2015
URBAN WATER MANAGEMENT PLAN
CITY OF SAN FERNANDO

May 2016
Draft Copy

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URBAN WATER MANAGEMENT PLAN

City of San Fernando

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ACRONYMS

AF	acre-feet
AFY	acre-feet per year
AP	Allocation Plan
Basin	Raymond Groundwater Basin
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
Board	Metropolitan's Board of Directors
cfs	cubic feet per second
CII	Commercial Industrial Institutional
CIMIS	California Irrigation Management Information System
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DBPs	Disinfection Byproducts
DDW	State Water Resources Control Board Division of Drinking Water
DMM	Demand Management Measure
DOE	Department of Energy
DWR	Department of Water Resources
eARDWP	Electronic Annual Report to the Drinking Water Program
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ETo	Evapotranspiration
FHCUP	Foothill Conjunctive Use Program
FMWD	Foothill Municipal Water District
hcf	hundred cubic feet
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
IWA	International Water Association
JPL	Jet Propulsion Laboratory
JWPCP	Joint Water Pollution Control Plant
Kinneloa	Kinneloa Irrigation District
LACSD	Los Angeles County Sanitation District

LAGWRP	Los Angeles-Glendale Water Reclamation Plant
MAF	Million Acre-feet
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons per Day
mg/L	milligrams per liter
µg/L	micrograms per liter
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary-Butyl Ether
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NDMA	N-nitrosodimethylamine
ng/L	nanograms per liter
NMFS	National Marine Fisheries Service
OEHHA	Office of Environmental Health Hazard Assessment
PCE	Perchloroethylene
PPCPs	Pharmaceuticals and Personal Care Products
QSA	Quantification Settlement Agreement
RHNA	Regional Housing Needs Assessment
SDCWA	San Diego County Water Authority
SBx7-7	Senate Bill x7-7
SCAG	Southern California Association of Governments
SDP	Seawater Desalination Program
SWP	State Water Project
SWRCP	State Water Resources Control Board
TCE	Trichloroethylene
TDS	Total Dissolved Solid
TOC	Total Organic Carbon
ULARA	Upper Los Angeles River Area
ULFT	Ultra-Low-Flow Toilet
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
VOCs	Volatile Organic Compounds
WBIC	Weather-Based Irrigation Controller
WRP	Water Reclamation Plant
WSAP	Water Supply Allocation Plan

SECTION 1: INTRODUCTION

1.1 PURPOSE AND SUMMARY

This is the 2015 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), which has been codified at California Water Code sections 10610 through 10657 and can be found in **Appendix XX** to this 2015 Plan.

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 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 shall make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. Each urban retail water supplier shall develop water use targets by July 1, 2016. Effective beginning of 2016, 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.

As part of the City's past and current sustainability goals, the City is currently implementing all facets of this plan to achieve its target conservation by 2020.

1.2 COORDINATION

In preparing this 2015 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 20, 2016, 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 2015 Plan on June 20, 2016. A copy of the City Council resolution approving the 2015 Plan is included in **Appendix XX**.

As required by the Act, the 2015 Plan is being provided by the City to DWR, the California State Library, and the public within 30 days of the City's adoption.

Table 1.1
Coordination and Public Involvement

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

1.3 FORMAT OF THE PLAN

The sections and information contained in this 2015 UWMP correspond to the items in the UWMP Act and other amendments to the Water Code, including the Water Conservation Act of 2009 (SBx7-7), as follows:

Section 1 - Introduction

This section describes the Act, the City's planning process, the history of the development of the City's water supply system, a description of its existing service area, the local climate, population served, and the City's water distribution system.

Section 2 – Water Supply Resources

This section describes the existing water supplies available to the City, including imported water from the Metropolitan Water District of Southern California (MWD) and local groundwater extracted from the West Coast Basin. In addition, this

section discusses potential future water supplies, including transfers and exchanges, recycled water, and desalinated water.

Section 3 – Water Quality

This section discusses the quality of the City's imported and groundwater sources. This section also discusses the effect of water quality on management strategies and supply reliability.

Section 4 – Water Demand

This section describes past, current and projected water usage within the City's service area. This chapter also discusses the requirement of the SBx7-7.

Section 5 – Reliability Planning

This section presents an assessment of the reliability of the City's water supplies by comparing projected future water demands with expected available water supplies under three different hydrologic conditions: normal year; a single dry year; and multiple dry years. This 2015 Plan concludes that if projected imported and local supplies are developed as anticipated, no water shortages are anticipated in the City's service area during the planning period.

Section 6 – Demand Management

This section addresses the City's implementation of the current Best Management Practices (BMPs). The BMPs correspond to 7 Demand Management Measures (DMMs), which were previously the 14 DMMs listed in the Act, and are described in this section.

Section 7 – Contingency Planning

This section describes the City's response plan to water shortages (City Ordinance No. 1638, adopted Oct. 20, 2014), as well as those efforts that will be utilized in the event of a water supply interruption, such as drought. The City's water shortage contingency plan was developed in consultation and coordination with other MWD member agencies. In addition, MWD's Water Surplus and Drought Management Plan (WSDM) is also described.

Appendices

The appendices contain references and specific documents that contain the data used to prepare this 2015 Plan.

1.4 UPDATES TO THE 2015 PLAN

In addition to updated data, the City's UWMP has undergone several changes from 2010-2015 UWMP years (2011-2016 calendar years). A summary of the changes to the UWMP, by section, are provided below:

- **Section 2:** Updated information of water supplies.
- **Section 4:** Updated information on the City's SBx7-7 targets and its 2020 sustainability goals.

- **Section 5:** Added a discussion on the recent California drought.

- **Section 6:** Updated DWR's list of DMMs.

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 has elected to include or modify.

1.5 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.

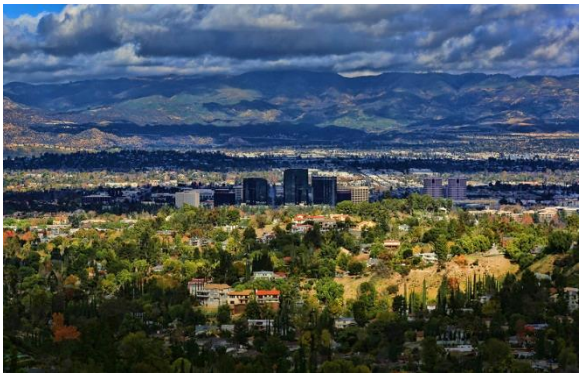

Figure 1.1: San Fernando Valley

Due to the continued development of Southern California, several water agencies came together to form the 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 water quality issues (primarily due to high nitrate levels) with its wells which cause the City to purchase imported water. For this reason, the City is 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. Currently, Well No.

7A's treatment system is near completion of the construction phase and will have the capacity of approximately 1,000 gallons per minute (gpm). Well No. 3's treatment system is planned for the near future and has a capacity of 1,200 gpm.

1.6 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. The water service area and zoning map are shown in **Figures 1.5** and **1.6** on pages 1-7 and 1-8.

1.7 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 approximately 18 inches. Evapotranspiration (ETo) in the region averages approximately 58 inches annually. **Table 1.2** lists the historical average rainfall for the City of San Fernando from 1906 to 2015.

Table 1.2
Historical Climate Characteristics
(www.wrccdri.edu)

Month	Rainfall (in)
Jan	3.8
Feb	3.5
Mar	2.7
Apr	1.5
May	0.4
Jun	0.4
Jul	0.0
Aug	0.0
Sep	0.2
Oct	0.5
Nov	1.7
Dec	3.0
Totals:	**17.7**

Table 1.3 lists the recent ETo and rainfall for the City:

Table 1.3
Recent Climate Characteristics
(www.cimis.water.ca.gov)

Month	Rainfall (in)	ETo (in)
Jan '15	1.2	2.6
Feb '15	0.7	3.0
Mar '15	0.5	5.2
Apr '15	0.3	5.5
May '15	0.4	5.1
Jun '15	0.0	6.6
Jul '15	0.6	6.7
Aug '15	0.0	7.2
Sep '15	0.5	5.7
Oct '15	0.3	4.6
Nov '15	0.1	3.1
Dec '15	1.0	2.4
Totals:	**5.6**	**57.7**

As noted in the table above, the rainfall totals for the year of 2015 were lower than

the average historical annual rainfall. This indicates that the region was in a drought period. The region is expected to be in an El Nino year for 2016.

1.8 POPULATION

According to the most recent population figures from the California Department of Finance (DOF), the current 2015 resident population of the City is approximately 24,560 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 24,650 persons. Population growth over the past 5 years, was approximately 0.4 percent. Population projections in accordance with this growth rate over the next 25 years are shown in **Table 1.4**:

Table 1.4
Service Area Population Projections

Year	Service Area Population
2020	25,003
2025	25,456
2030	25,917
2035	26,387
2040	26,865

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.

1.9 WATER SYSTEM

1.9.1 Imported Water

The City's imported water supply is delivered through its 12-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

1.9.2 Groundwater

The City produces groundwater from four active wells (2A, 3, 4A, & 7A). The wells extract groundwater from the Sylmar Groundwater Basin and range in capacity from 450 gpm to 2,100 gpm.

Figure 1.4: Well No. 2A

1.9.3 Distribution System

The City distributes water to approximately 5,264 service customers through a 66.5-mile network of distribution mains ranging from 4 to 16 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.

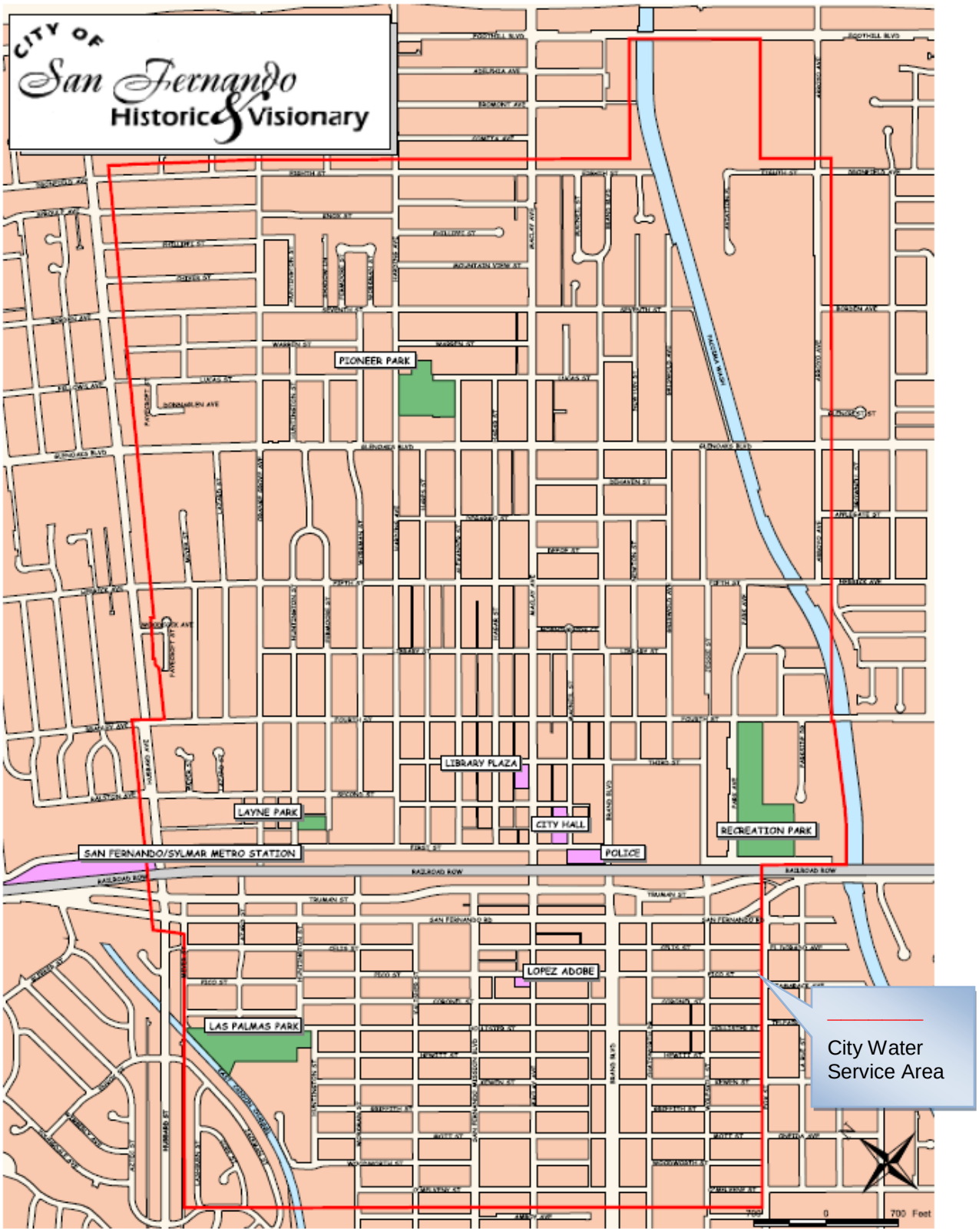

Figure 1.5: City of San Fernando Water Service Area

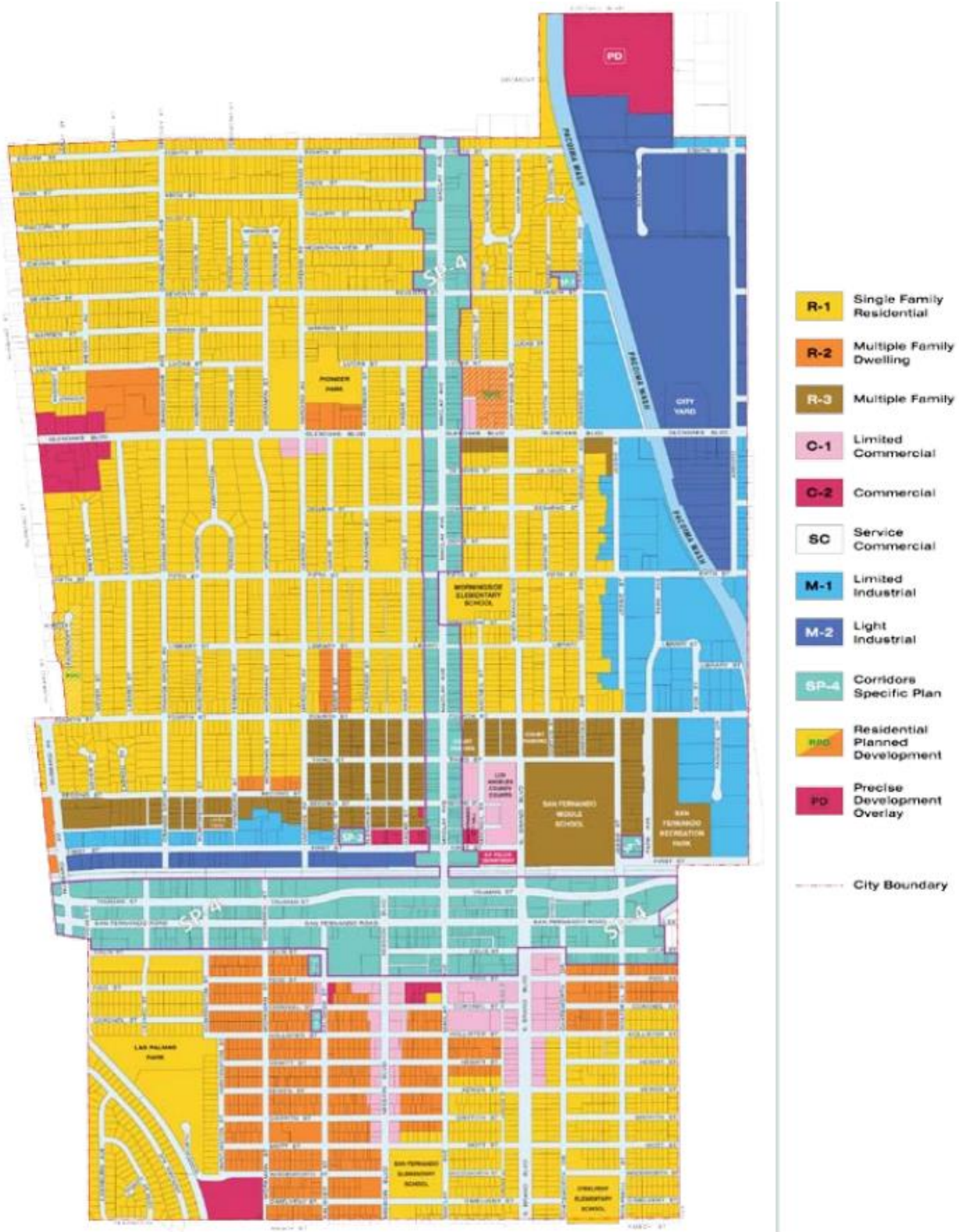

Figure 1.6: City of San Fernando Zoning Map

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 both within the City limits and adjacent to the City's well facilities.

Figure 1.7: Upper Reservoirs 3A and 4

Table 1.5 lists The City's reservoirs:

Table 1.5
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 Interconnections

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.

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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.

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.

Figure 2.1: Parker Dam at Colorado River

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.

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.

Figure 2.3: Colorado River Aqueduct

In addition to the CRA, MWD receives water from northern California via the California Aqueduct. Also known as the State Water Project (SWP), the California Aqueduct is 444 miles long and carries 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** on page 2-4.

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 18-inch imported connection to MWD with a capacity of 2,200 gpm (about 2,900 AFY). **Table 2.1** presents the City's historic imported water purchased from 2010 to 2015:

Table 2.1
Imported Water Supply 2010-2015
(Purchases from MWD)

Year	Purchases (AF)
2010	51
2011	19
2012	114
2013	86
2014	126
2015	0
Average:	**66**
2005-2009 Average:	**341**

As can be noted from **Table 2.1** above, the City imports water on an as-needed basis only. The City currently has a preferential right of 0.10 percent of MWD's supplies and a Tier 1 limit of 629 AFY.

Figure 2.5: Aqueduct Systems in California

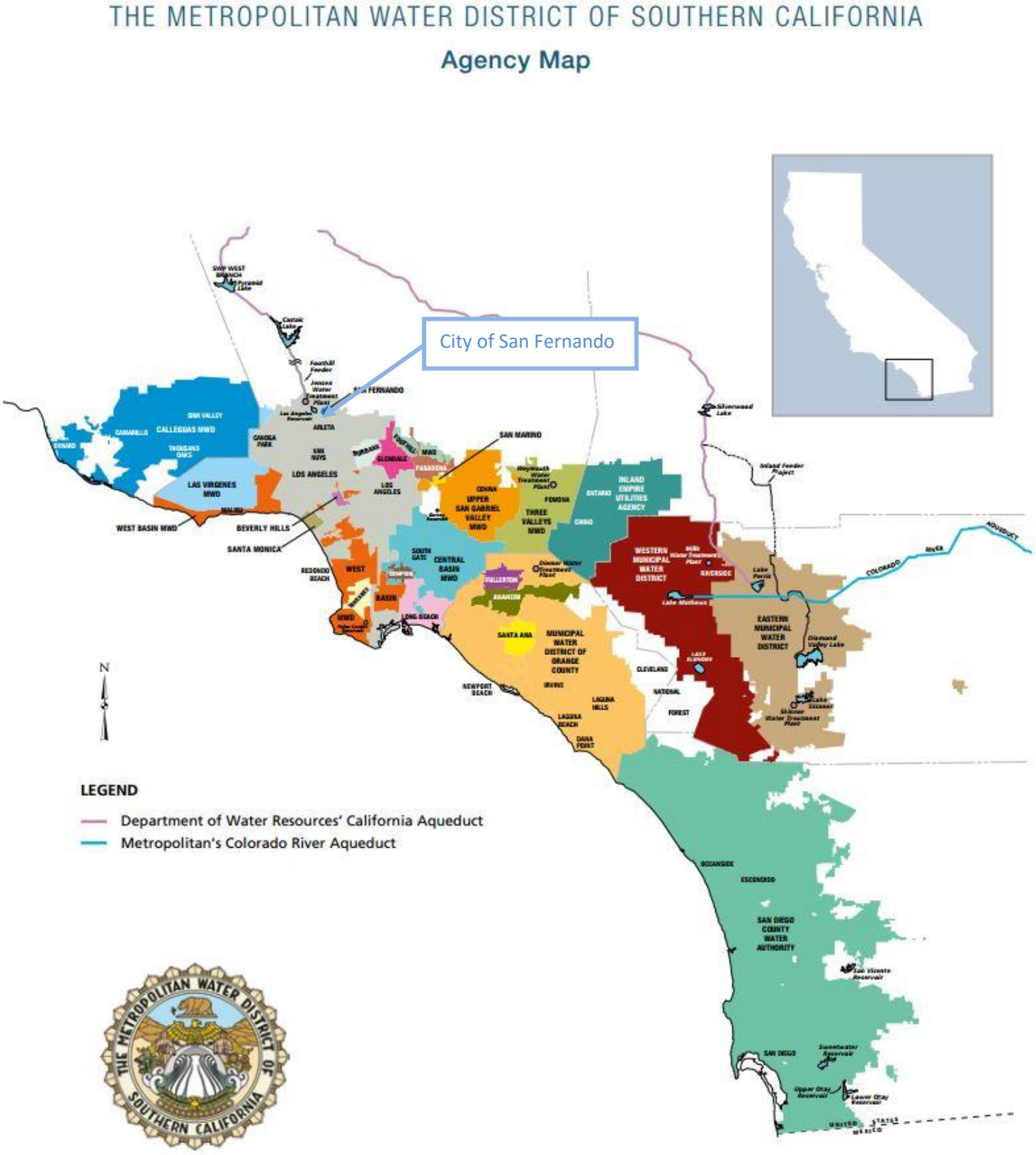

Figure 2.6: MWD Service Area Map

2.2.2 Groundwater

The City obtains its groundwater supply from the Sylmar Groundwater Basin (see **Figures 2.7** and **2.8**). 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. 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 Sylmar 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 18 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) according to the July 2012 provision titled “Final Report—

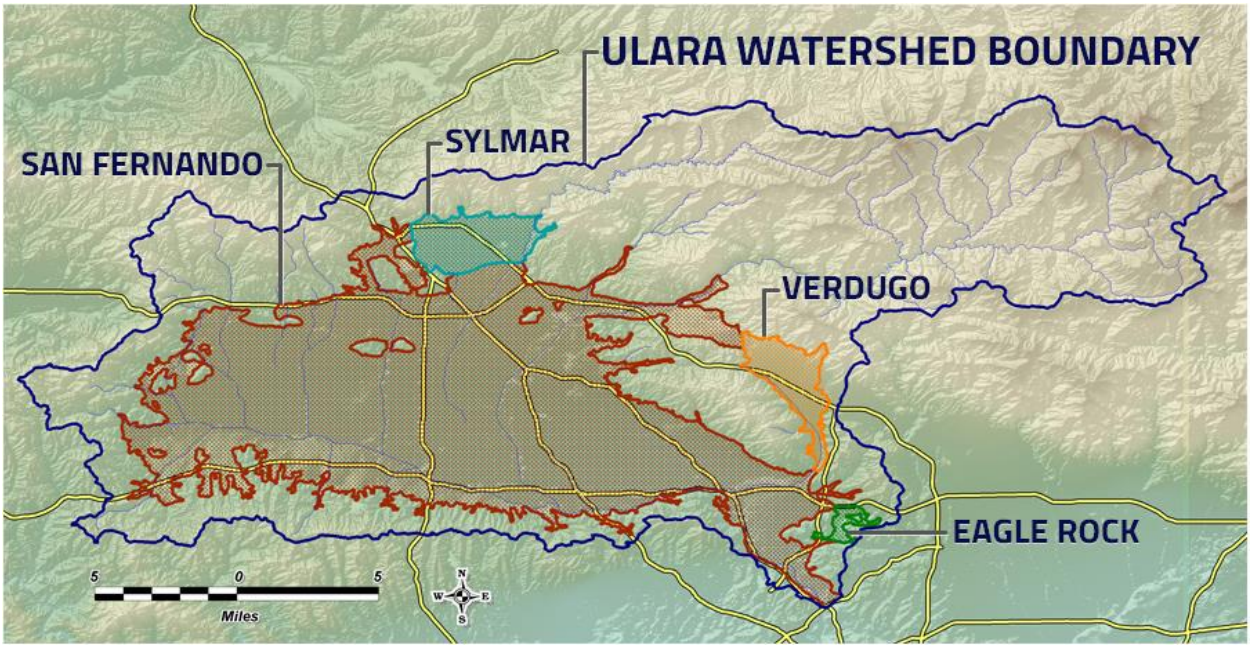

Figure 2.7: ULARA Groundwater Basins

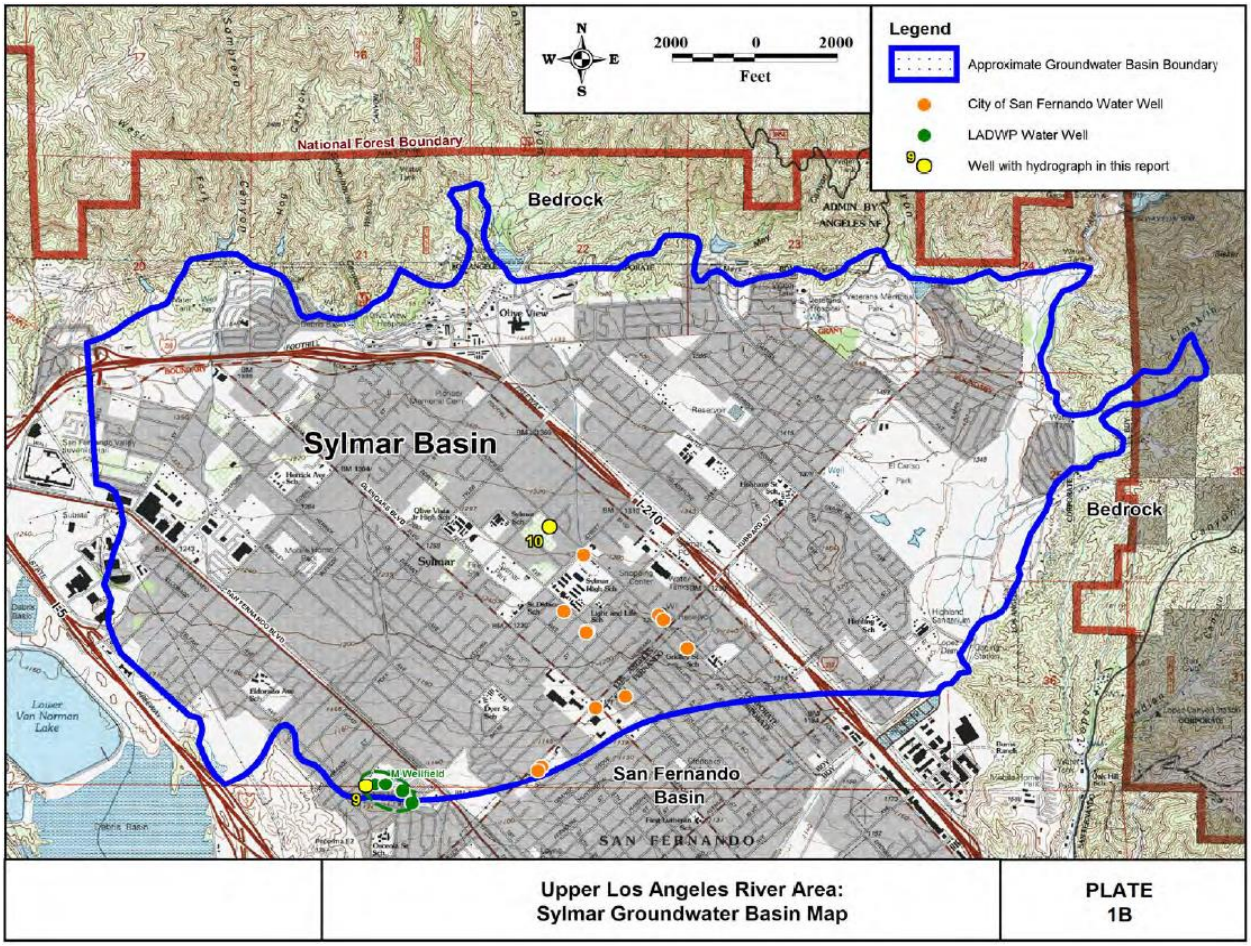

Figure 2.8: Sylmar Groundwater Basin

Sylmar Basin Safe Yield, 5-Year Re-assessment" (See **Appendix XX**). Additionally, San Fernando and Los Angeles each has the right to receive stored water credit in the Sylmar 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. 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 of 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	3,570 AFY
Adjudicated Rights	3,570 AFY
Spreading Basins (Total)	0
Wells (Active)	3
Wells (Inactive)	1

Groundwater Production

The City currently has three active wells (2A, 4A, & 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. In the past ten years, the City has upgraded all of its wells with the exception of Well 4A, which currently has a capacity of 450 gpm. Currently, 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 a blending plan to remediate contamination issues and to maintain supply reliability by using imported water to blend raw well discharge before it enters the City's distribution system. However, this is no longer the case; in more recent years, the City has looked to other options in order to decrease imported water while increase groundwater quality and production.

The City is currently in the final stages of the construction phase for a nitrate treatment ion-exchange plant for Well No. 7A. The project is expected to be completed this year. A similar ion-exchange treatment plant is also in the planning stages for Well No. 3.

Figure 2.9: City Well No. 7A Facility

The City's groundwater well pumping capacities are summarized in **Table 2.3**:

Table 2.3
City Groundwater Wells

Well No.	Capacity (gpm)
2A	2,100
3	1,200
4A	450
7A	900
Total Capacity:	**4,650**

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 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 2010 is shown below in **Table 2.4**:

Table 2.4
2010-2015 Groundwater Production

Year	Production (AF)
2010	3,070
2011	3,122
2012	3,215
2013	3,877
2014	3,684
2015	3,221
Average:	**3,365**

2.3 WATER SUPPLY SUMMARY

Over the past five years, the City's groundwater pumping ability has led the City to be mostly independent of imported water, particularly in the past few years. Due to rising costs of imported water, the continued reliance of groundwater vs. imported water will provide cost savings for the City.

Table 2.5 lists The City's supply totals:

Table 2.5
Water Supply Summary

Year	Imported (AF)	Ground (AF)	Total (AF)
2010	51	3,070	3,121
2011	19	3,122	3,141
2012	114	3,215	3,329
2013	86	3,877	3,963
2014	126	3,684	3,810
2015	0	3,221	3,221
Average (2010-2015):	**66**	**3,365**	**3,431**
Average (2005-2009):	**341**	**3,292**	**3,633**

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 preferential right of 0.10 percent of MWD's annual supplies:

Table 2.6
Projected Water Supply Availability

Year	Imported (AF)	Ground (AF)
2020	3,653	3,570
2025	3,755	3,570
2030	3,925	3,570
2035	4,055	3,570
2040	4,091	3,570

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 5** discusses reliability issues and compares the City's projected water supplies to projected demands for normal, dry, and multiple dry years through 2040.

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.

Recycled Water Potential in the City

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. Treated wastewater from the 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 mgd and an instantaneous peak flow of 3.2 cfs.

Figure 2.10: Wastewater Treatment at Hyperion in Playa Del Ray, 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.

2.5.3 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.

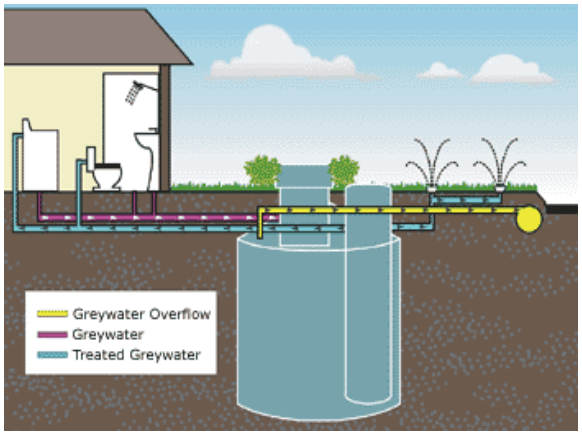

Figure 2.12: Greywater System

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.

2.5.4 Desalinated Seawater

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 (SDP), the MWD facilitates implementation and provides financial incentives for the development of seawater desalination facilities within its service area.


Figure 2.13: Seawater Desalination Plant

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 which 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' population is not expected to increase significantly, the City does not foresee a need to lease or 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 at Well No. 3. This is in addition to the denitrification treatment plant that is currently nearing completion at Well No. 7A. Since Wells No. 3 & 7A have had nitrate readings slightly above the MCL of 45 mg/l in the past, they have been taken offline and production has temporarily halted. With the completion of these treatment plants, groundwater quality and production will be increased.

The City of San Fernando'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.

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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 2015 UWMP discusses the water quality concerns of its supplies in detail.

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.

Figure 3.1: 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's two main supply sources (SWP and CRA) have different water quality issues. However, only water from the Bay-Delta in Northern California concerns the City. Some of the key water quality issues with water obtained from the Bay-Delta via the SWP are discussed as follows:

Total Organic Carbon and Bromide

Water containing high levels of Total Organic Carbon and Bromide, once treated with disinfectants such as chlorine or ozone, can lead to the production of Disinfection byproducts (DBPs). DBPs are known to cause certain cancers and pose a significant concern to the City's imported water supply. The EPA currently regulates DBPs with strict standards. MWD manages DBP concentration by participating in the CALFED Bay-Delta Program to safeguard SWP source water and also by providing advanced treatment operations.

Nutrients (Algal Productivity)

Elevated nutrient levels in the SWP can adversely affect the City'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, MWD does not expect there to be any effects on its supplies from the SWP.

Figure 3.2: Algal Growth in State Water Project

Arsenic

Arsenic is a naturally occurring element found in rocks, soil, water, and air. It is used in wood preservatives, alloying agents, certain agricultural applications, semi-conductors, paints, dyes, and soaps. Arsenic can get 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 has been linked to certain cancers, skin pigmentation changes, and hyperkeratosis (skin thickening).

The MCL for arsenic in domestic water supplies was lowered to 10 µg/L, with an effective date of January 2006 in the federal regulations, and an effective date of November 2008 in the California regulations. The standard impacts both groundwater and surface water supplies. Historically, Metropolitan's water supplies have had low levels of this contaminant and would not require treatment changes or capital investment to comply with this new standard.

Other Emerging Imported Water Concerns

As the technology to discover contaminants advances, the City faces ongoing threats to its drinking water as new contaminants are discovered and existing contaminants are more readily detected. Some of the current contaminants not previously mentioned which pose a threat to the City's imported water supplies include, but are not limited to: Chromium VI, N-nitrosodimethylamine (NDMA), and Pharmaceuticals & Personal Care Products (PPCPs). Continued mitigation efforts may, however, lead to a decrease in the threat level of these contaminants, as has been demonstrated through past mitigation efforts.

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. In particular, TCE levels have caused the City of Los Angeles to remove a well from service due to TCE levels in the Sylmar Basin. Other ULARA constituents of concern include high TDS and total hexavalent chromium. **Table 3.1** summarizes the main constituents of concern in the ULARA Basins:

Table 3.1
ULARA Groundwater Basin: Constituents of Concern

Constituent	Units	Range	Description
TDS Secondary MCL = 500	mg/L	280 to 729	Highest levels reported in the North Hollywood area of the San Fernando Basin.
VOCs **(TCE and PCE)** Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	<5 to over 100	The highest concentrations in Glendale and Burbank areas of the eastern San Fernando Basin are being treated. Other areas in the San Fernando Basin, which have levels significantly above the MCL, are currently being addressed through treatment or other means, while long-term solutions are being developed.
Perchlorate Notification level = 6	µg/L	ND to 8.9	Detected in 2 wells above notification level since 2000.
Nitrate (as N) Primary MCL = 10	mg/L	2.6 to 79.2	Highest levels reported in the Verdugo Basin and eastern portion of the San Fernando Basin
Total and Hexavalent Chromium Total Cr MCL = 50 Hexavalent Cr MCL = TBD	µg/L	ND to 423	Highest concentrations are in the Burbank and Glendale areas. These areas are currently being investigated. The city of Los Angeles discontinued pumping from one San Fernando Basin production well after total hexavalent chromium levels as high as 423 µg/L were detected.

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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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.

The City's population growth rate has decreased in the past 20 years and is currently at under 0.5 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 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 of San Fernando'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.

Figure 4.1: Residential Irrigation

The City of San Fernando 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.

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.

Figure 4.2: Las Palmas Park

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 HISTORIC WATER DEMAND

Water demands within the City's service area are met by groundwater from the Sylmar Basin and imported water from MWD. Annual water use since 2010 has ranged from 3,121 AF to 3,963 AF with an average of 3,431 AF as shown below in **Table 4.1**:

Table 4.1
Five-Year Historic Total Water Consumption

Year	Consumption (AF)
2010	3,121
2011	3,141
2012	3,329
2013	3,963
2014	3,810
2015	3,221
Average:	**3,431**

As indicated by **Table 4.1** above, annual water use fluctuates each year and is dependent on climatologic conditions.

4.4 WATER USE STATISTICS

The City maintains records of water consumption and bills its customers on a monthly basis for its water service. The City currently has over 5,100 service connections with a mixture of residential, commercial, institutional, industrial, and landscape irrigation customers. Over 80 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 and have the highest consumption rate at about 1.5 AFY per connection. Water sales data is compiled by City water staff and recorded on DWR's Form No. 38 (Public Water System Statistics) and submitted to DWR annually. The total number of service connections and total water consumption since 2010 is shown below in **Tables 4.2** and **4.3**:

Table 4.2
Number of Service Connections (2010-2015)

Sector	2010	2011	2012	2013	2014	2015
Single Family Residential	3,756	3,802	3,802	3,790	3,800	3,837
Multi-Family Residential	472	462	462	456	457	459
Commercial/Institutional	423	455	455	438	446	599
Industrial	146	181	181	158	162	171
Landscape Irrigation	51	43	43	49	62	70
Other	143	184	184	144	0	6
Total Connections:	**4,991**	**5,127**	**5,127**	**5,035**	**4,927**	**5,142**

Table 4.3
Historic Water Demand by Sector (AF)

Sector	2010	2011	2012	2013	2014	2015
Single Family/Multi-Family Res	1,495	1,513	1,626	1,657	1,579	1,341
Commercial/Institutional	469	444	478	471	466	420
Industrial	649	545	592	586	585	525
Landscape Irrigation	58	71	87	124	132	100
Other	64	99	127	134	148	123
Total Water Sales:	**2,734**	**2,672**	**2,910**	**2,972**	**2,910**	**2,509**
Unaccounted for Water (%)	387 (12%)	469 (15%)	419 (13%)	991 (25%)	900 (24%)	712 (22%)
Total Water Consumption:	**3,121**	**3,141**	**3,329**	**3,963**	**3,810**	**3,221**

As indicated by **Table 4.3** above, unaccounted for water contributes to a significant portion of the City's overall water use (at approximately 18 percent on average) 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.

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.

4.5 WATER CONSERVATION ACT

4.5.1 SBx7-7 Background

Due to reductions of water in the San Joaquin Delta, the Legislature drafted the 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 2020 and 2015 water use targets in the 2010 UWMPs, updates or revisions to these targets in the 2015 UWMPs, and allows DWR to enforce compliance to the new water use standards. Beginning this year (2016) failure to comply with interim and final targets will make the City ineligible for grants and loans from the State needed to attain water self-sufficiency by 2020.

In addition to an overall statewide 20 percent water use reduction, the objective of SBx7-7 is to reduce water use in 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** on page 4-5. Each hydrologic region has been established for planning purposes and corresponds to the State's major drainage areas. The service area of 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** on page 4-6.

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

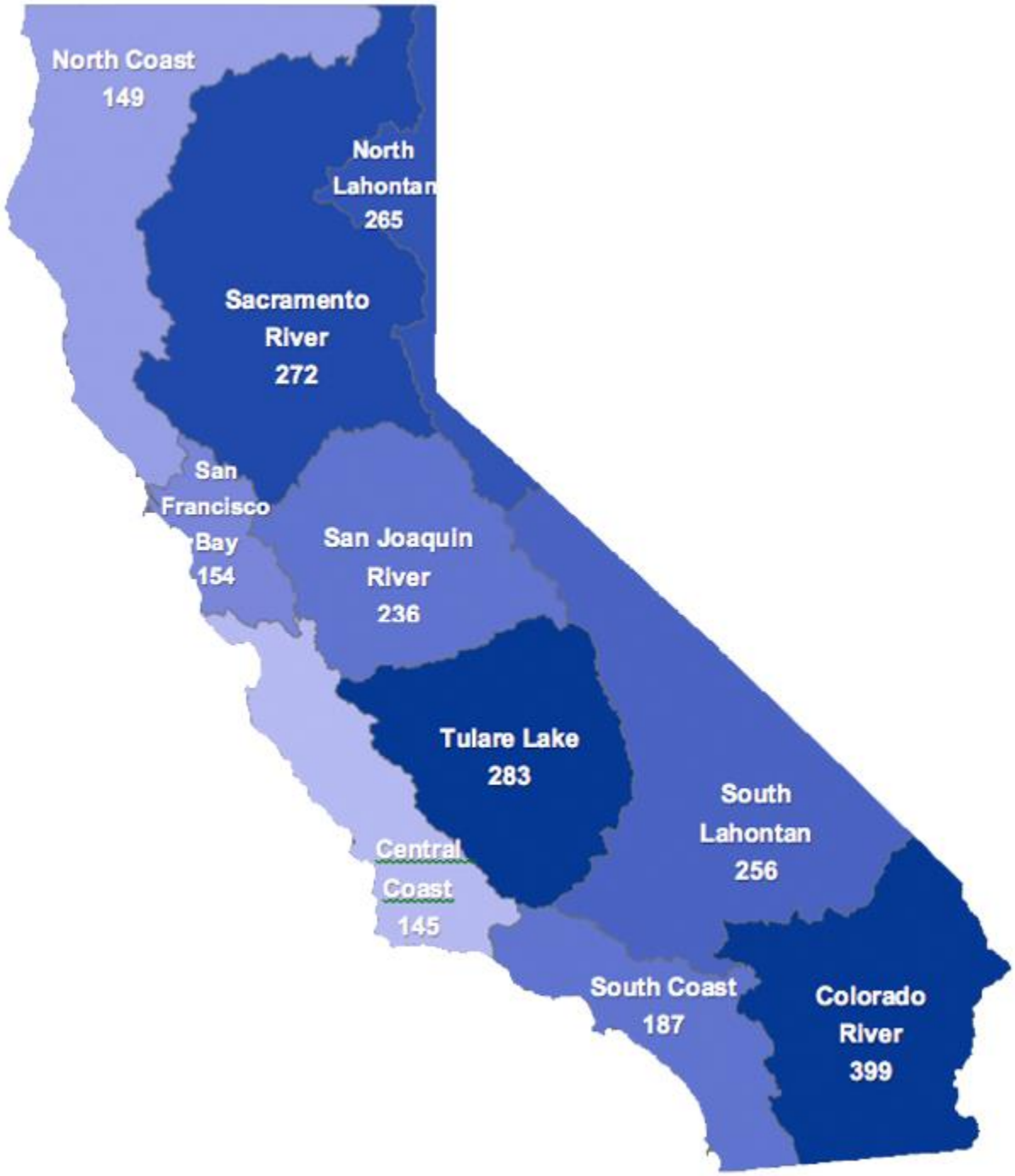

Figure 4.3: California's 10 Hydrologic Regions (with Baselines by Region)

Figure 4.4: South Coast Hydrologic Region

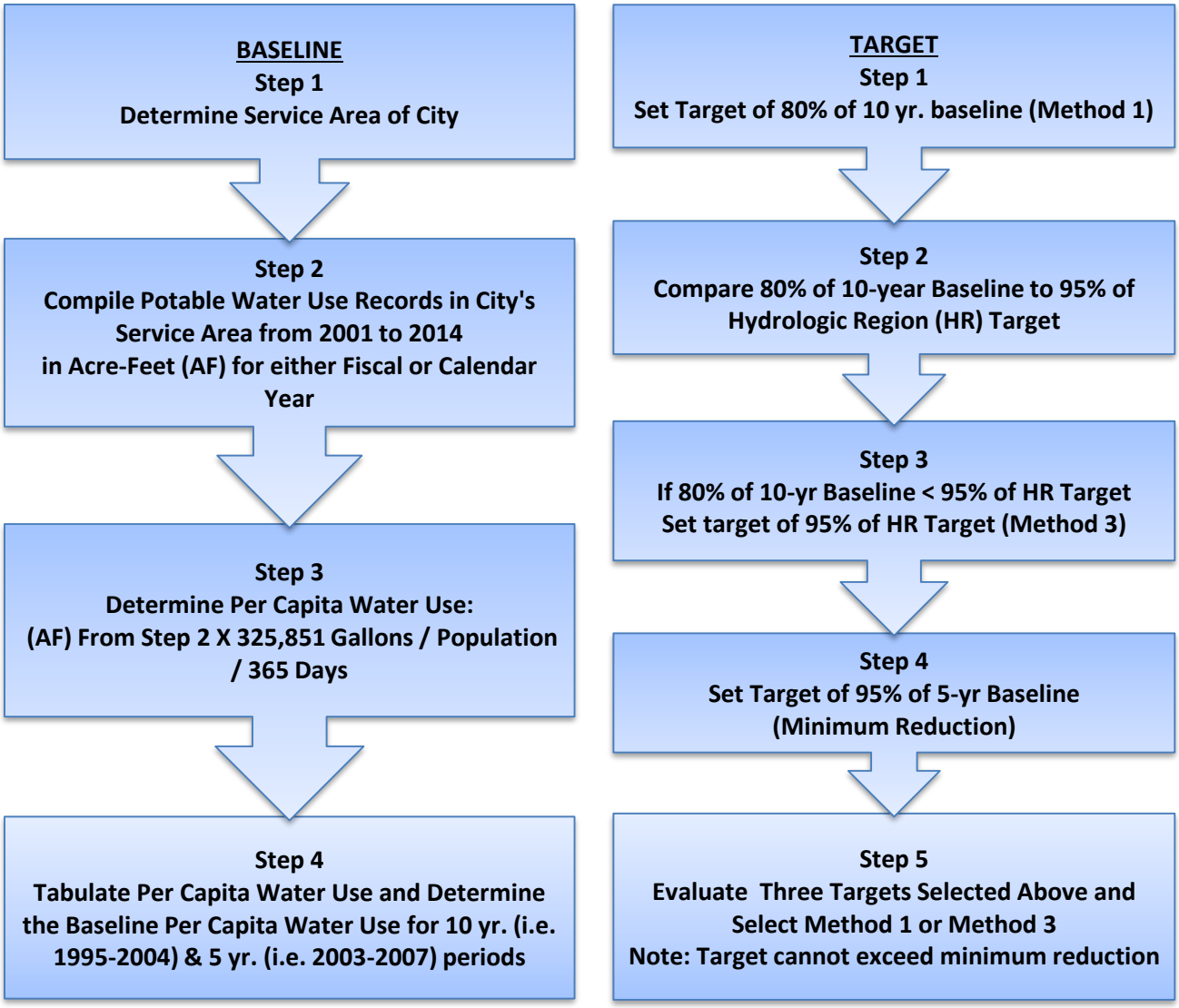

Figure 4.5: Procedure for Determining Baseline and Per Capita Water Use

4.5.2 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* (2011) and also in the 2010 and 2015 UWMP Guidebooks. In the 2010 UWMP, the City's baseline water use was determined based on San Fernando's historic water use by the procedure shown above in **Figure 4.5**.

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. The basic options included a minimum reduction requirement of five percent (Water Code § 10620), a five percent reduction from the Regional (South Coast HR) target (Water Code § 10608.20 (b) (3)), or a strict 20 percent reduction.

These options were established in order to avoid placing any undue hardship on water agencies that have already been implementing water conservation measures for some time. The basic procedure for determining the applicable water reduction target is illustrated by **Figure 4.5** on the previous page. 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.

4.5.3 SBx7-7 Targets

Due to the options available to water agencies, some neighbor agencies within the South Coast HR with moderate water usages, such as Los Angeles, (baseline of 150.6 GPCD) will not have to adhere to stringent 2020 reduction requirements, such as a 20 percent reduction. **Table 4.4** shows an example* of these options available to the City of Los Angeles:

Table 4.4
Reduction Example for Los Angeles
(Baseline = 151 GPCD)

Min. Reduction Requirement (5% of 5-year baseline) (10608.22)	20% Target (10608.20) (b)(1)	5% Reduction from Regional Target (10608.20) (b)(3)
143	121	142
2020 Per Capita Target:		**142**
Interim (2015) Target:		**146**

**Shown to illustrate the methodology. City of Los Angeles may have selected an alternate target other than that of Method 1 or Method 3.*

As indicated by **Table 4.4** above, the City of Los Angeles cannot select a minimum reduction requirement of 143 GPCD (five percent from its baseline) as this amount is greater than 141.5 GPCD (five percent reduction from the South Coast HR's target); however, since both Los Angeles's 20 percent reduction target (120.5 GPCD) and the regional target (141.5 GPCD) are less than the minimum reduction requirement that is required by DWR (143 GPCD), it is most feasible to select 141.5 GPCD as opposed to 120.5 GPCD as its SBx7-7 2020 water use target.

Unlike the City of Los Angeles, water consumption characteristics within the City's service area are slightly higher due to socio-economic and land-use characteristics. This indicates that the City's options will be limited within the provisions of SBx7-7.

Table 4.5 shows historic (1996 to 2009) as well as recent (2010 to 2015) water use, and also includes the baseline statistics that

were previously included in this table.

Table 4.5
City of San Fernando
Recent and Past GPCD Water Use

Year	Total Potable Consumption (AF)	Per Capita (GPCD)
2015	3,221	117
2014	3,810	140
2013	3,963	147
2012	3,329	125
2011	3,141	118
2010	3,121	118
2009	3,395	128
2008	3,653	138
2007	3,757	142
2006	3,699	140
2005	3,650	139
2004	3,894	148
2003	3,791	145
2002	3,786	145
2001	3,649	140
2000	3,735	144
1999	3,996	155
1998	3,324	129
1997	3,575	139
1996	3,564	139
1995	3,460	135
10-yr. Baseline (1995-2004) (SB7: 10608.20)		**142**
5-yr. Baseline (2003-2007) (SB7: 10608.22)		**143**
South Coast HR:		**187**

As determined previously in the City 's 2010 UWMP, the City's 10-yr and 5-yr baselines were determined to be 142 GPCD and 143 GPCD, respectively. 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 as in the Los Angeles example 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 below in **Table 4.6:**

Table 4.6
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)
136	**113**	**142**
2020 Per Capita Target:		**136**
Interim (2015) Target:		**140**
2015 Per Capita Water Use:		**117**

As indicated by the above table, the City can select an SBx7-7 target of 136 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 (113 GPCD) far exceeds the minimum reduction requirement of 136 GPCD, it is

feasible for the City to select 136 GPCD as its 2020 water use target. Therefore, the City's compliance target for 2020 per capita water consumption is 136 GPCD in accordance with SB7: 10608.22.

Although the requirements of SBx7-7 seem stringent, it is noteworthy to mention that the City has seen an increase in water efficiency from 2000-2015. This is due in part to a greater achievement of conservation measures, saturation of water-saving plumbing fixtures, and overall water conservation awareness.

The City is not revising its interim or 2020 SBx7-7 targets that were calculated in its 2010 UWMP.

Altogether, the City is not only meeting its SBx7-7 requirements, but also exceeding them. In 2015, GPCD was 117, well below their 2015 interim target and is set to achieve its 2020 target.

4.5.4 Impacts on Bay-Delta

Through adherence to conservation measures, the City can participate in statewide efforts to conserve Sacramento-San Joaquin Bay-Delta Water and to protect the ecological habitat of the region. The Bay-Delta is crucial to the health of the state's natural environment, its residents, and the economy. As an estuary (an inland body of water where fresh river water mixes with salty seawater), the Delta and its islands create a habitat for hundreds of aquatic and terrestrial species, some of which are unique to the region. Delta water irrigates local farms where much of the nation's domestic fresh produce is grown. Finally, freshwater originating in the Sierra Nevada flows through the Delta, providing water supplies for 25 million Californians and the economies in the San Francisco Bay Area, the Central Valley, and of course Southern California.

Figure 4.6: Bay-Delta Water Must Be Preserved

With increased public awareness of conservation requirements, it is likely that the public will begin to understand the importance of water conservation and will begin to use water even more efficiently.

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 2020-2040 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 4.7**.

Table 4.7
Projected Water Demand by Sector (2020-2040)
(Based on SBx7-7 Consumption Requirement of 136 GPCD)

Sector	2020	2025	2030	2035	2040
Water Service Area Population	25,003	25,456	25,917	26,387	26,865
Demands					
Single Family/ Multi-Family Res.	1,713	1,744	1,775	1,808	1,840
Commercial/Institutional	512	521	531	540	550
Industrial	650	662	674	686	698
Landscape Irrigation	104	106	108	110	112
Other	127	130	132	135	137
Total Water Sales:	**3,106**	**3,163**	**3,220**	**3,278**	**3,338**
Unaccounted for Water	703	715	728	741	755
Total Water Consumption (Total Supply into System):	**3,809**	**3,878**	**3,948**	**4,020**	**4,093**

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SECTION 5: RELIABILITY PLANNING

5.1 INTRODUCTION

Drought conditions continue to be a critical 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 5.3** - **5.9**.

5.2 HISTORIC DROUGHTS

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 2012-14. 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 three-year period of water years 2012-14 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.

Figure 5.1: Lake Oroville: Drought Conditions

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.

Figure 5.2: Recent Drought Effects

5.3 RECENT DROUGHT (2011-2015)

A significant drought has hit the state of California since 2011. The drought has depleted reservoir levels all across the state, as reflected by **Figure 5.2** above. 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, Governor Brown gave an executive order in April 2015 which mandated a statewide 25% reduction in water use.

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.

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

To date, Californians have reduced water use by about 25 percent since emergency conservation regulations took effect in June 2015. This continues to meet Governor Brown's 25 percent mandate (despite a decline in the statewide water-savings rate for the last two months).

Figure 5.3: MWD's 800,000 AF Reservoir: Diamond Valley Lake

5.4 REGIONAL SUPPLY RELIABILITY

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 (pictured in **Figure 5.3**), 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.

5.4.1 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.

5.4.2 State Water Project Reliability

The reliability of the SWP impacts MWD's member agencies' ability to plan for future growth and supply. DWR's Bulletin 132-03, December 2004, provides certain SWP reliability information, and in 2002, the DWR Bay-Delta Office prepared a report specifically addressing the reliability of the SWP. This report, The State Water Project Delivery Reliability Report, provides 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.

Figure 5.4: State Water Project (SWP)

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 2016 is set at 4.2 MAF.

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.

5.4.3 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 2014, conditions of several key reservoirs indicated drought conditions. Currently, reservoir levels are a bit higher as indicated by **Figures 5.5** and **5.6** on the following pages.

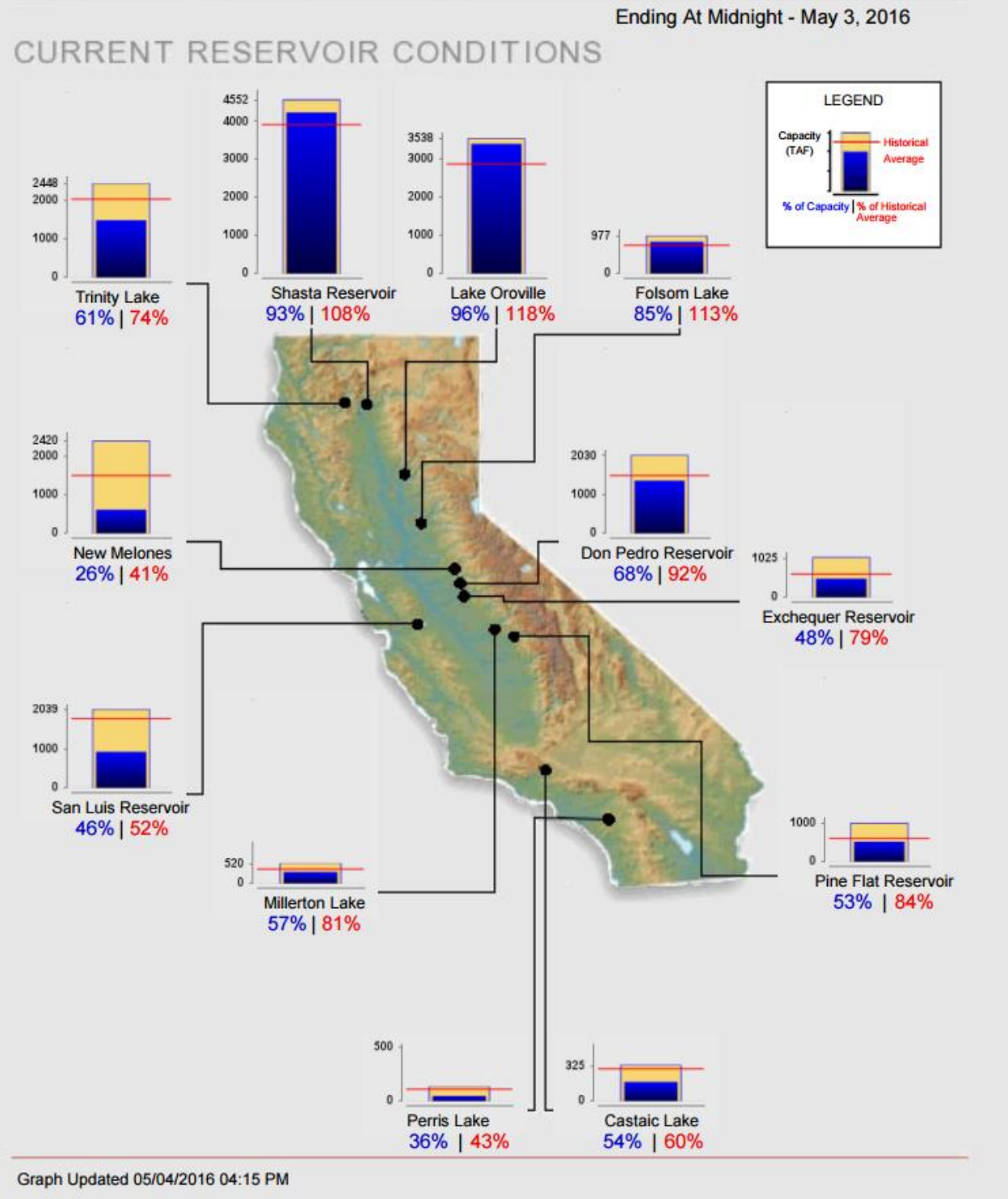

Figure 5.5: California State Reservoir Levels

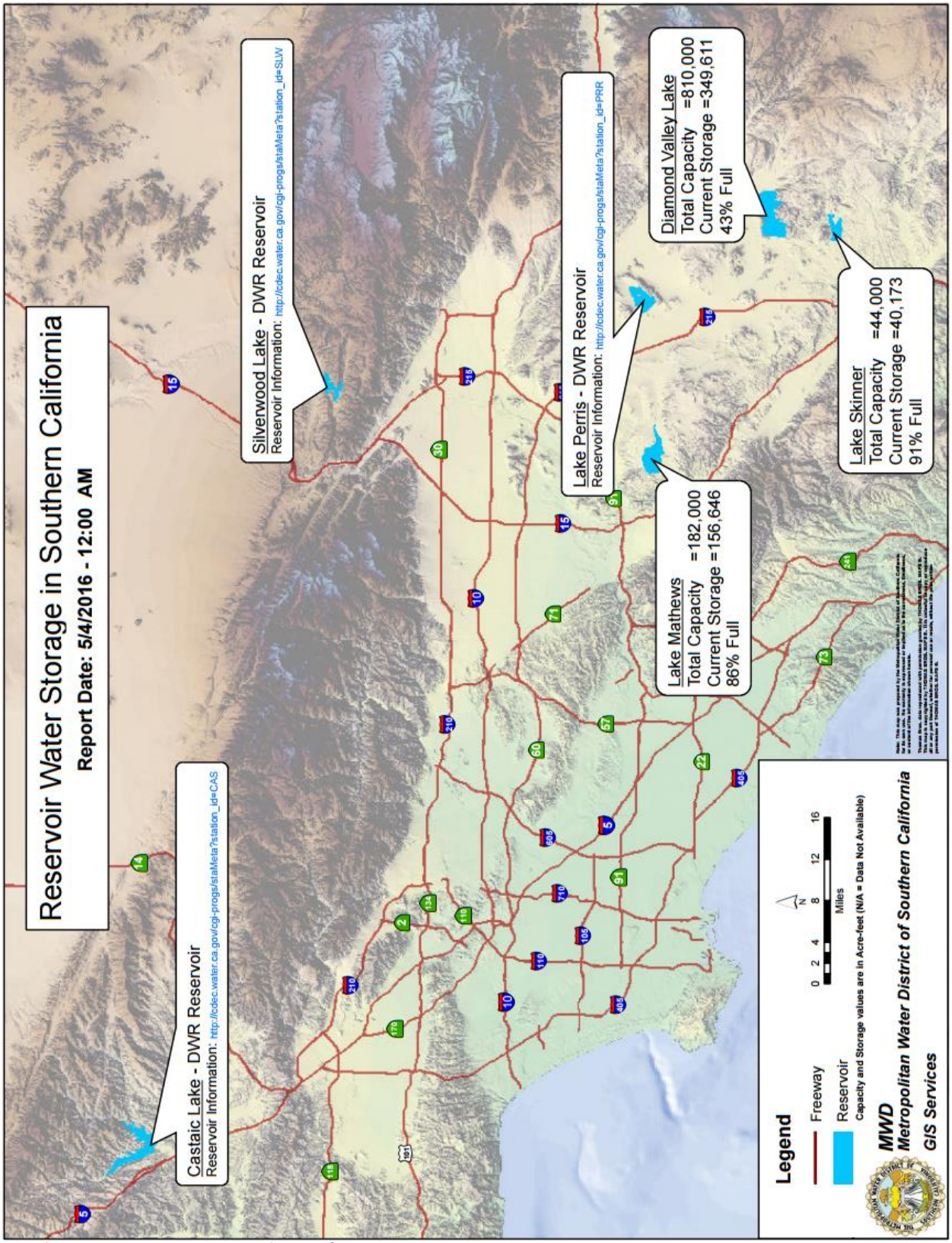

Figure 5.6: MWD Reservoir Levels

5.5 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.

5.5.1 Regional Supply Reliability

Southern California is expected to experience an increase in regional demands in the years 2020 through 2040 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 will be at or near their compliance targets by 2020 and thereafter as conservation measures are more effectively enforced.

Tables 2.8 – **2.10** of MWD's 2015 UWMP shows supply reliability projections for average and single dry years through the year 2040. 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. **Tables 5.1** and **5.2** show MWD's supply reliability.

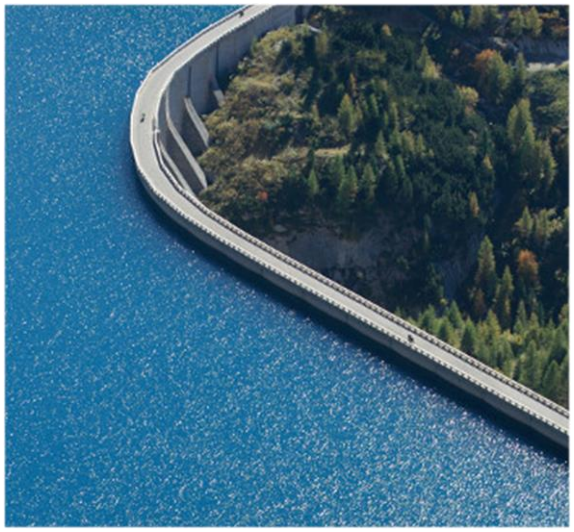

Figure 5.7: Reservoir Storage

5.5.2 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 136 GPCD in accordance with SBx7-7 requirements. During times of drought, however, demand will increase at a time when supply will decrease. To project demands during drought periods, the following factors measured from actual demand data from dry years 2012-2014 will be assumed:

- **Single Dry Year Demand Increase**: 118% of Normal

- **Multiple Dry Year Demand Increases (Years 1, 2, & 3)**: 106%, 127%, 122% of Normal

Tables 5.1 – 5.9, shown on the following pages, provide an analysis of MWD and City supply and demand projections.

Table 5.1
MWD Regional Imported Water Supply Reliability Projections
Average and Single Dry Years (AF)

Row	Region Wide Projections	2020	2025	2030	2035	2040
Supply Information						
A	Projected Supply: Average Year	3,653,000	3,755,000	3,925,000	4,055,000	4,091,000
B	Projected Supply: Dry Year	2,537,000	2,639,000	2,744,000	2,874,000	2,910,000
C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	**69.4%**	**70.3%**	**69.9%**	**70.9%**	**71.1%**
Demand Information						
D	Projected Average Year Demand	1,860,000	1,918,000	1,959,000	2,008,000	2,047,000
E	Projected Dry Year Demand	2,005,000	2,066,000	2,108,000	2,160,000	2,201,000
F = E/D	Projected Dry Year / Avg. Year (%)	**107.8%**	**107.7%**	**107.6%**	**107.6%**	**107.5%**
Surplus						
G = A-D	Projected Surplus: Average Year	1,793,000	1,837,000	1,966,000	2,047,000	2,044,000
H = B-E	Projected Surplus: Dry Year	532,000	573,000	636,000	714,000	709,000
Programs Under Development						
I	Projected Capability of Programs (Average Year)	63,000	100,000	343,000	385,000	425,000
J	Projected Capability of Programs (Dry Year)	63,000	100,000	316,000	358,000	398,000
Potential Surplus						
K=A+I-D	Projected Surplus: Average Year	1,856,000	1,937,000	2,309,000	2,432,000	2,469,000
L=B+J-E	Projected Surplus: Dry Year	532,000	573,000	636,000	714,000	709,000
Comparisons						
I = A/D	Projected Avg. Yr. Supply/Demand (%)	**196.4%**	**195.8%**	**200.4%**	**201.9%**	**199.9%**
J = A/E	Projected Dry Yr. Supply/Demand (%)	**126.5%**	**127.7%**	**130.2%**	**133.1%**	**132.2%**

Table 5.2
MWD Regional Imported Water Supply Reliability Projections
Average and Multiple Dry Years (AF)

Row	Region Wide Projections	2020	2025	2030	2035	2040
Supply Information						
A	Projected Supply: Average Year	3,653,000	3,755,000	3,925,000	4,055,000	4,091,000
B	Projected Supply: Multiple Dry Year	2,151,000	2,202,000	2,246,000	2,298,000	2,316,000
C = B/A	Projected Dry Yr. / Avg. Yr. Supply (%)	**58.9%**	**58.6%**	**57.2%**	**56.7%**	**56.6%**
Demand Information						
D	Projected Average Year Demand	1,860,000	1,918,000	1,959,000	2,008,000	2,047,000
E	Projected Dry Year Demand	2,001,000	2,118,000	2,171,000	2,216,000	2,258,000
F = E/D	Projected Dry Year / Average Year (%)	**107.6%**	**110.4%**	**110.8%**	**110.4%**	**110.3%**
Surplus						
G = A-D	Projected Surplus: Average Year	1,793,000	1,837,000	1,966,000	2,047,000	2,044,000
H = B-E	Projected Surplus: Multiple Dry Year	150,000	84,000	75,000	82,000	58,000
Programs Under Development						
I	Projected Capability of Programs (Average Year)	63,000	100,000	343,000	385,000	425,000
J	Projected Capability of Programs (Multiple Dry Year)	43,000	80,000	204,000	245,000	286,000
Potential Surplus						
K=A+I-D	Projected Surplus: Average Year	1,856,000	1,937,000	2,309,000	2,432,000	2,469,000
L=B+J-E	Projected Surplus: Multiple Dry Year	150,000	84,000	75,000	82,000	58,000
Comparisons						
I = A/D	Projected Avg. Yr. Supply/Demand (%)	**196.4%**	**195.8%**	**200.4%**	**201.9%**	**199.9%**
J = A/E	Projected Dry Yr. Supply/Demand (%)	**107.5%**	**104.0%**	**103.5%**	**103.7%**	**102.6%**

Table 5.3
City of San Fernando Water Supply Availability & Demand Projections
Normal Water Year (AF)

Water Sources	2020	2025	2030	2035	2040
Population					
Water Service Area Population	25,003	25,456	25,917	26,387	26,865
Supply					
Imported Water*	3,653	3,755	3,925	4,055	4,091
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,223**	**7,325**	**7,495**	**7,625**	**7,661**
Demand					
Total Normal Demand	**3,501**	**3,564**	**3,629**	**3,695**	**3,762**
% of 2010-2015 Avg. Demand (3,431)	102.0%	103.9%	105.8%	107.7%	109.6%
Supply/Demand Comparison					
Supply/ Demand Difference	3,722	3,761	3,866	3,930	3,899
Supply/Demand (%)	206.3%	205.5%	206.5%	206.4%	203.7%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above.

2. Imported Water Supply represents supply available to City, if needed, based on the City's preferential right of 0.10% multiplied by Table 5.1 Row A.

3. Groundwater Supplies based on the City's 2014-2015 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. The City may also overdraft up to 10% of this amount.*

**This Table is not intended to be a projection of City's actual demand. Demand of 125 GPCD was chosen as a reasonable water consumption target based on consumption over the last five years.*

Table 5.4
City of San Fernando Water Supply Availability & Demand Projections
Single Dry Year (AF)

Water Sources	2020	2025	2030	2035	2040
Population					
Water Service Area Population	25,003	25,456	25,917	26,387	26,865
Supply					
Imported Water**	2,151	2,202	2,246	2,298	2,316
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**5,721**	**5,772**	**5,816**	**5,868**	**5,886**
Normal Year Supply	7,223	7,325	7,495	7,625	7,661
% of Normal Year	79.2%	78.8%	77.6%	77.0%	76.8%
Demand					
Total Dry Demand	**4,138**	**4,213**	**4,289**	**4,367**	**4,446**
Normal Year Demand	3,501	3,564	3,629	3,695	3,762
% of Normal Year	118.2%	118.2%	118.2%	118.2%	118.2%
Supply/Demand Comparison					
Supply/Demand Difference	1,583	1,559	1,527	1,501	1,440
Supply/Demand (%)	138.3%	137.0%	135.6%	134.4%	132.4%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by single dry year increase of 118%.

2. All other items derived in similitude to Table 5.3

**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Table 5.5
City of San Fernando Water Supply Availability & Demand Projections
Multiple Dry Years (2016-2020) (AF)

Water Sources	2016	2017	2018	2019	2020
Population					
Water Service Area Population	24,646	24,735	24,824	24,913	25,003
Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	3,653	3,653	2,151	2,151	2,151
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,223**	**7,223**	**5,721**	**5,721**	**5,721**
Normal Year Supply	7,223	7,325	7,495	7,625	7,661
% of Normal Year	100.0%	98.6%	76.3%	75.0%	74.7%
Demand					
	Normal Years		**Multiple Dry Years**		
Total Demand	**3,451**	**3,463**	**3,696**	**4,415**	**4,260**
Normal Year Demand	3,451	3,463	3,476	3,488	3,501
% of Normal Year	100.0%	100.0%	106.3%	126.6%	121.7%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	3,772	3,760	2,025	1,306	1,461
Supply/Demand (%)	209.3%	208.6%	154.8%	129.6%	134.3%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by multiple dry year increases of 106%, 127%, and 122%.

2. All other items derived in similitude to Table 5.3.
**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Table 5.6
City of San Fernando Water Supply Availability & Demand Projections
Multiple Dry Years (2021-2025) (AF)

Water Sources	2021	2022	2023	2024	2025
Population					
Water Service Area Population	25,093	25,183	25,274	25,365	25,456
Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	3,755	3,755	2,202	2,202	2,202
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,325**	**7,325**	**5,772**	**5,772**	**5,772**
Normal Year Supply	7,223	7,325	7,495	7,625	7,661
% of Normal Year	101.4%	100.0%	77.0%	75.7%	75.3%
Demand					
	Normal Years		**Multiple Dry Years**		
Total Demand	**3,513**	**3,526**	**3,763**	**4,495**	**4,337**
Normal Year Demand	3,513	3,526	3,539	3,552	3,564
% of Normal Year	100.0%	100.0%	106.3%	126.6%	121.7%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	3,812	3,799	2,009	1,277	1,435
Supply/Demand (%)	208.5%	207.7%	153.4%	128.4%	133.1%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by multiple dry year increases of 106%, 127%, and 122%.

2. All other items derived in similitude to Table 5.3.
**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Table 5.7
City of San Fernando Water Supply Availability & Demand Projections
Multiple Dry Years (2026-2030) (AF)

Water Sources	2026	2027	2028	2029	2030
Population					
Water Service Area Population	25,548	25,640	25,732	25,824	25,917
Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	3,925	3,925	2,246	2,246	2,246
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,495**	**7,495**	**5,816**	**5,816**	**5,816**
Normal Year Supply	20,366	20,366	20,366	20,366	20,366
% of Normal Year	36.8%	36.8%	28.6%	28.6%	28.6%
Demand					
	Normal Years		**Multiple Dry Years**		
Total Demand	**3,577**	**3,590**	**3,831**	**4,577**	**4,416**
Normal Year Demand	3,577	3,590	3,603	3,616	3,629
% of Normal Year	100.0%	100.0%	106.3%	126.6%	121.7%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	3,918	3,905	1,985	1,239	1,400
Supply/Demand (%)	209.5%	208.8%	151.8%	127.1%	131.7%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by multiple dry year increases of 106%, 127%, and 122%.

2. All other items derived in similitude to Table 5.3.
**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Table 5.8
City of San Fernando Water Supply Availability & Demand Projections
Multiple Dry Years (2031-2035) (AF)

Water Sources	2031	2032	2033	2034	2035
Population					
Water Service Area Population	26,011	26,104	26,198	26,292	26,387
Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	4,055	4,055	2,298	2,298	2,298
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,625**	**7,625**	**5,868**	**5,868**	**5,868**
Normal Year Supply	20,366	20,366	20,366	20,366	20,366
% of Normal Year	37.4%	37.4%	28.8%	28.8%	28.8%
Demand					
	Normal Years		**Multiple Dry Years**		
Total Demand	**3,642**	**3,655**	**3,900**	**4,660**	**4,496**
Normal Year Demand	3,642	3,655	3,668	3,681	3,695
% of Normal Year	100.0%	100.0%	106.3%	126.6%	121.7%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	3,983	3,970	1,968	1,208	1,372
Supply/Demand (%)	209.4%	208.6%	150.5%	125.9%	130.5%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by multiple dry year increases of 106%, 127%, and 122%.

2. All other items derived in similitude to Table 5.3.
**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Table 5.9
City of San Fernando Water Supply Availability & Demand Projections
Multiple Dry Years (2036-2040) (AF)

Water Sources	2036	2037	2038	2039	2040
Population					
Water Service Area Population	26,482	26,577	26,673	26,769	26,865
Supply					
	Normal Years		**Multiple Dry Years**		
Imported Water	4,091	4,091	2,316	2,316	2,316
Groundwater	3,570	3,570	3,570	3,570	3,570
Total Supply	**7,661**	**7,661**	**5,886**	**5,886**	**5,886**
Normal Year Supply	20,366	20,366	20,366	20,366	20,366
% of Normal Year	37.6%	37.6%	28.9%	28.9%	28.9%
Demand					
	Normal Years		**Multiple Dry Years**		
Total Demand	**3,708**	**3,721**	**3,971**	**4,744**	**4,577**
Normal Year Demand	3,708	3,721	3,735	3,748	3,762
% of Normal Year	100.0%	100.0%	106.3%	126.6%	121.7%
Supply/Demand Comparison					
	Normal Years		**Multiple Dry Years**		
Supply/Demand Difference	3,953	3,940	1,915	1,142	1,309
Supply/Demand (%)	206.6%	205.9%	148.2%	124.1%	128.6%

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

1. Total Demand based on 125 GPCD multiplied by population projections shown above and by multiple dry year increases of 106%, 127%, and 122%.

2. All other items derived in similitude to Table 5.3.
**See notes below Table 5.3 for explanation of groundwater supply / overall demand.*

Based on the data contained in **Tables 5.3 - 5.9**, the City can expect to meet future demands through 2040 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.

5.6 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 5.3** through **5.9** 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. 479, see **Appendix XX**) along with implementation of the appropriate stage of regional plans, such as the WSDM Plan (MWD). These programs are discussed in **Section 7**.

5.7 WATER SUPPLY OPPORTUNITIES

5.7.1 City Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Currently, the City is nearing completion of an ion exchange treatment plant for Well No. 7A, in order to mitigate 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, renovations for Reservoir #4 are planned in the future, after Well. No. 3's project is complete, and as soon as funding allows.

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.

5.7.2 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 Integrated Resource Plan (IRP) to include many supply sources. A brief description of the various programs implemented by MWD to improve reliability is included in **Table 5.10** on the following page.

Table 5.10
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**.	

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SECTION 6: CONSERVATION MEASURES

6.1 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 6.1: Water Waste Is Prohibited by City Code

To conserve California's water resources, several public water agencies and other interested parties of the California Urban Water Conservation Council (CUWCC) drafted the Memorandum of Understanding Regarding Urban Water Conservation (MOU) in 1991. The MOU establishes 14 Best Management Practices (BMPs) which are defined roughly as policies, programs, practices, rules, regulations, or ordinances that result in the more efficient use or conservation of water.

6.1.1 Updates to BMPs for 2015 UWMPs

In previous years, the 14 CUWCC BMPs coincided with the 14 Demand Management Measures (DMMs) defined in the UWMP Act. The DMMS are intended to reduce long-term urban demands from what they would have been without their implementation. The DMMs are in addition to programs which may be instituted during occasional water supply shortages.

For 2015 UWMPs, DWR has refined the list to 7 DMMs required to be reported in the 2015 UWMPs.

- ***DMM 1:*** *Water Waste Prohibition Ordinances*
- ***DMM 2:*** *Metering*
- ***DMM 3:*** *Conservation Pricing*
- ***DMM 4:*** *Public Education & Outreach*
- ***DMM 5:*** *Programs to Assess and Manage Distribution System Real Loss*
- ***DMM 6:*** *Water Conservation Program Coordination and Staffing Support*
- ***DMM 7:*** *Other Demand Management Measures (that have a significant impact on water use as measured in GPCD, including innovative measures, if implemented)*

As with previous UWMPs, agencies that are members of the CUWCC can submit the annual reports in lieu of proving details on the agency's DMMs. That is, in lieu of providing a description of each DMM, agencies can provide data on recent implementation and provide plans for future implantation.

6.2 CUWCC MEMBERSHIP

In 1994, the City became a signatory of the CUWCC by signing the MOU and has expedited implementation of water conservation measures. The City actively implements all five of the measures with good faith effort by achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition as described in the MOU. Water conservation is an integral part of the City's water policies.

As a member of CUWCC, the City is required to submit bi-annual reports to the CUWCC that document the implementation of each BMP.

6.2.1 Updates to CUWCC BMPs

As with the DMMs, the CUWCC BMPs have changed for CUWCC members. The BMPs are now listed as:

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

6.3 CONSERVATION MEASURES

As signatory to the CUWCC MOU, the City has committed to use good-faith efforts to implement all applicable BMPs. In addition, the City has continued to work with the Metropolitan Water District (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 CUWCC 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 (see **Appendix XX**), 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 6.1 on the following page provides a status overview of the City's Conservation Measures.

Table 6.1
City BMPs (CUWCC)

BMP
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, and leak detection surveys related to residential water use and rebates for water conserving fixtures*
BMP 4: Commercial, Institutional, & Industrial 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*

6.3.1 BMP 1: Utility Operations (Now Corresponds with DMMs 1, 2, 3, 5, & 6)

This City 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 7** with the complete list found in **Appendix XX**.

Figure 6.2: Water Waste

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 insures that customers are paying for all of the water they consume, and therefore encourages conservation.

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 CUWCC's BMP Costs and Savings Study. The

measure of effectiveness will include a comparison of water use before and after meter calibration.

Figure 6.3: Water Meter

Conservation Pricing

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 from years 2013 - 2017.

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 – 9 hundred cubic feet (hcf) are charged at the Block 1 Rate (the lowest rate). While those who consume 10 – 18 hcf are charged at the Block 2 Rate, which is more than double the Block 1 Rate. Finally, those who consume 18+ hcf are charged at the highest rate: Block 3 Rate.

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 6.4: 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 Field Operations Manager serves as the City's Conservation Coordinator for the water service area. The role of the Field Operations Manager entails consistent water, street, and tree code enforcement, and as a result, regular communication with customers is provided. In addition, responsibilities of the Field Operations Manager include conservation coordinator duties.

Figure 6.5: The City's Water Department Staff

6.3.2 BMP 2: Public Education & Outreach (Now Corresponds with DMM 4)

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

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.

Figure 6.6 School Programs Promote Water 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.

"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.

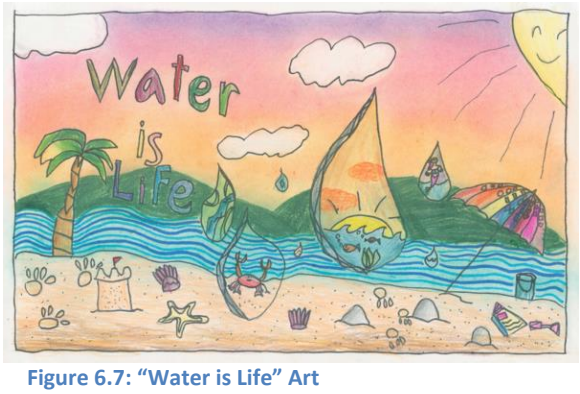

Figure 6.7: "Water is Life" Art

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.

MWD's Community Partnering Program

As a city member, the City of San Fernando 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.

6.3.3 BMP 3: Residential Programs (Now Corresponds with DMMs 6 & 7)

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

Water Survey Assistance

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

Figure 6.8: Residential Water Survey

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.

Based on the CUWCC's savings rates set forth in the BMP Costs & Savings Study, savings from untargeted intensive home surveys results in an average of 21 gallons per day (gpd) per household (both single family and multi-family) total savings for future projections. This rate allows for the calculation of estimated total water savings that result from completion of residential water surveys. For the City, 21 gallons per household provides significant returns in their water conservation efforts.

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 (HEWC), premium high-efficiency toilets (PHET), weather-based irrigation controllers (WBIC), soil moisture sensor system (SMSS), rotating sprinkler nozzles, rain barrels/cisterns, and turf removal, as described below.

- ***Weather-Based Irrigation Controllers (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.

Figure 6.10: Rain Barrel

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

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

6.2.4 BMP 4: Commercial, Institutional, & Industrial Programs (Now Corresponds with DMMs 6 & 7)

The City of San Fernando 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 6-2** and must replace higher water use devices. Installation of devices is the responsibility of each participant. Participants may purchase and install as many of the water saving devices as are applicable to their site.

Table 6-2: 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 and 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

6.3.5 BMP 5: Landscape Programs (Now Corresponds with DMMs 6 & 7)

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 described in detail in **Section 6.3.3** and listed below:

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

6.4 REBATE PROGRAM PARTICIPATION

Over the past six years (2010-2015) the City of San Fernando has found success in offering rebates through MWD's SoCal Water$mart program. Since the beginning of 2010, there have been 129 HETs, 53 HECWs, 22 turf removals, 6 WBICs, and 3 rain barrels that have qualified and received rebates through the rebate program.

SECTION 7: CONTINGENCY PLANNING

7.1 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.

During water shortage emergencies, the City will implement its Water Conservation Ordinance. The purpose of the ordinance is to reduce the effect of shortage water supplies on the City's customers during water shortage emergencies. In compliance with the Water Code requirements, this plan imposes up to a 50 percent mandatory reduction in the total water supply. The City will also coordinate with MWD to implement water shortage plans on a regional level.

7.2 CITY 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 San Fernando City Council adopted a new revised version Water Conservation Ordinance (Ordinance No. 1638, see **Appendix XX**), 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 use 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

7.2.1 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 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 7.1** shows the stages of action of the ordinance:

Table 7.1
Water Shortage Reduction Targets

Shortage Phase	Restriction Type	Water Supply Reduction Target
I	Voluntary	5-10%
II	Mandatory	20%
III	Mandatory	50%

The City of San Fernando's 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 Water Supply Allocation Plan (WSAP).

7.2.2 MWD WSDM Plan

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 Water Surplus Drought Management (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 in accordance with the principles of the WSAP.

Figure 7.1: Severe Droughts Highlight the Importance of Conservation Ordinances

7.3 THREE-YEAR MINIMUM SUPPLY

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% 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 2015 UWMP, as referenced in **Tables 5.1** – **5.9** in Section 5, results in 100 percent reliability for full-service demands through the year 2040 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. **Table 7.2** displays the minimum water supply available to the City based on a three-year dry period for the next three years:

Table 7.2
Projected 3-yr Minimum Water Supply (AF)

Source	Supply (AF) 2016	Supply (AF) 2017	Supply (AF) 2018
Imported	2,151	2,151	2,151
Groundwater	3,405	3,405	3,405
Total	**5,556**	**5,556**	**5,556**

Based on the above analysis, the City should expect 100 percent supply reliability during a three-year drought period over the next three years.

7.4 CASTROPHIC INTERRUPTIONS

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 of San Fernando has an Emergency Operations Center that can be activated in times of local and regional emergencies. 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.

The City has prepared an Emergency Response Plan, 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.

Figure 7.2: Reservoirs Provide Emergency Supplies

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 their Member Agency Response System (MARS) to facilitate the flow of information and requests for mutual-aid within MWD's 5,100 square mile service area. MARS is a radio communication system developed by MWD and its member agencies to provide an alternative means of communication in extreme circumstances. 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.

7.5 PROHIBITIONS

7.5.1 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 XX**).

Prohibitions 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.

7.5.2 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

7.5.3 Penalties of Charges

Violation of the regulations and restrictions on water use in accordance with the City's 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

7.6 FISCAL IMPACTS

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.

7.7 COUNCIL ORDINANCE

On October 20, 2014, the City adopted Ordinance No. 1638 (see **Appendix XX**) to implement several measures in order to curtail water consumption during times of supply shortages. The Ordinance includes specific stages of actions to be implemented during a declared water shortage, prohibited actions, and penalties for violations of the Ordinance. Additionally, the City Council will implement the provisions of the Water Conservation Plan by resolution following a public hearing to determine the projected water shortage and the appropriate measures or stages that should be implemented. A copy of the Ordinance is included in **Appendix XX**.

7.8 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.