts of the MWD, large reservoirs are capable of supplying the City's (and the region's) water needs for several months provided that the water use restrictions of each agency are met. Lake Castaic is a large nearby reservoir that can provide emergency supplies of up to 324,000 AF of emergency and non-emergency supplies.

During a disaster, the City will work cooperatively with LADWP and MWD through the radio communication MARS to facilitate the flow of information and requests for mutual-aid within MWD’s 5,100 square mile service area. In the event of groundwater supply loss, all supply could be imported from MWD's reservoirs, and it is confirmed that the necessary capacity is available to do so.

Additional emergency services in the State of California include the Master Mutual Aid Agreement, California Water Agencies Response Network (WARN), and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement and is planned out of the California Office of Emergency Services. WARN includes all public agencies that have signed the agreement to WARN and provides mutual aid assistance. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency in times of disasters when danger to life and property exists.

8.4.6 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 the City’s structures and equipment, disruption of service, and injuries to staff. This section provides a description of the City'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 the City's Risk and Resilience Assessment (RRA) and ERP as well as the 2019 County of Los Angeles All-Hazards Mitigation Plan (**Appendix XX**). The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although the City does not currently have a Seismic Risk Assessment and Mitigation Plan, it plans to prepare a Local Hazard Mitigation Plan by the end of 2021.

Seismology of Water Facilities & Vulnerability

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

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), one known fault traverses the City's service area, which is the San Fernando Fault Zone. In addition, there are areas with increased risk due to soil liquefaction. The known regional fault lines, landslide zones, and liquefaction zones are shown in **Figure 8.7**.

ERP – Earthquake Emergency Response

The City is currently preparing a new 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 City staff with the necessary information, strategies, procedures, and mitigation actions

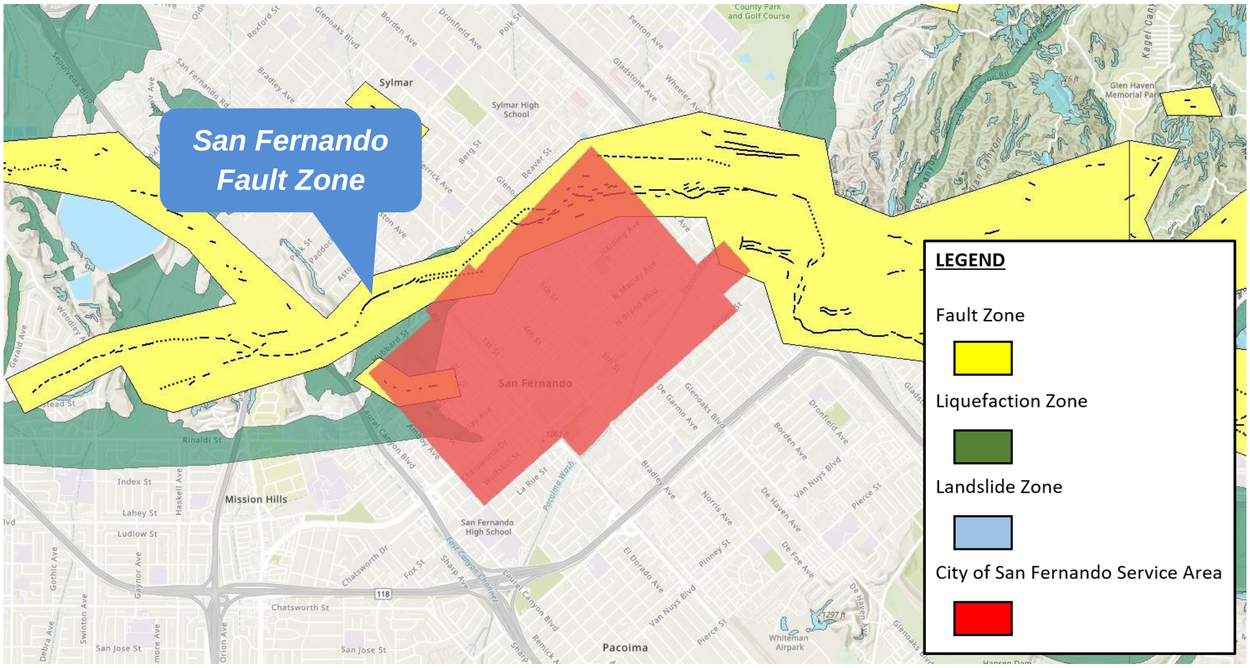

Figure 8.7: Seismic Hazards within the City's Service Area (California Geological Survey)

to address earthquake emergencies. The Water Operations Personnel will be a part of the City Emergency Response Team in case of a citywide emergency. The City'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 EOC will be activated if potential or significant damage has occurred in the City, and the situation cannot be handled by routine public safety response or immediate mutual aid assistance. In the event of an emergency, the Public Works Superintendent will inform the Water Operations Personnel, who will be required to inspect all 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. In addition, Water Operations Personnel will notify the EOC to have the Police Department warn nearby residents if imminent danger from flooding might occur from structural damage to reservoirs. The Public Works Superintendent will also inform the Fire Department of the status of availability of water for firefighting and other purposes.

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.

County of Los Angeles

The goals of the County of Los Angeles All-Hazards Mitigation Plan are based on a risk assessment, representing a long-term vision for hazard reduction or enhanced mitigation capabilities.

The five mitigation goals and descriptions are listed below:

Figure 8.8: The Five Phases of Emergency Management

1. ***Protect Life and Property*** – Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards. Improve hazard assessment information to make recommendations for avoiding new development in high-hazard areas and encouraging preventive measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.

2. ***Enhance Public Awareness*** – Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards. Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

3. ***Preserve Natural Systems*** – Support management and land use planning practices with hazard mitigation to protect life. Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

4. ***Encourage Partnerships and Implementation*** – Strengthen communication and coordinate participation with public agencies, citizens, nonprofit organizations, business, and industry to support implementation. Encourage leadership within the County and public organizations to prioritize and implement local and regional hazard mitigation activities.

5. ***Strengthen Emergency Services*** – Establish policy to ensure mitigation projects are considered for critical facilities, services, and infrastructure.

The mitigation actions and goals established by the County of Los Angeles to mitigate seismic risks and vulnerabilities are further described within its hazard mitigation plan.

City of San Fernando

After a major earthquake event, City staff will follow the emergency management phases described in the ERP, which include Immediate Actions, Post-Emergency Actions, and Incident

Investigation Process and Reporting. After the Immediate Actions phase, City staff will begin review actions to repair damaged water facilities and prepare for future earthquake emergencies.

Post-Emergency Actions include the following:

1. Water Operations will prepare an action plan for cleanup and repair activities based on the damage caused by the earthquake.
2. If electric power and/or communications remain unavailable for an extended time, the Public Works Superintendent will plan frequent personnel visits to affected facilities.
3. Once the electricity is restored, the facility will be inspected and reset to ensure all active components are functioning properly, including the alarm systems. If any part of the alarm system cannot be restored, the Public Works Superintendent will plan frequent personnel visits to the affected facilities.
4. An incident report will be prepared. In addition, a Response Information Management Form will be completed.

To minimize recurrence and enhance the lessons learned from each earthquake event, an incident investigation will be conducted and a report produced. The following guidance statements are provided to facilitate the process:

1. Personnel directly involved with the incident may record the sequence of events of an incident.
2. An incident investigation shall be initiated by a Public Works Field Supervisor or appropriate Manager.
3. The following notes may facilitate the incident investigation process:
    - Photograph the area affected by the incident and any damaged equipment.
    - Put together a committee familiar with the systems affected and related operations and maintenance.
    - Convene at least one meeting of the committee to:
        a) Review the facts and chain of events
        b) Identify the root cause of the incident
        c) Identify action items to improve the system and/or operation to minimize likelihood of recurrence
    - An incident investigation report shall be produced that may include the following:
        a) Date and time of the event
        b) Circumstances that led to event initiation

c) Method by which the event was discovered

d) Description of the event

e) Actions taken by various employees and other entities

f) Persons injured; extent of injury and reasons for the injury

g) Equipment involved; reasons for involvement; extent of damage

h) Agencies notified (time of notification and persons contacted)

i) Observations in terms of what went right and what went wrong; what was the root causes of the event and "what went wrong", what can be done to minimize the likelihood of occurrence of such conditions or to minimize their adverse impact.

Specific seismic mitigation actions/measures are further described in the City's recently updated ERP.

8.5 COMMUNICATION PROTOCOLS

8.5.1 Introduction

The City's communication protocol includes the various channels that the City will utilize to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. A strong communication strategy and a common understanding on the water supply situation and necessary actions between the City 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 Phase II water supply shortage. Activation of the communication protocol will continue through all subsequent water shortage phases. The City 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 the City is taking to respond to the water supply situation.

8.5.2 Coordination

The goal of the City'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, the City will work closely with the City Council. 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 the City and its customers. In addition to collaboration with its wholesaler, MWD, the City will seek opportunities with outside organizations and agencies to complement its own outreach.

8.5.3 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.

8.5.4 Communication Protocol for Current or Predicted Shortage

A current or predicted shortage, as determined by the City'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 the City's website, signage in front of City Hall, and wholesale agency coordination.

8.5.5 Communication Protocol for Shortage Response Actions Triggered or Anticipated to be Triggered

The City's customers and public will be notified about any triggered or anticipated to be triggered shortage response actions. The City monitors and measures the projected supply and demand for water by its customers monthly and recommends the phase of conservation required to the Members of the City Council. The City Council will change the phase designation as appropriate; however, the City Council will not impose mandatory measures without first conducting a duly-noticed public hearing pursuant to CWC Sections 350 et seq., or 375 et seq. The appropriate phase of water conservation and the shortage response action triggered by the phase is then declared in a public notification posted on the City's website and published in a daily newspaper. Upon declaration by the City Council that a water shortage emergency exists, the WSCP shall be implemented. The plan shall remain in effect until the City Council declares the water shortage emergency has ended.

8.5.6 Other Relevant Communication Protocols

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

- Promote available water assistance resources for vulnerable populations; specialized

outreach for impacted industries (Phase II).
- Keep stakeholders aware of conditions (all Phases).
- Proclaim phase change to key stakeholders and the general public (all Phases).
- Conduct meetings with elected officials and other key civic and business leaders (Phase II).
- Encourage reduced optional outdoor use through outreach (Phase I).

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

8.5.7 Crisis Communication Protocol

In the event of a catastrophic supply interruption due to a natural disaster or damage to the City's facilities, the City 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 the City's facilities, the City 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 interrupting supply, the Public Works Superintendent will go to the designated EOC and begin implementation of City procedures and employ appropriate strategies from the shortage stages in **Table 8.8**. The City is required to use SEMS when the EOC is activated or a local emergency is declared in order to be eligible for state funding of response-related personnel costs.

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. The City will keep the Members of the City Council informed of incident status and coordinate with public health officials.

The City will maintain communication with its wholesaler and its customers. In addition, the City may also authorize release of public information to news media to announce conditions and explain needed action. Finally, the City will ensure ongoing coordination with emergency response services with daily advisories or alerts as needed.

8.6 COMPLIANCE AND ENFORCEMENT

The means by which the City will use to safeguard compliance with and enforcement of water shortage rules include, but are not limited to, the following:

- Warning and citation protocols

- Water-waste patrols
- Fines and surcharges
- Rules and measures associated with fixing breaks or leaks in irrigation systems
- Customer service, education, and communication programs
- Other responses

The City may penalize repeat violators of water waste prohibitions through an escalating series of imposed actions. Compliance and enforcement protocols for violators are further detailed in the City's Water Conservation Plan.

8.6.1 Penalties or Charges

Any customer who is suspected of violating the prohibitions triggered by the Water Conservation Plan, will be given a preliminary notice in writing of the violation including a description of the violation. The person will have 24 hours to correct the violation or terminate the use. If the violation is not corrected or the use terminated, the City's Water Division may either:

(1) Disconnect service;
(2) Install flow-restricting devices restricting water service; or
(3) Order issuance of a second preliminary notice.

Service disconnected or restricted may only be restored upon payment of the turn-on and any other fixed charges by the Water Conservation Plan or the rules and regulations of the water division.

Violation of the regulations and restrictions on water use in accordance with the City's Water Conservation Plan will result in penalties punishable by fees and additional water restrictions as follows:

1) *First Violation*: $50 fine
2) *Second Violation:* $100 fine
3) *Third Violation:* $200 fine along with a flow-restrictor at the customer's expense
4) *Fourth Violation:* Termination of service along with a $100 fee for termination

8.6.2 Exemption from Compliance

A customer may be exempted from water shortage supply prohibitions to a certain type of use if the City's Public Works Director issues a permit allowing such use and if such permit issuance is based on a finding that the enforcement of the water use restriction would either:

1) Cause an unnecessary and undue hardship to the applicant or the public; or
2) Cause or threaten an emergency condition affecting the health, sanitation, fire protection or safety of the applicant or the public.

The Public Works Director may require the use of water conservation devices or practices as he deems appropriate as a condition of the exemption permit.

8.6.3 Enforcement

The Public Works Director, the fire chief, police chief, water superintendent, or designee have the duty and are authorized to enforce water shortage supply prohibitions and have all the powers and authority contained in the California Penal Code § 836.5, including the power to issue written notice to appear.

Each law enforcement officer shall, in connection with his duties imposed by law, diligently enforce this division.

8.7 LEGAL AUTHORITES

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 City Council 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 City Council 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. The City 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.

8.8 FINANCIAL CONSEQUENCES OF WSCP IMPLEMENTATION

The City's water rate structure is designed to provide adequate reserves to allow operation of the system during periods of low consumption due to water shortages. The rates have been designed to recover fixed costs through the monthly service charge based on meter size, and commodity charge based on water usage. The City generates a positive revenue stream from continued water sales and maintains a reserve fund. This structure minimizes the City's vulnerability to funding shortages when water consumption levels are reduced.

8.9 MONITORING AND REPORTING

8.9.1 Evaluation of Reductions

Under normal conditions, potable water production figures are recorded daily. Weekly and monthly reports are prepared and monitored. This data is used as a baseline to measure the effectiveness of any water shortage contingency stage that may be implemented.

During rationing conditions, the water budget will be monitored on a weekly, daily, or hourly basis depending on the severity of the drought. During a disaster shortage, production figures will be monitored on an ongoing basis. In addition, meter readings may be performed more frequently than the normal bi-monthly schedule.

The City prepares an annual report (eARDWP) that includes water production, consumption, and other information regarding its distribution system. Such reports are used to determine reductions in water use and take into consideration seasonal and annual fluctuations in water production.

8.10 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 the City does not currently use recycled water and does not have the ability to use recycled water due to a lack of infrastructure, the City would use non-potable water for non-pool water features if and when recycled water supply ever becomes available to the City. Furthermore, the WSCP requires potable water recirculation for fountains and decorative water features.

8.11 WSCP ADOPTION AND REFINEMENT PROCEDURES

8.11.1 WSCP Public Notice and Adoption

To encourage broad community participation in the WSCP preparation process, the City provided 60-day notification letters to agencies within the City's service area. Copies of the draft WSCP were made available for public review at City Hall and on the City website 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, the City's final WSCP was approved and adopted by its Councilmembers on June 14, 2021. **Appendix XX** 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, the City's approved WSCP was filed with DWR. By July 1, 2021, the City's plan was submitted to the California State Library, County of Los Angeles, and cities within its service area. The City will make the plan available for public review no later than 30 days after filing with DWR.

8.11.2 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 the City'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 City's Public Works Superintendent is responsible for maintaining this plan and updating it as needed. The Civil Engineering Assistant is the primary City staff member who will carry out this process, under the direction of the Public Works Superintendent or other appropriate staff member. In addition, the Public Works Superintendent, 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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The City of San Fernando does not operate a sewage collection system, but instead relies on Los Angeles County Sanitation District for treatment and disposal. MWD plays an important role in supporting its member agencies’ own water supply projects that reduce imported water reliance.

SECTION 9: RECYCLED WATER

CITY OF SAN FERNANDO | 2020 URBAN WATER MANAGEMENT PLAN

SECTION 9 RECYCLED WATER

9.1 INTRODUCTION

Recycled water is the reuse of treated wastewater for non-potable and indirect potable reuse applications. Wastewater is treated to different levels of purification based on the usage need. Recycled water is often used to irrigate landscapes, replenish groundwater aquifers, and provide industrial users with an alternative water supply to meet their non-personal water use needs.

9.2 WASTEWATER COLLECTION & TREATMENT

Municipal wastewater is generated in the City'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. There are no wastewater treatment facilities in the City's service area. All wastewater flows generated by the City (not including storm water) are collected by the City of Los Angeles. Under a contract entered into in 1969, the City's wastewater is collected and discharged to the City of Los Angeles for treatment and disposal. The contract provides the City with purchased capacity rights in the Hyperion Treatment Plant in El Segundo, for average daily flow of 1.14 million gallons per day (MGD) and an instantaneous peak flow of 3.2 cfs.

Wastewater collection volumes are shown in **Table 9.1**. Per City of Los Angeles Bureau of Engineering, average per wastewater flow in the Los Angeles area is estimated at 90 GPCD. This average is used to estimate the wastewater volumes generated by the City.

Table 9.1: 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?
City of Los Angeles	Estimated	2,541	LACSD	Hyperion Treatment Plant	No	No
Total Wastewater Collected from Service Area in 2020:		2,541				

9.3 CURRENT & PROJECTED RECYCLED WATER USE

Currently, the City does not use recycled water and does not have the ability to use recycled water due to a lack of infrastructure.

9.4 RECYCLED WATER POTENTIAL IN THE CITY

Figure 9.1: Wastewater Treatment at Hyperion in El Segundo, CA

Due to the high costs involved in constructing recycled water infrastructure, the City has not considered using recycled water in the past and the City currently does not use recycled water. As a result, the City has not considered any formal plans nor has specifically identified any potential recycled water users. If the City were to use recycled water in the future (with help from LADWP or MWD), the City would benefit as typical recycled water users (large landscapes, City parks & medians, and dual-plumbed buildings) could receive recycled water. Currently, the City is investigating a potential option with Southern California Edison as a funding partner to install a scalping plant and supply recycled water to irrigation customers. If the City anticipates receiving recycled water in the near future, the City could prepare an optimization plan which identifies specific recycled water customers. Currently, the City encourages the efficient use of potable water while raising awareness of alternative water sources such as recycled water.

In addition, MWD developed a Regional Recycled Water Supply Program. MWD's Regional Water Supply Program is exploring the potential of a water purification project to beneficially reuse water currently discharged to the Pacific Ocean for recharge of regional groundwater basins. Under a partnership with the Los Angeles County Sanitation Districts, MWD will purify wastewater to produce high quality water that could be used again. The program started in 2019 with a demonstration facility costing $17M. Once approved, the full-scale program will take 11 years to complete and cost $3.4B. The program would also include a new purification plant and distribution lines to groundwater basins in Los Angeles and Orange counties including a basin within the City's service area. The Regional Water Supply Program would represent the first in-region production of water by MWD. Diversifying the region's water supply sources, advancing conservation and maintaining imported supplies are all part of MWD's long-term Integrated Water Resources Plan.


WELCOME TO THE CITY OF
SAN FERNANDO
INCORPORATED IN 1911