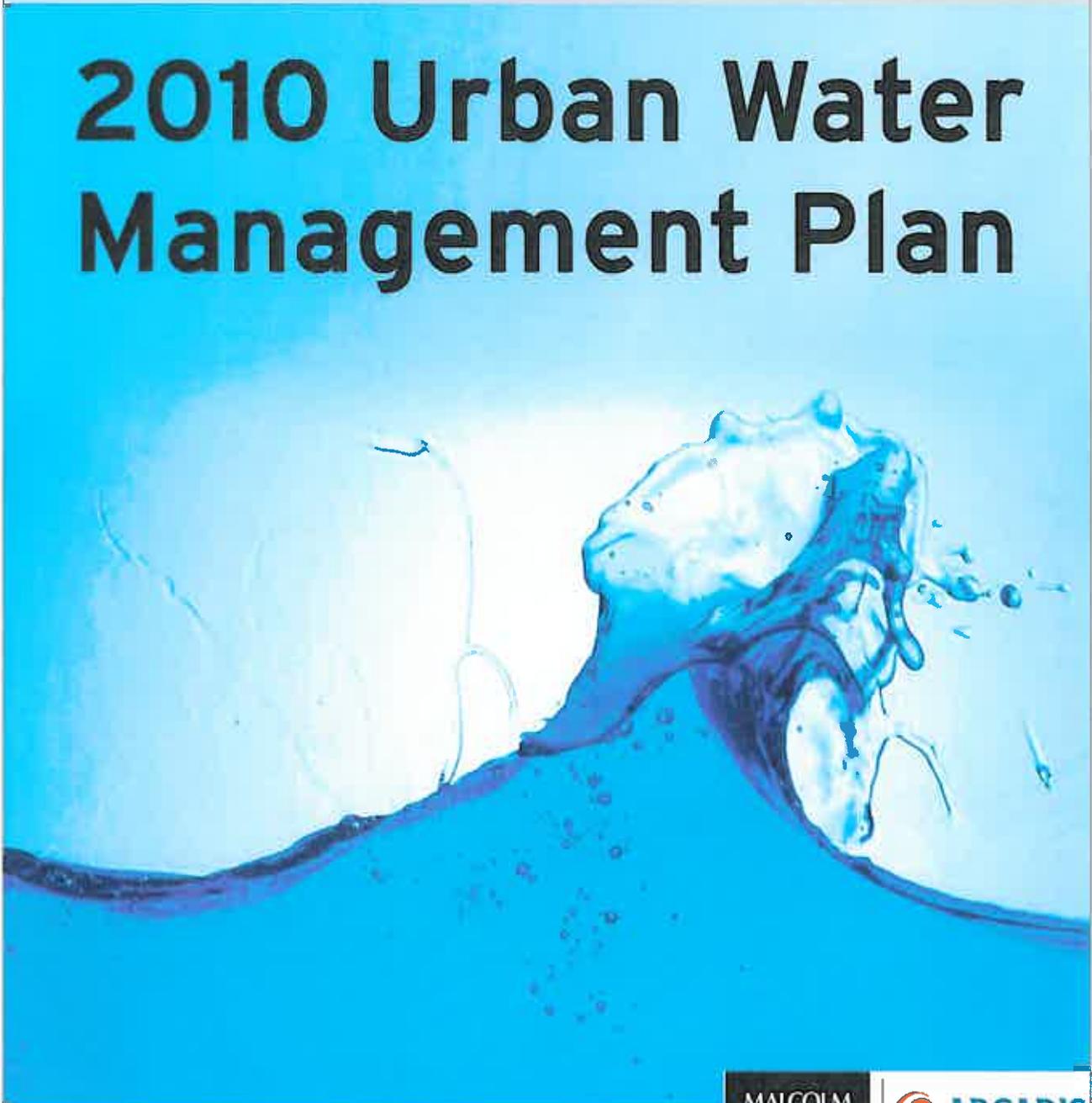




Foothill Municipal Water District

Final Draft

2010 Urban Water Management Plan



April 2011

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The Water Division of ARCADIS

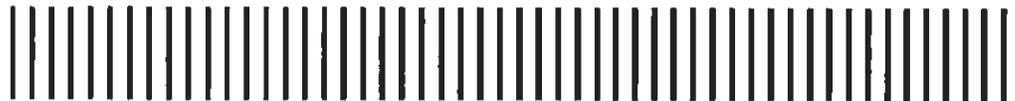


Foothill Municipal Water District

4536 Hampton Rd • La Canada • Flintridge, CA 91011

2010 Urban Water Management Plan

April 2011



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Acronyms Used in the Report

AP	Allocation Plan
BMP	Best Management Practice
CDPH	California Department of Public Health
cfs	cubic feet per second
CII	Commercial Industrial Institutional
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
DBPs	Disinfection Byproducts
DMM	Demand Management Measure
DOE	Department of Energy
DWR	Department of Water Resources
FHCUP	Foothill Conjunctive Use Program
FMWD	Foothill Municipal Water District
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
JPL	Jet Propulsion Laboratory
JWPCP	Joint Water Pollution Control Plant
Kinneloa	Kinneloa Irrigation District
LACSD	Sanitation Districts of Los Angeles County
LAGWRP	Los Angeles/Glendale Water Reclamation Plant
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary-Butyl Ether
Metropolitan	Metropolitan Water District of Southern California
NDMA	N-nitrosodimethylamine
OEHHA	Office of Environmental Health Hazard Assessment
PPCPs	Pharmaceuticals and Personal Care Products
QSA	Quantification Settlement Agreement
RUWMP	Regional Urban Water Management Plan
SDCWA	San Diego County Water Authority
SBx7-7	Senate Bill x7-7
SWP	State Water Project
TDS	Total Dissolved Solid
TOC	Total Organic Carbon
ULARA	Upper Los Angeles River Area
ULFT	Ultra-Low-Flow Toilet
USEPA	United States Environmental Protection Agency

UWMP	Urban Water Management Plan
WSAP	Water Supply Allocation Plan

Executive Summary

Foothill Municipal Water District's (FMWD) 2010 Urban Water Management Plan (UWMP) has been prepared in accordance with the 1983 Urban Water Management Plan Act (Act). The Act requires urban water suppliers 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 an UWMP every five years.

This 2010 UWMP is an update of FMWD's 2005 UWMP. The intent of this plan is to provide the California Department of Water Resources (DWR) with information on the present and future water resources and demands and provide an assessment of FMWD's water resource needs. Specifically, this 2010 UWMP provides water supply planning for the 25-year planning period from 2010 to 2035 in 5-year increments; identifies and quantifies adequate water supplies for existing and future demands during normal, dry and multiple-dry years; evaluates demand management measures; addresses water supply contingency planning; and describes strategies to expand supply sources such as desalination and recycled water.

FMWD is a member agency of Metropolitan Water District of Southern California (Metropolitan). FMWD is a wholesaler which serves retail agencies located in the foothills of the San Gabriel Mountains in Los Angeles County, including Crescenta Valley Water District, La Cañada Irrigation District, Las Flores Water Company, Lincoln Avenue Water Company, Mesa Crest Water Company, Rubio Cañon Land & Water Association, and Valley Water Company. An additional retail agency, the Kinneloa Irrigation District (Kinneloa), located at the eastern end of FMWD's boundaries, is 100 percent local groundwater.

FMWD's service area is a built out area with minimal projected population growth. FMWD's population is estimated to grow at a rate of approximately 0.5 percent per year. FMWD's area is approximately 90 percent residential, 5 percent commercial and 5 percent institutional/government.

Water Sources and Supplies

Within FMWD's service area, retail water demands can be met through a combination of local groundwater supplies and imported supplies from Metropolitan. While FMWD is dependent upon Metropolitan for 100 percent of its water supply, most of its retail agencies have access to their own groundwater supplies. During the early years of operation, FMWD supplied less than 20 percent of the water used within its boundaries. This reliance has increased over the years to the current 60 percent reliance upon

imported water purchased from Metropolitan. The remaining 40 percent of demand comes from local production. Local supplies include groundwater from two adjudicated groundwater basins, Verdugo and Raymond basins, runoff from local canyons and a small amount of recycled water.

Demand Projections

The 25-year demand projections provided in this UWMP reflect FMWD's projected demand for imported supply from Metropolitan since FMWD is 100% reliant on Metropolitan. FMWD's demand projections are based on projections furnished by each of FMWD's retail agencies where water use reduction under Senate Bill (SBx7-7) has been factored into the total demand projections.

Water Supply Capabilities

FMWD's supply capabilities from 2015 through 2035 are dependent on Metropolitan's supply capabilities. Metropolitan's 2010 RUWMP states that Metropolitan has supply capabilities that would be sufficient to meet expected demands from 2015 through 2035 under the single dry-year and multiple dry-year conditions. FMWD's supply capabilities were evaluated under three hydrologic conditions: normal (average) year (represented by the average of FY 2005-06 to 2009-10 hydrologies); single dry-year (represented by a repeat of FY 2006-07 hydrology); multiple dry-year (represented by a repeat of FY 1998-99 to 2001-02 hydrologies). These periods are Foothill area's dry years in recent history.

Water Supply Contingency Plan

FMWD has adopted a Conservation Plan which institutes five water shortage stages corresponding to percent shortage from Metropolitan and associated water conservation measures that will be undertaken in each stage. FMWD also adopted an Allocation Plan which documents its procedure for passing through a cutback in supplies from Metropolitan to its member agencies. FMWD's stages of actions to address water supply shortages reflect Metropolitan's Water Surplus and Drought Management (WSDM) Plan.

20x2020 Water Use Reduction Targets

New legislation, SBx7-7 was passed in November 2009 requiring California urban water suppliers to achieve a 20 percent reduction in per capita water consumption by 2020. Under this new legislation, retail water suppliers must comply with the target-setting and reporting requirements. Wholesale water suppliers are not subjected to the requirements of SBx7-7. However, wholesalers are required to include in their 2010 UWMP an assessment of present and proposed future measures, programs, and policies that would help achieve the water use targets.

Through financial incentive programs and various public outreach campaigns and events led by FMWD, all four of its retail agencies that must comply with SBx7-7 are well on their way to achieving the legislative water use reduction targets. Four of the retail agencies do not need to comply, because they do not have 3,000 meters and do not serve greater than 3,000 AFY. Water consumption in 2008 and 2009 show that two of the four retail agencies already meet the 2020 target under the third compliance option, which is to achieve 95 percent of the applicable state hydrologic region target as set forth in the state's 20x2020 Water Conservation Plan.

Planned Water Supply Projects

FMWD's Local, Reliable Water Supply Program has identified reducing Metropolitan imported water demands by one third to one half of current levels. This reduction would be achieved through conservation, use of recycled water, and storm water capture, and use where integrated with recycled water. As mentioned above, FMWD is committed to various conservation programs. A facilities planning study is currently underway for development of recycled water. Up to three locations are being studied for the possibility of installing membrane bioreactor plants or bringing recycled water from other areas. A draft of the study has been submitted to the State Water Resources Control Board and comments have been received. FMWD is refining the draft for re-submittal. FMWD does not have opportunities to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination. However, FMWD supports Metropolitan's Seawater Desalination Program (SDP).

1. Introduction

1.1. Urban Water Management Plan Requirements

Water Code Sections 10610 through 10656 of the Urban Water Management Planning 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 of water annually" to prepare, adopt, and file an UWMP with the California Department of Water Resources (DWR) every five years. 2010 UWMP updates are due to DWR by August 1, 2011.

This UWMP provides DWR with information on present and future water resources and demands and provides an assessment of Foothill Municipal Water District's (FMWD's) water resource needs. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments. The plan will identify water supplies for existing and future demands, quantify water demands during normal year, single-dry year, and multiple-dry years, and identify supply reliability under the three hydrologic conditions. FMWD's 2010 UWMP update revises the 2005 UWMP. This document has been prepared in compliance with the requirements of the Act as amended in 2009 and includes the following analyses:

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

Since its passage in 1983, several amendments have been added to the Act. The most recent changes affecting the 2010 UWMP include Senate Bill 7 as part of the Seventh Extraordinary Session (SBx7-7) and SB 1087, Water and Sewer Service Priority for Housing Affordable to Low-Income Households. The Water Conservation Act of 2009 or SBx7-7, enacted in 2009, is the water conservation component of the historic Delta package. It stemmed from the Governor's goal to achieve a 20% statewide reduction in per capita water use by 2020 (20x2020). SBx7-7 requires each urban retail water supplier to develop urban water use targets to help meet the 20% goal by 2020 and an interim 10% goal by 2015. Each urban retail water supplier must include in its 2010 UWMP the following information from its target-setting process:

- Baseline daily per capita water use

- 2020 Urban water use target
- 2015 Interim water use target
- Compliance method being used along with calculation method and support data

Wholesale water suppliers are required to include an assessment of present and proposed future measures, programs, and policies that would help achieve the 20 by 2020 goal.

The other recent amendment made to the UWMP Act to be included in the 2010 UWMP is set forth by SB 1087. SB 1087 requires water and sewer providers to grant priority for service allocations to proposed developments that include low income housing. SB 1087 also requires UWMPs to include projected water use for single- and multi-family housing needed for low-income households.

The sections in this Plan correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of FMWD's water utility. The UWMP Checklist has been completed, which identifies the location of Act requirements in this Plan and is included as Appendix F.

1.2. Agency Overview

Incorporated on January 7, 1952, FMWD was formed by voters in the area to help meet the increasing water needs of a rapidly growing population following World War II. Because local well water supplies were limited, a supplemental water source was needed. A group of concerned community leaders determined that membership in Metropolitan was the solution to meeting these local water needs. On January 15, 1953, after receiving overwhelming local voter approval, FMWD officially joined Metropolitan, thus making available supplemental water from the Colorado River and, eventually, from the State Water Project.

During its early years of operation, FMWD supplied less than 20% of the water used within its boundaries. This reliance has increased over the years to the current average of about 60% reliance upon imported water¹. The most dominant feature of FMWD's operation is the intensive pumping required delivering water to the residents in the communities that are located in the foothills of the San Gabriel Mountains. In some cases, this water must be lifted 1,900 feet at a distance of up to ten miles in order to deliver it to the elevations required by water users.

¹ FMWD Local, Reliable Water Supply Program, Public Review Draft, November 16, 2009

FMWD has a 5-member Board of Directors that participate in the management of the Association. The current members of the Board of Directors are:

- Richard W. Atwater – President, Director Division 4
- Mel Matthews – Vice President, Director Division 2
- Robert J. Gomperz – Director Division 1
- La Drena D. Dansby – Director Division 3
- Dean V. Wiberg - Director Division 5

FMWD receives its water from one main source, the Metropolitan Water District of Southern California (Metropolitan).

1.3. Service Area and Facilities

1.3.1. FMWD's Service Area

FMWD's water supply system delivers imported water to supplement existing local groundwater supplies. The service area covers 21.66 square miles and includes a population of approximately 88,000 people. FMWD, as a water wholesaler, currently serves seven retailing agencies located in four communities, as indicated below.

Retail Agencies

Crescenta Valley Water District
La Cañada Irrigation District
Las Flores Water Company
Lincoln Avenue Water Company
Mesa Crest Water Company
Rubio Cañon Land & Water Association
Valley Water Company

Communities Served

La Crescenta, unincorporated area of Los Angeles County and some portions of the City of Glendale
La Cañada Flintridge, incorporated City
A small portion of Pasadena, incorporated City
Altadena, unincorporated area of Los Angeles County

An additional retail agency, the Kinneloa Irrigation District (Kinneloa), is located at the eastern end of FMWD's boundaries. Kinneloa is served by 100 percent local groundwater.

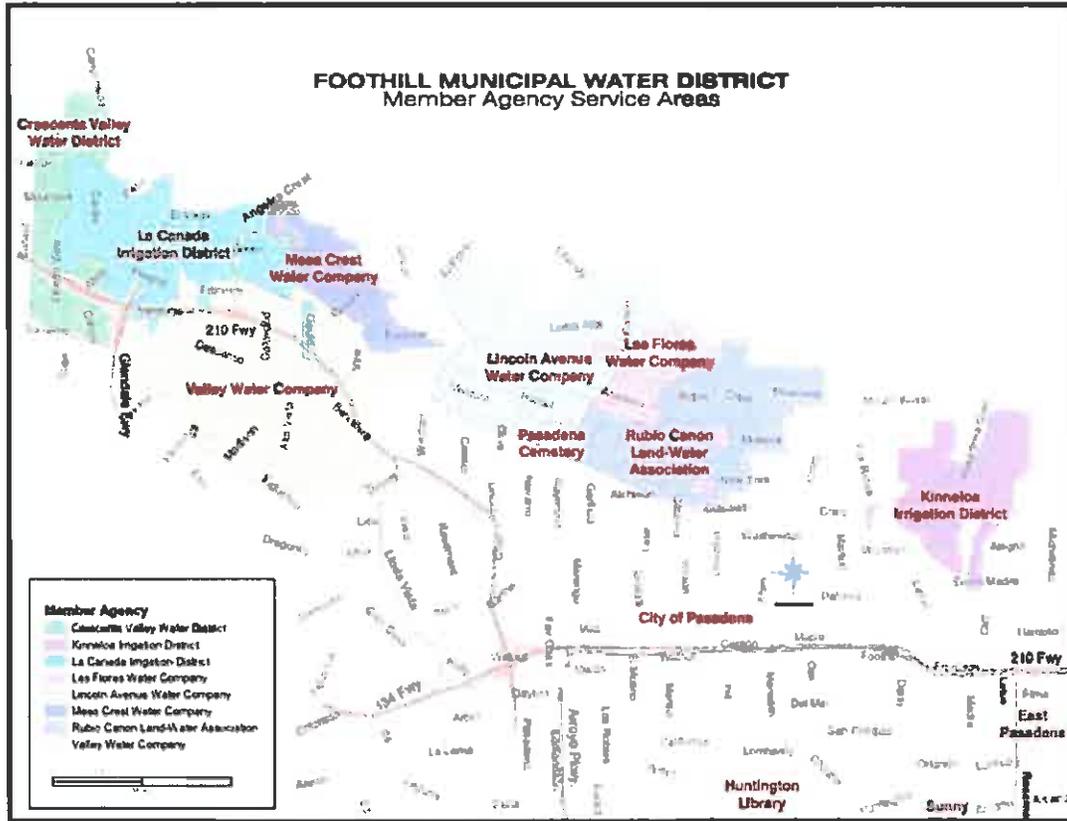


Figure 1-1: Foothill Municipal Water District Service Area Map

1.3.2. FMWD's Water Facilities

Metropolitan's Upper Feeder is tapped in the vicinity of Seco Street and Rosemont Avenue in Pasadena near the Rose Bowl. This treated water flows by gravity from Metropolitan's system through FMWD's 39-inch Arroyo Seco Gravity Main which traverses a northerly direction in the vicinity of Rosemont Avenue and terminates at the District's Main Pumping Station.

The Main Pumping Station consists of two banks of electrically driven vertical turbine pumps. The East bank of boosters pushes water into the Altadena Force Main leading to the Altadena Reservoir pressure zone; while the West propels water into the Westside Force Main leading to the La Cañada Reservoir pressure zone and, via the Berkshire Booster Station, into the La Crescenta Force Main and the La Crescenta pressure zone. In total, Foothill maintains approximately 10 miles of transmission water mains, ranging in size from 24" to 39".

The bank of pumps which supplies the 24-inch Altadena Force Main consists of five boosters, ranging in size from 100 to 350 HP, with a total capacity of 8.9 million gallons per day (MGD). Las Flores Water Company, Lincoln Avenue Water Company, and Rubio Cañon Land & Water Association are served by this system.

The bank of boosters which supplies the Westside Force Main consists of five pumps, ranging in size from 125 to 350 HP, with a total capacity of 14.6 MGD. Water is lifted through the 30-inch Westside Force Main to a junction with the 24-inch La Cañada Lateral and the Berkshire Booster Station Lateral. The La Cañada Lateral terminates at the La Cañada reservoirs. Water agencies served by this part of the system are the La Cañada Irrigation District, Mesa Crest Water Company, and Valley Water Company.

As a backup to the electrical service provided to this pump station by the Water and Power Department of the City of Pasadena, the District maintains two 500 kW portable diesel driven generators at this plant. The existing control system can no longer electrically synchronize the units and consequently, their output is limited to approximately 14.0 cfs.

The 1200 HP Berkshire Booster Station consists of four 300 HP electrically driven vertical turbine pumps with a total capacity of 10.0 MGD. Water is pumped by the Berkshire pumps through the 24-inch La Crescenta Force Main into the La Crescenta Reservoir pressure zone. Water agencies served by this part of the system are the Crescenta Valley Water District, La Cañada Irrigation District, and Valley Water Company.

As a backup to the electrical service provided by the Southern California Edison Company, the District maintains a 350kW portable diesel driven generator at this booster station which can provide enough power for up to 4 cfs of flows.

The system reservoir facilities consist of 6 storage tanks at 3 pressure zone locations with a total storage capacity of 6.8 million gallons.

2. Water Demand

2.1. Overview

FMWD is a wholesale provider of imported water to seven retail agencies in Los Angeles County. FMWD is currently dependent upon Metropolitan for 100% of its water supply. During the early years of operation, FMWD supplied less than 20% of the water used within its boundaries. This reliance has increased over the years to the current 60% of total demand. FMWD does not have groundwater supplies of its own. Most of its retail agencies have access to their own groundwater supplies. Therefore, about 60% of the demand in FMWD's service area is met through wholesale supplies purchased from Metropolitan, and the remaining 40% of demand is met through local groundwater production from the adjudicated Raymond and Verdugo Basins, runoff from local canyons and a small amount of recycled water.

The passage of SBx7-7 will increase efforts to reduce the use of potable supplies in the future. This new law requires all of California's retail urban water suppliers serving more than 3,000 AFY or 3,000 service connections to achieve a 20% reduction in potable water demands (from a historical baseline) by 2020. While FMWD, as a wholesaler, is not directly required to comply with the SBx7-7 water use targets, FMWD is required to provide an assessment of its present and proposed future measures, programs, and policies to help its service area achieve the water use reductions.

This section will explore in detail FMWD's current water demands by customer type and the factors which influence those demands as well as provide a perspective of its expected future water demands for the next 25 years. In addition, this section will provide a discussion of proposed programs which FMWD intends to implement to support the region's water demand reduction goals.

2.2. Factors Affecting Demand

Water consumption is influenced by many factors, from climate characteristics of that hydrologic region, to demographics, land use characteristics, and economics. The key factors affecting water demand in FMWD's service area are discussed below.

2.2.1. Climate Characteristics

FMWD has a Mediterranean-like climate. Summers are mild and dry but can also be very hot. Winters are cool, with an annual average of 22 inches of precipitation. The region is subject to wide variations in annual precipitation and is subject to wildfires from

time to time. Average annual evapotranspiration (ETo), temperatures, and rainfall are shown in Table 2-1.

Table 2-1: Climate Characteristics

	Standard Monthly Average ETo (inches) [2]	Annual Rainfall (inches) [1]	Average Temperature (°F) [1]
Jan	1.90	4.60	53.3
Feb	2.33	4.79	54.2
Mar	3.65	3.57	55.7
Apr	4.91	1.80	56.3
May	6.07	0.43	62.6
Jun	6.93	0.17	66.0
Jul	7.71	0.04	71.7
Aug	7.24	0.11	73.0
Sep	5.34	0.43	71.5
Oct	3.99	0.81	64.3
Nov	2.43	2.02	60.7
Dec	1.95	3.15	55.2
Annual	54.44	21.91	62.0

[1] Data provided by Western Regional Climate Center from station 040144 (Altadena). Average from 1922-2010.

[2] Average evapotranspiration is an average value taken from station #133 (Glendale) and station #159 (Monrovia) provided by CIMIS.

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

2.2.2. Demographics

Table 2-2 shows the existing and projected population total for FMWD from 2010 to 2035. This UWMP has included a projection for 2035, a five-year increment beyond the legislated 20-year planning horizon. These figures are derived from the U.S. Census Bureau in coordination with town councils and member agencies. This population is about 1% of Los Angeles County’s population. FMWD’s population is estimated to grow at a rate of approximately 0.5% per year. The area is basically fully developed.

Table 2-2: Population – Current and Projected

	2010	2015	2020	2025	2030	2035-opt
Service Area Population [1]	87,876	90,538	93,283	96,103	99,012	102,003

[1] Population provided by member retail agencies

2.2.3. Land Use

FMWD’s service area is approximately 90% residential. The area is almost fully developed, but in some areas of the communities, single-family homes are being replaced by multi-residential units.

FMWD’s service area is only 5% commercial and 5% institutional/government. Jet Propulsion Laboratory (JPL), which has its own water system supplied by the City of Pasadena, is a major employer within the service area.

2.3. Water Use by Customer Type

2.3.1. Overview

FMWD only provides wholesale water service to its member agencies and does not provide retail service. Water use by customer type (single-family, multi-family, commercial/industrial/institutional (CII), landscape, and agriculture) will be reported in the retail agencies’ 2010 UWMPs. The total system per capita water use averages approximately 240 gallons per day within the FMWD service area. Because of the predominance of residential property within FMWD service area and the larger-than-average residential lot sizes, district-wide, indoor water use is estimated to range between 30-40% of total residential use. It is projected to increase to 40% or more due to the construction of sewers in the area and smaller homes being replaced with larger homes or multi-unit dwellings on the same lot.

CII and dedicated landscape/recreational sectors in the FMWD service area represent only a combined 10% of total system use. Agricultural use in FMWD’s service area is insignificant.

2.3.2. Other Water Uses

In addition to Metropolitan water delivered to retail agencies, the only other regular additional water uses in the FMWD service area are normal system losses and recycled water for golf course irrigation.

The current recycled water use amounts to about 120 AFY and is used for irrigation at a golf course. Recycled water use is projected to increase to 1,400 AFY by 2020, phased in over time based on the construction of up to three membrane bioreactor plants. The phasing of the plants has yet to be determined. This figure is based on findings from a

draft facilities planning study. The study is currently being updated to incorporate leach fields for recharge with some scenarios and include associated capital costs. The development of this new recycled water would not be additional water use, but the substitution of recycled water for imported water.

Also, FMWD has placed into operation a new Conjunctive Use Program, namely, the Foothill Conjunctive Use Program (FHCUP). However, since that water is extracted from storage in-lieu of surface deliveries from Metropolitan, there is no additional water use. In other words, one source of water (previously delivered Metropolitan water stored in the groundwater basin) is substituted for another (Metropolitan direct deliveries).

FMWD retail agencies have also previously participated in Metropolitan’s groundwater replenishment program, in which water is stored via injection or in-lieu means in the basin for future use. Metropolitan offered this water at discount rates. Should Metropolitan offer this water at discount rates in the future, some FMWD agencies may continue to participate.

2.3.2.1. Sales to Other Agencies

Table 2-3 identifies FMWD’s member agencies and the quantity of past, current and projected water sales to each agency. All water delivered to the member agencies is metered. This water includes water used for groundwater recharge by the member agencies. Pertaining to SB 1087, projected water demands for single- and multi-family residential housing needed for low income households are included for 2015 and beyond in the total figures, since FMWD is a wholesale agency.

Table 2-3: FMWD Sales to Member Agencies (AFY)

Water Distributed	2010	2015	2020	2025	2030	2035-opt
Crescenta Valley Water District	1,724	1,705	1,881	2,101	2,293	2,532
Kinneloa Irrigation District	-	-	-	-	-	-
La Cañada Irrigation District	2,311	2,863	2,935	3,010	3,085	3,163
Las Flores Water Company	520	706	724	742	761	780
Lincoln Avenue Water Company	1,818	1,934	2,000	2,068	2,137	2,208
Mesa Crest Water Company	640	732	750	769	788	808
Rubio Cañon Land & Water Assoc	650	772	569	621	675	730
Valley Water Company	2,427	2,331	2,400	2,400	2,400	2,400
Total	10,090	11,043	11,259	11,711	12,139	12,621

2.3.2.2. Non-Revenue Water

As a wholesale agency, FMWD’s unaccounted for water (non-revenue water) is confined to normal system losses and timing of meter reading differences, whereby Metropolitan

meters measuring deliveries to FMWD and FMWD meters delivering to its member agencies are not exactly synchronized. This can be seen in the negative losses (theoretical gains) in Table 2-4 for 2005 and 2010. System losses from leakage have been substantially minimized and are insignificant. FMWD has an ongoing leak detection program within its distribution system.

Table 2-4: Additional Water Uses and Losses (AFY)

Water Use (AFY)	2005	2010	2015	2020	2025	2030	2035-opt
Saline Barriers	-	-	-	-	-	-	-
Groundwater Recharge	-	-	-	-	-	-	-
Conjunctive Use	-	-	-	-	-	-	-
Raw Water	-	-	-	-	-	-	-
Recycled Water ²	136	104	120	120	120	120	120
Unaccounted-for Losses ³	60	125	50	50	50	50	50
Total	196	229	170	170	170	170	170

2.4. SBx7-7 Requirements

2.4.1. Overview

SBx7-7, which became effective on February 3, 2010, is the water conservation component to the Delta legislative package. It seeks to implement Governor Schwarzenegger's 2008 future water use reduction goals to achieve a 20% statewide reduction in urban per capita water use by December 31, 2020. As discussed above, the bill requires each urban retail water supplier to develop urban water use targets to help meet the 20% goal by 2020 and an interim 10% goal by 2015. The bill establishes methods for urban retail water suppliers to determine their targets to help achieve statewide water reduction targets. The retail water supplier must select one of the four target-setting methods. The retail agency may choose to comply with SBx7-7 as an individual or as a region in collaboration with other water suppliers. Under the regional compliance option, the retail water supplier still has to report the water use target for its individual service area. The bill also includes reporting requirements in the 2010, 2015, and 2020 UWMPs. An agency that does not comply with SBx7-7 requirement will not be eligible for a water grant or loan from the state on and after July 16, 2016.

Wholesale water suppliers are required to include in their UWMPs discussions of programs they intend to implement to support water demand reduction goals. Although

² Please note that this supply is produced from Los Angeles County Sanitation Districts' plant and delivered to the Golf Course. FMWD and its retail agency have no ownership of this plant or water produced from it.

³ Please note that the positive number for unaccounted for losses is due to timing of metering readings.

wholesale water suppliers are not required to determine baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, programs that the wholesale supplier implements may support the retail water suppliers to attain their goals and targets.

2.4.2. SBx7-7 Compliance Options

DWR has established four compliance options for urban retail water suppliers to choose from. Each supplier is required to adopt one of the four options to comply with SBx7-7 requirements. The four options include:

- *Option 1* requires a simple 20% reduction from the baseline by 2020 and 10% by 2015.
- *Option 2* employs a budget-based approach by requiring an agency to achieve a performance standard based on three metrics:
 - Residential indoor water use of 55 GPCD
 - Landscape water use commiserate with a Model Landscape Ordinance
 - 10% reduction in baseline CII water use
- *Option 3* requires achievement of 95% of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan.
- *Option 4* is under development by DWR.

FMWD has seven retail agencies, four of which supply more than 3,000 AFY and have more than 3,000 connections, including Crescenta Valley Water District, Valley Water Company, Lincoln Avenue Water Company, and Rubio Cañon Land and Water Association. These four retail agencies have chosen to report and comply individually. The interim and final water use targets to meet the 20% reduction in per capita use by 2020, as well as the technical methodology chosen to calculate the targets, are described in each of the retail agency's 2010 UWMPs.

2.4.3. Water Use Reduction Plan On-going Water Conservation Efforts

Wholesale agencies are required to include in their UWMPs an assessment of present and proposed future measures, programs, and policies that would help achieve the water use reductions required under SBX7-7. FMWD works with its retail agencies to promote water use efficiency within its service area. FMWD's main role is to administer various conservation programs, including Metropolitan rebate programs for its retail agencies. Before conservation program budgets are approved by the FMWD's Board of Directors, they are vetted with the retail agencies. Because single residential homes are the largest water use sector in the FMWD service area, the focus of water conservation efforts have been and will continue to be residential rebate programs and public outreach programs. Single family residential homes with large landscapes are common in the FMWD area.

Therefore much of FMWD's conservation budget is used for outdoor conservation, such as turf replacement rebate. FMWD also offers landscaping contests, rain barrel rebate program, and public outreach, including Metropolitan's California Friendly Landscape Program, in its effort to promote landscape water use efficiency.

Through financial incentive programs and various public outreach campaigns and events led by FMWD, all four retail agencies that must comply with SBx7-7 are well on their way to achieving the legislative water use reduction targets. Water demands in 2008 and 2009 for two of the four retail agencies already meet the 2020 target under the third compliance option which is the achievement of 95% of the applicable state hydrologic region target as set forth in the state's draft 20x2020 Water Conservation Plan.

Furthermore, the development of recycled water will help agencies meet the 2020 target since new recycled water offsets a required reduction in use.

Future Metropolitan Programs

Metropolitan in collaboration with its member agencies, is in the process of developing a draft Long-Term Conservation Plan⁴ with the overarching goals to:

- Achieve the 2010 Integrated Water Resources Plan Update (IRP) conservation target – The target for new water savings through conservation is a regional per capita use of 159 gallons per day in 2015 and 141 gallons per day in 2020.
- Pursue innovation that will advance water conservation.
- Transform the public's value of water within this region – A higher value on water within this region can lead to a conservation ethic that results in permanent change in water use behavior, earlier adoption of new water-saving technologies, and transition towards climate-appropriate landscapes.

Achieving these goals requires the use of integrated strategies that leverage the opportunities within this region. It requires regional collaboration and sustained support for a comprehensive, multi-year program. It requires a commitment to pursue behavioral changes and innovation in technologies that evolve the market for water efficient devices and services. It requires strategic, focused implementation approaches that build from broad-based traditional programs. It requires that research be conducted to provide the basis for decisions. Lastly, it requires the support of local leaders to communicate a new value standard for water within this region. Metropolitan will implement the five strategies through both a traditional program and a market acceleration program. The five strategies include:

⁴ Metropolitan Water District of Southern California Long Term Conservation Plan Working Draft Version 6 (November 30, 2010)

- **Use catalysts for market transformation.** Metropolitan will pursue market transformation to affect the market and consumer choices for water efficient devices and services.
- **Encourage action through outreach and education.** Metropolitan will provide outreach, educational workshops, and training classes through a range of media and formats which are essential to changing public perceptions of the value of water.
- **Develop regional technical capability.** Metropolitan will conduct research, facilitate information sharing, and/or provide technical assistance to member agencies and retail agencies to develop technical capabilities within the region for water budgeting, advanced metering infrastructure, ordinances, retail rate structures, and other conservation measures.
- **Build strategic alliances.** Metropolitan will form strategic alliances with partners to leverage resources, opportunities and existing momentum that support market transformation.
- **Advance water efficiency standards.** Metropolitan will work to advance water efficiency codes and standards to increase efficiency and reduce water waste.

Successful market transformation requires the integrated use of all five strategies. It is implemented through two complementary programs: traditional and market acceleration programs. When used together, these approaches can be catalytic and transform markets.

Traditional Program: A traditional program of incentives, outreach, education, and training will be used to provide a foundation of water savings, establish baseline conditions, provide market data, and help determine devices and services that are primed for market acceleration. Implementation may include regional incentive programs, pilot programs, regional outreach, and research for a variety of devices and services.

Market Acceleration Program: A portion of Metropolitan's resources will be used for market acceleration of devices and services that have potential for market change. Metropolitan will use a strategic focus for a specified time period to affect the market for a particular device or service. Tactics may include strategic outreach to manufacturers, retailers, contractors, and consumers; enhanced incentives; and collaboration on implementation.

2.5. Demand Projections

2.5.1. 25 Year Projections

FMWD demand projections shown in Table 2-5 are based on projections furnished by each of FMWD's retail agencies. SBx7-7 requirements are also taken into account in the values. The growth projection for population is also 0.5% per year. FMWD is in a built-out area, accounting for the low growth projections.

Table 2-5: FMWD's Demand Projections Provided To Wholesale Suppliers (AFY)

Wholesales	2015	2020	2025	2030	2035-opt
Metropolitan	11,043	11,259	11,711	12,139	12,621

2.5.2. Low Income Household Projections

One significant change to the UWMP Act since 2005 is the requirement that retail water suppliers develop water use projections for “low-income” households at the single-family and multifamily level. These projections assist retail suppliers with compliance with Section 65589.7 of the Government Code, which requires suppliers to grant a priority for the provision of service to low income households. Consistent with this Code section, a low-income household is defined as a household earning 80% of the County of Los Angeles’ median income or less.

FMWD as a wholesale supplier is not subjected to these requirements. Water use projections for “low-income” households for FMWD service area were established at the retail level. As recommended by DWR, FMWD’s retail agencies relied on the Regional Housing Needs Assessment (RHNA) or Regional Housing Needs Plan information developed by the local council of governments (COG), in coordination with the California Department of Housing and Community Development to identify the low-income housing projections within its service area.

The RHNA process quantifies the need for housing by income group within each jurisdiction during specific planning period and is used in Housing Element and General Plan updates. COGs are required by the State Housing Law to determine the existing and projected regional housing needs for persons at all income levels. The RHNA is to prioritize local resource allocation and to help decide how to address existing and future housing needs.

Existing and projected housing needs for Los Angeles County were incorporated into the Southern California Association of Governments’ (SCAG) 2007 Final Regional Housing Need Allocation Plan (2007 RHNA Plan)⁵. This plan covers the planning period January 1, 2006 to June 30, 2014. The next RHNA process is not expected to be completed until fall of 2012; therefore, the 2007 RHNA Plan was used for the purpose of this 2010 UWMP. Water use projections for low-income households within the FMWD service area can be found in Section 2.5.2 of FMWD’s retail agencies’ 2010 UWMPs.

⁵ Southern California Association Governments, Final Regional Housing Need Allocation Plan for Jurisdictions within the Six County SCAG Region (July 2007)

3. Water Sources and Supply Reliability

3.1. Overview

FMWD is currently dependent upon Metropolitan for 100% of its water supply. During the early years of operation, FMWD supplied less than 20% of the water used within its boundaries. This reliance has increased over the years to the current 60% of total demand. FMWD does not have groundwater supplies of its own. Most of its sub-agencies have access to their own groundwater supplies. Therefore, about 60% of the demand in FMWD's service area is met through wholesale supplies purchased from Metropolitan, and the remaining 40% of demand is met mostly from local groundwater production. There is also canyon runoff and recycled water that makes up a small percentage of local supplies. The most dominant feature of FMWD's operation is the intensive pumping required for delivering water to the residents in the communities located in the foothills of the San Gabriel Mountains. In some cases, this water must be lifted 1,900 feet over a distance of ten miles in order to deliver it to the elevations required by water users.

FMWD works together with Metropolitan to ensure a safe and high quality water supply, which will continue to serve the community in periods of drought and shortage. The sources of imported water supplies include the Colorado River and the State Water Project (SWP). Metropolitan's 2010 Integrated Water Resources Plan (IRP) update describes the core water resource strategy that will be used to meet full-service demands (non-interruptible agricultural and replenishment supplies) at the retail level under all foreseeable hydrologic conditions from 2015 through 2035.

Table 3-1 reflects FMWD current and projected water supplies under normal conditions. Note that FMWD's member agencies' water supplies are not included in the table. FMWD only purchases water from Metropolitan and delivers it to its member agencies. It does not have groundwater rights and does not produce groundwater, capture surface water, or produce recycled water.

Table 3-1: Current and Projected Water Supplies (AFY)

Water Supply Sources	2010	2015	2020	2025	2030	2035-opt
Purchased Imported Water from Metropolitan:	10,090	11,043	11,259	11,711	12,139	12,621
Direct Use	10,090	11,043	11,259	11,711	12,139	12,621
Groundwater Recharge	-	-	-	-	-	-
Desalination	-	-	-	-	-	-
Water Transfers	-	-	-	-	-	-
Water Exchanges	-	-	-	-	-	-
Recycled Water ⁶ :	104	120	120	120	120	120
Direct Use	104	120	120	120	120	120
Indirect Use	-	-	-	-	-	-
Total	10,194	11,163	11,379	11,831	12,259	12,741

3.2. Imported Water

The annual amount of water purchased from Metropolitan has averaged 11,308⁷ AF over the past five years (FY 2005-2006 to 2009-2010), including approximately 900 AF purchased for replenishment purposes. In previous years, FMWD was able to purchase water at discounted rates for replenishment purposes. That discounted water has not been available since spring 2007 due to reduced supplies based on dry hydrology and a federal decision reducing pumping in the Delta.

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

In 2009, FMWD received an average blend of 75% Colorado River water and 25% State Project water treated at Metropolitan’s Weymouth Treatment Plant⁸.

⁶ The quantities in the table are supplies produced from the LACSD Plant 28. FMWD has no ownership of that plant or water supplies produced from that plant. FMWD is currently conducting a recycled water facilities planning study. Future quantities of water produced are not known at this time. Study scheduled to be completed February 2012.

⁷ Source: Foothill MWD 5-Year MWD purchases.xls.

⁸ Metropolitan Annual Drinking Water Quality Report 2010

3.2.1. Metropolitan's 2010 Regional Urban Water Management Plan

Metropolitan's 2010 Regional Urban Water Management Plan (RUWMP) reports on its water reliability and identifies projected supplies to meet the long-term demand within its service area. It presents Metropolitan's supply capacities from 2015 through 2035 under the three hydrologic conditions specified in the Act: single dry-year, multiple dry-years, and average year.

Colorado River Supplies

Colorado River Aqueduct (CRA) supplies include supplies that would result from existing and committed programs and from implementation of the Quantification Settlement Agreement (QSA) and related agreements to transfer water from agricultural agencies to urban uses. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis.

State Water Project Supplies

Metropolitan's State Water Project (SWP) supplies have been impacted in recent years by restrictions on SWP operations in accordance with the biological opinions of the U.S. Fish and Wildlife Service and National Marine Fishery Service issued on December 15, 2008 and June 4, 2009, respectively. In dry, below-normal conditions, Metropolitan has increased the supplies received from the California Aqueduct by developing flexible Central Valley/SWP storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the available Banks pumping capacity to maximize deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions.

In June 2007, Metropolitan's Board approved a Delta Action Plan that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. The Delta Action Plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected and mid-term steps to maintain the Bay-Delta while the long-term solution is implemented.

State and federal resource agencies and various environmental and water user entities are currently engaged in the development of the Bay Delta Conservation Plan (BDCP), which is aimed at addressing the basic elements that include the Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development. In evaluating the supply capabilities for the 2010 RUWMP, Metropolitan assumed a new Delta conveyance is fully operational by 2022 that would return supply reliability similar to the 2005 condition, prior to supply restrictions imposed due to the Biological Opinions.

Storage

Storage is a major component of Metropolitan's dry year resource management strategy. Metropolitan's likelihood of having adequate supply capability to meet projected demands without implementing its Water Supply Allocation Plan (WSAP) is dependent on its storage resources. In developing the supply capabilities for the 2010 RUWMP, Metropolitan assumed a simulated median storage level going into each of five-year increments based on the balances of supplies and demands.

Supply Reliability

Metropolitan evaluated supply reliability by projecting supply and demand conditions for the single- and multi-year drought cases based on conditions affecting the SWP (Metropolitan's largest and most variable supply). For this supply source, the single driest-year was 1977, and the three-year dry period was 1990-1992. Metropolitan's analyses are illustrated in Tables 3-2, 3-3, and 3-4, which correspond to Metropolitan's 2010 RUWMP's Tables 2-11, 2-9 and 2-10, respectively. These tables show that the region can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year hydrologies.

Table 3-2: Metropolitan Average Year Projected Supply Capability and Demands for 2015 to 2035

**Average Year
Supply Capability¹ and Projected Demands
Average of 1922-2004 Hydrologies
(acre-feet per year)**

Forecast Year	2015	2020	2025	2030	2035
Current Programs					
In-Region Storage and Programs	685,000	931,000	1,076,000	964,000	830,000
California Aqueduct ²	1,550,000	1,629,000	1,763,000	1,733,000	1,734,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	1,507,000	1,529,000	1,472,000	1,432,000	1,429,000
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Capability of Current Programs	3,485,000	3,810,000	4,089,000	3,947,000	3,814,000
Demands					
Firm Demands of Metropolitan	1,826,000	1,660,000	1,705,000	1,769,000	1,826,000
IID-SDCWA Transfers and Canal Linings	180,000	273,000	280,000	280,000	280,000
Total Demands on Metropolitan⁵	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
Surplus	1,479,000	1,877,000	2,104,000	1,898,000	1,708,000
Programs Under Development					
In-Region Storage and Programs	206,000	306,000	336,000	336,000	336,000
California Aqueduct	382,000	383,000	715,000	715,000	715,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	187,000	187,000	187,000	182,000	182,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	588,000	689,000	1,051,000	1,051,000	1,051,000
Potential Surplus	2,067,000	2,566,000	3,155,000	2,949,000	2,759,000

¹ Represents Supply Capability for resource programs under listed year type.

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

³ Colorado River Aqueduct includes water management programs, IID-SDCWA transfers and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings.

⁵ Firm demands are adjusted to include IID-SDCWA transfers and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

Table 3-3: Metropolitan Single-Dry Year Projected Supply Capability and Demands for 2015 to 2035

**Single Dry-Year
Supply Capability¹ and Projected Demands
Repeat of 1977 Hydrology
(acre-feet per year)**

Forecast Year	2015	2020	2025	2030	2035
Current Programs					
In-Region Storage and Programs	685,000	931,000	1,076,000	964,000	830,000
California Aqueduct ²	522,000	601,000	651,000	609,000	610,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	1,416,000	1,824,000	1,669,000	1,419,000	1,419,000
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Capability of Current Programs	2,457,000	2,782,000	2,977,000	2,823,000	2,690,000
Demands					
Firm Demands of Metropolitan IID-SDCWA Transfers and Canal Linings	1,991,000	1,889,000	1,921,000	1,974,000	2,039,000
	180,000	273,000	280,000	280,000	280,000
Total Demands on Metropolitan⁵	2,171,000	2,162,000	2,201,000	2,254,000	2,319,000
Surplus	286,000	620,000	776,000	569,000	371,000
Programs Under Development					
In-Region Storage and Programs	206,000	306,000	336,000	336,000	336,000
California Aqueduct	556,000	556,000	700,000	700,000	700,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	187,000	187,000	187,000	182,000	182,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	762,000	862,000	1,036,000	1,036,000	1,036,000
Potential Surplus	1,048,000	1,482,000	1,812,000	1,605,000	1,407,000

¹ Represents Supply Capability for resource programs under listed year type

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

³ Colorado River Aqueduct includes water management programs, IID-SDCWA transfers and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings

⁵ Firm demands are adjusted to include IID-SDCWA transfers and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting

Table 3-4: Metropolitan Multiple-Dry Year Projected Supply Capability and Demands for 2015 to 2035

**Multiple Dry-Year
Supply Capability¹ and Projected Demands
Repeat of 1990-1992 Hydrology
(acre-feet per year)**

Forecast Year	2015	2020	2025	2030	2035
Current Programs					
In-Region Storage and Programs	246,000	373,000	435,000	398,000	353,000
California Aqueduct ²	752,000	794,000	835,000	811,000	812,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	1,318,000	1,600,000	1,417,000	1,416,000	1,416,000
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Capability of Current Programs	2,248,000	2,417,000	2,520,000	2,459,000	2,415,000
Demands					
Firm Demands of Metropolitan	2,056,000	1,947,000	2,003,000	2,059,000	2,119,000
IID-SDCWA Transfers and Canal Linings	180,000	241,000	280,000	280,000	280,000
Total Demands on Metropolitan⁵	2,236,000	2,188,000	2,283,000	2,339,000	2,399,000
Surplus	12,000	229,000	237,000	120,000	16,000
Programs Under Development					
In-Region Storage and Programs	162,000	280,000	314,000	336,000	336,000
California Aqueduct	242,000	273,000	419,000	419,000	419,000
Colorado River Aqueduct					
Colorado River Aqueduct Supply ³	187,000	187,000	187,000	182,000	182,000
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	404,000	553,000	733,000	755,000	755,000
Potential Surplus	416,000	782,000	970,000	875,000	771,000

¹ Represents Supply Capability for resource programs under listed year type.

² California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct

³ Colorado River Aqueduct includes water management programs, IID-SDCWA transfers and canal linings conveyed by the aqueduct.

⁴ Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings.

⁵ Firm demands are adjusted to include IID-SDCWA transfers and canal linings. These supplies are calculated as local supply, but need to be shown for the purposes of CRA capacity limit calculations without double counting.

3.2.2. FMWD’s Imported Water Supply Projections

Metropolitan is FMWD’s sole wholesale supplier of water. Table 3-5 reflects Metropolitan’s average year supplies in five-year increments starting with 2015 and ending in 2035. The bottom section shows supplies under development by Metropolitan and potential surplus supplies. It also shows average year demands in five-year increments starting with 2015 and ending in 2035.

Table 3-5: Wholesaler Identified & Quantified Existing and Planned Sources of Water (AFY)

Wholesaler Sources	2015	2020	2025	2030	2035-opt
Metropolitan	11,043	11,259	11,711	12,139	12,621

3.3. Groundwater

FMWD, as a wholesale agency, does not pump nor are they projected to pump groundwater for future use. FMWD’s member agencies produce groundwater to meet demands from two groundwater basins in the service area: Raymond and Verdugo.

The Raymond Basin underlies much of the Foothill area. Three of FMWD’s Altadena agencies, two of its La Cañada Flintridge agencies, and one agency in unincorporated Los Angeles County produce groundwater from the Raymond Basin. Crescenta Valley Water District (CVWD) produces groundwater from the Verdugo Basin.

The majority of the groundwater yield comes from natural recharge. Natural recharge of the groundwater basins is accomplished through the natural percolation of rainfall and stream flow from surface runoff within the watershed. In addition in the Raymond Basin, surface runoff from certain areas is captured and released into spreading basins for additional percolation into the groundwater basin. The Los Angeles County Department of Public Works and the Pasadena Water and Power Water Services Division operate these recharge facilities. A portion of the water that would otherwise flow into the Pacific Ocean is allowed to percolate into the underlying aquifers and is later pumped for local use. The Raymond Basin is also recharged with imported supplies by injection. The groundwater basin can be used as a large underground storage reservoir. The basin can provide storage of surplus surface water (local and imported) in wet years. The supplies then can be withdrawn in dry years or during emergency outages of the imported water system.

Artificial recharge of captured surface water has never occurred and does not currently occur in Verdugo Basin. The Verdugo Basin has very little storage capacity and the two agencies with pumping rights in the Basin must use those rights each year since there is no ability to carry it forward.

FMWD is also participating in a Conjunctive Use Program with Metropolitan. The program allows for additional supplies from Metropolitan to be stored by FMWD's member agencies in the Raymond Basin. During periods of shortage, Metropolitan may ask for production of this water instead of providing direct deliveries. From 2007 to 2010, member agencies withdrew water out of underground storage accounts to meet part of their needs from Metropolitan.

3.4. Recycled Water

In response to the potentially limited future supply of imported water and the relative cost of imported water, FMWD has developed a Local, Reliable Water Supply Program to improve long-term water supply reliability to its service area, including development of a recycled water program. FMWD's Water Recycling Facilities Planning Study Report is being prepared to evaluate the feasibility of using recycled water to offset the use of imported water. A more detailed description of this study can be found in Section 6.

3.5. Supply Reliability

3.5.1. Overview

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years. FMWD depends on a combination of imported supplies and its retail agencies local supplies so that water demands in its service area are met.

Imported Water Reliability

Metropolitan is participating in the development of groundwater, groundwater recovery, recycled water systems, desalination opportunities, and collection of urban return flows to augment the reliability of the imported water system. There are various factors that may impact reliability of supplies, such as legal, environmental, water quality and climatic, which are discussed below. The water supplies are projected to meet full-service demands; Metropolitan's 2010 RUWMP finds that Metropolitan is able to meet with existing supplies full service demands of its member agencies starting in 2015 through 2035 during normal years, single dry year, and multiple dry years.

Metropolitan's 2010 Integrated Water Resources Plan (IRP) update describes the core water resource strategy that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2015 through 2035. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources, such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region

groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements. FMWD is reliant on Metropolitan for all of its imported water. With the addition of planned supplies under development, Metropolitan’s 2010 RUWMP finds that Metropolitan will be able to meet full-service demands from 2015 through 2035, even under a repeat of the worst drought. Table 3-6 shows the reliability of the wholesaler’s supply for single dry year and multiple dry year scenarios.

Table 3-6: Wholesaler Supply Reliability - % of Normal AFY

Wholesaler Sources	Single Dry	Multiple Dry Water Years		
		Year 1	Year 2	Year 3
Metropolitan	100%	100%	100%	100%

In addition to meeting full-service demands from 2015 through 2035, Metropolitan projects reserve and replenishment supplies to refill system storage. Table 3-7 shows the basis of water year data used to predict Metropolitan’s drought supply availability.

Table 3-7: Basis of Water Year Data

Water Year Type	Base Year	Base Year	Base Year
Normal Water Year	Average 1922-2004		
Single-Dry Water Year	1977		
Multiple-Dry Water Years	1990	1991	1992

3.5.2. Factors Impacting Reliability

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

Environment – Endangered species protection needs in the Sacramento-San Joaquin River Delta have resulted in operational constraints to the SWP system. The Bay-Delta’s declining ecosystem caused by agricultural runoff, operation of water pumps and other factors has led to historical restrictions in SWP supply deliveries. SWP delivery restrictions due to the biological opinions resulted in the loss of about one-third of the available SWP supplies in 2008.

Legal – Listings of additional species under the Endangered Species Act and new regulatory requirements could further impact SWP operations by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations. Additionally, the Quantification Settlement

Agreement has been challenged in courts and may have impacts on the Imperial Irrigation District and San Diego County Water Authority transfer. If there are negative impacts, San Diego could become more dependent on the Metropolitan supplies.

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

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

Legal, environmental, and water quality issues may have impacts on Metropolitan supplies. It is felt, however, that climatic factors would have more of an impact than the others. Climatic conditions have been projected based on historical patterns; however severe pattern changes may occur in the future. Table 3-8 shows the factors which may affect inconsistency of supply.

Table 3-8: Factors Which May Affect Inconsistency of Supply

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

These and other factors are addressed in greater detail in Metropolitan’s 2010 RUWMP.

3.5.2.1. Water Quality

FMWD takes delivery of its entire water supply at an existing single connection along the Metropolitan Upper Feeder. Metropolitan treats the water provided to FMWD at the F.E. Weymouth treatment plant located in La Verne, CA. The F.E. Weymouth filtration plant is a conventional treatment plant with a capacity of 520 MGD.

The FMWD distribution system consists of approximately 10 miles of transmission mains and six storage tanks located in 3 pressure zones.

Metropolitan is responsible for providing FMWD with water that meets all drinking water regulations contained in California’s Title 22 and federal regulations contained in

the Code of Federal Regulations, Volume 40, Section 141. FMWD does not provide any additional treatment prior to delivery of water to its customers.

No changes to water supply due to water quality are expected through 2035.

Metropolitan's supplies originate from the Colorado River Aqueduct (CRA) and from the State Water Project (SWP). Both supplies are generally of high quality. However, both supplies face water quality challenges, as described below. In the RUWMP prepared by Metropolitan, the agency does not believe, however, that any of the water quality challenges described below will impact the reliability of its supplies during the next 25 years.⁹

Salinity

Colorado River Aqueduct - Water imported from the Colorado River Aqueduct (CRA) has been recorded as containing the highest level of salinity of all of Metropolitan's sources of supply, averaging around 630 mg/L since 1976. To address the Colorado River's salinity, the federal and state governments have taken various measures. The federal government issued the Colorado River Basin Salinity Control Act in 1974, and seven basin states have collaborated to form the Colorado River Basin Salinity Control Forum. Moreover, in 1975, the U. S. Environmental Protection Agency (USEPA) approved a plan for controlling salinity as well as numeric water quality standards. Currently, the only constraint that Metropolitan foresees in its using the Colorado River water is the need to blend CRA supplies with State Water Project supplies to meet a target salinity standard of 500 mg/L.

State Water Project - State Water Project (SWP) supplies have significantly lower TDS concentrations when compared to the Colorado River, averaging approximately 250 mg/L in water supplied through the East Branch and 325 mg/L on the West Branch. Because of SWP's lower salinity level, Metropolitan blends SWP water with CRA to reduce the salinity of the delivered water. Metropolitan has set a salinity objective for delivered water in its Salinity Management Policy of less than of 500 mg/L of TDS. Metropolitan has estimated that this objective could be met in seven out of ten years. However, in the other three years, hydrologic conditions could result in increased salinity and reduced volume of SWP supplies.

Perchlorate

Perchlorate is a contaminant of concern for the Colorado River water supply. Perchlorate compounds easily dissolve in water and have been found to adversely affect the human

⁹ The information in this section is referenced from the Metropolitan Water District of Southern California 2010 Regional Urban Water Management Plan Draft "Water Quality" section (pages 4-1 through 4-18).

thyroid gland. The perchlorate ion does not readily degrade in the environment. Moreover, the conventional drinking water treatment that Metropolitan's plants provide does not effectively remove perchlorate.

In June 1997, the first perchlorate contaminants were detected in the Colorado River and sourced to a chemical manufacturing facility in Henderson, Nevada. As a result of perchlorate detection in the CRA supply, Metropolitan, USEPA, and Nevada agencies, including Nevada Division of Environmental Protection, worked together to successfully treat and decrease the sources of perchlorate loading. In October 2007, the California Department of Public Health's (CDPH's) primary drinking water standard for perchlorate with an MCL of 6 µg/L became effective. Recent Colorado River levels of perchlorate recorded at Lake Havasu have been sufficiently lower than the State standard. OEHHA in December 2010 released a draft of a public health goal of 0.01 µg/L for perchlorate in drinking water. Since October 2002, levels have been less than 6 µg/L, and, since June 2006, they have been typically less than 2 µg/L. Since monitoring began in 1997, no perchlorate has been identified in the SWP water source.

Disinfection Byproducts Formed by Reacting with Total Organic Carbon and Bromide

Disinfection byproducts (DBPs) are contaminants affecting State Water Project supplies. When source water containing high levels of total organic carbon (TOC) and bromide is treated with disinfectants, such as chlorine, disinfection byproducts form. These DBPs have been linked with causing adverse health effects, including certain cancers.

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

Metropolitan has taken several steps to decrease DBP presence in SWP water supplies. In 2003 and 2005, Metropolitan completed upgrading two of its water treatment plants, Mills and Jensen, to utilize ozone as the primary disinfectant, preventing the formation of DBPs that would normally form in chlorine treatment of SWP water. The Skinner water treatment plant's ozone disinfection upgrade was completed by mid-2010. In addition to upgrading its treatment plants, Metropolitan has been blending the SWP water with the Colorado River water in order to sufficiently meet the federal guidelines for the disinfection byproducts.

Nutrients

Phosphorus has been labeled the limiting nutrient in both SWP and Colorado River supplies. As the limiting nutrient, phosphorus can stimulate algal and aquatic weed growth when added to the water supply, affecting the taste and odor toxins as well as impeding the flow of water. SWP supplies have significantly higher nutrient levels than Colorado River water supplies. Therefore, Metropolitan blends the Colorado River and SWP supplies in order to lower the overall nutrient level of the delivered water. Metropolitan does not foresee nutrient loading as an impact on availability of water supply in the future.

Arsenic

Since 2006, the MCL for arsenic in domestic water supplies has been 10 µg/L, according to federal regulations. Metropolitan's water supplies are significantly lower than this standard. The Colorado River water supply has contained arsenic levels ranging from undetected levels to 3.5 µg/L, and State Water Project water levels have ranged from undetected levels to 4.0 µg/L. In April 2004, the California Office of Environmental Health Hazard Assessment set a public health goal for arsenic of 0.004 µg/L.

Uranium

A sixteen million ton pile of uranium mine tailings located near Moab, Utah, 750 feet from the river has in recent years posed a threat to the water quality of the Colorado River. In the event of a catastrophic flood or other natural disaster, much of these uranium tailings could be washed into the Colorado River. Also, the tailings have been contaminating groundwater from the mine site, and this groundwater has been seeping into the river. However, the uranium measurements in the Colorado River at Metropolitan's intake range from 1 to 6 pCi/L, which is significantly less than the 20 pCi/L that is standardized by California's MCL.

Current operations and maintenance activities at the mine site include the Department of Energy's removal of the uranium tailings from the pile and groundwater and transfer of the tailings to a disposal cell at Crescent Junction, Utah, located approximately 30 miles northwest of the Moab site. This transfer of the uranium tailings to the disposal cell began in April 2009, and, by September 2011, DOE projects that it will have removed a total of 3 million tons of the tailings. DOE estimates completing movement of the tailings pile by 2025, with a goal of 2019, should additional funding be secured.

Chromium VI

Chromium VI is a potential drinking water contaminant of concern. Hexavalent chromium is used in electroplating stainless steel production, tanning leather,

manufacturing textiles, manufacturing dyes and pigments, and preserving wood as an anti-corrosion agent. Chromium VI is a health hazard to humans, causing cancer when inhaled; however, the health effects of ingested Chromium VI are currently being determined. At this time, no drinking water standards for chromium VI exist; however, California regulates the total chromium (including chromium III and chromium VI) in drinking water as an MCL of 50 µg/L. OEHHA released a draft of a public health goal in December 2010 of 0.02 µg/L for chromium VI in drinking water. Over the past ten years, the Colorado River water supply has contained levels of chromium VI that are mainly <0.03 µg/L but also ranging from 0.03 – 0.08 µg/L. SWP's water supply has contained levels ranging from 0.03 – 0.08 µg/L.

N-Nitrosodimethylamine

N-Nitrosodimethylamine (NDMA) is an emerging contaminant of drinking water. NDMA forms as a disinfection byproduct when source waters containing certain organic material mix with chloramines at treatment plants. USEPA and CDPH consider NDMA to be a probable human carcinogen; however, neither has yet established an MCL. Since 1998, CDPH has kept a notification level of 0.01 µg/L. Also, in December 2006, OEHHA set a public health goal for NDMA of 0.003 µg/L. Since 1999, Metropolitan has monitored its source waters for NDMA contaminants, and the presence of NDMA has ranged from non-detect to 0.014 µg/L.

Pharmaceuticals and Personal Care Products

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

Methyl Tertiary-Butyl Ether

Prior to December 2003, Methyl Tertiary Butyl Ether (MTBE) was the primary gasoline oxygenate. MTBE was banned in California after it was discovered to have contaminated groundwater as well as surface water supplies. At Metropolitan's surface water bodies, Diamond Valley Lake and Lake Skinner, the motor exhaust of gasoline-powered watercrafts was observed contaminating the water. However, since 2003, MTBE has been replaced by ethanol, and the boats used at Metropolitan's surface water bodies are now required to use MTBE-free fuel and operate clean-burning engines. Metropolitan has in recent years been testing its source waters for oxygenates, and the results have remained below 3 µg/L. While surface water supplies are no longer significantly affected by MTBE, groundwater supplies continue to face the impacts of MTBE contamination.

3.5.2.2. Water Quality Impacts

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

Table 3-9 shows the projected volumetric impact in acre-feet per year that water quality constituents will have on Metropolitan’s supply.

Table 3-9: Water Quality – Current and Projected Water Supply Impacts (AFY)

Water Source	2010	2015	2020	2025	2030	2035-opt
Imported	0	0	0	0	0	0

3.5.3. Normal-Year Reliability Comparison

FMWD has no entitlements and/or written contracts to receive imported water from Metropolitan via the regional distribution system. The relationship between Metropolitan and all of its agencies is based through Metropolitan’s Act and Administrative Code as “service on demand” from its agencies. Although pipeline capacity rights do not guarantee the availability of water, per se, they do guarantee the ability to convey water when it is available to the Metropolitan distribution system. FMWD requests a certain amount of water which is then delivered by Metropolitan. Metropolitan cannot deny the request. Rather, Metropolitan’s operators work with FMWD’s operators on the timing of the deliveries. The amount can vary from day-to-day, year-to-year based on what the demands are from FMWD’s retail agencies. Those demands can be impacted by weather, local supplies, the economy, population growth in the service area and other variables.

All imported water supplies assumed in this section are available to FMWD from existing water transmission facilities. Table 3-10 shows supply and demand under normal year conditions. More water supplies are projected to be available from Metropolitan;

however, it is not shown in the table since FMWD would not take supplies more than demands.

Table 3-10: Projected Normal Water Supply and Demand¹⁰ (AFY)

	2015	2020	2025	2030	2035
Total Demand	11,163	11,379	11,831	12,259	12,741
Total Supply	11,163	11,379	11,831	12,259	12,741

3.5.4. Single Dry-Year Reliability Comparison

FMWD has documented that its supplies are 100% reliable for single dry year demands from 2015 through 2035 with a demand increase of 10.4% using FY 2006-07 as the single dry-year. Table 3-11 compiles supply and demand projections for a single dry water year. The available imported supply is greater than shown; however, the surplus is not included because all demands are met.

Table 3-11: Projected Single-Dry Year Water Supply and Demand (AFY)

	2015	2020	2025	2030	2035
Total Demand	12,324	12,562	13,061	13,534	14,066
Total Supply	12,324	12,562	13,061	13,534	14,066

3.5.5. Multiple Dry-Year Reliability Comparison

FMWD is capable of providing their customers sufficient water to meet all their demands with significant reserves in multiple dry years from 2015 through 2035 with a demand increase of 10.4% using FY 1998-99 as the first multiple dry-year, 8.3% using FY 1999-00 as the second multiple dry-year, and 0% using FY 2000-01 as the third multiple dry-year. These percentages are based on a recent multiple dry-year scenario and is true even if the demand projections were to be increased by a large margin. Table 3-12 shows supply and demand projections under multiple dry year conditions.

Table 3-12: Projected Multiple Dry Year Period Supply and Demand (AFY)

		2015	2020	2025	2030	2035
First Year Supply	Total Demand	12,324	12,562	13,061	13,534	14,066
	Total Supply	12,324	12,562	13,061	13,534	14,066
Second Year Supply	Total Demand	12,090	12,323	12,813	13,276	13,799
	Total Supply	12,090	12,323	12,813	13,276	13,799
Third Year Supply	Total Demand	11,163	11,379	11,831	12,259	12,741
	Total Supply	11,163	11,379	11,831	12,259	12,741

¹⁰ Table 3-1 provides a more detailed breakdown of these numbers.

4. Demand Management Measures

4.1. Overview

FMWD recognizes the importance of water conservation and has made water use efficiency an integral part of water use planning. FMWD has been a signatory to the California Urban Water Conservation Council's (CUWCC) Best Management Practices (BMPs) Memorandum of Understanding (MOU) since inception. DMMs, as defined by the Act, correspond to the CUWCC's BMPs. FMWD is currently implementing all applicable DMMs described in the Act.

This section of the UWMP satisfies the requirements of § 10631 (f) & (j). It describes how each DMM is being implemented by FMWD and how FMWD evaluates the effectiveness of the DMMs implemented. This section also provides an estimate of existing conservation savings where information is available.

4.2. Water Use Efficiency Programs

As Signatory to the CUWCC MOU, FMWD has committed to use good-faith efforts to implement all applicable BMPs. FMWD plays an active role in promoting water use efficiency in its service area. A Water Conservation Plan was adopted by the FMWD Board of Directors in April 2009 as Resolution No. 772-0409.

Moreover, as the wholesale supplier to the region, FMWD assists its retail agencies by administering various Metropolitan rebate programs for its retail agencies and providing assistance to the retail agencies in other water use efficiency programs, such as education and public information programs. Table 4-1 provides a status overview of FMWD's DMMs.

Table 4-1: FMWD’s Demand Management Measures Overview

Demand Management Measures	Applies to:		Metropolitan Regional Program
	Retailer	FMWD as a Wholesaler	
Residential Water Surveys	√		√
Residential Plumbing Retrofits	√		√
System Water Audits, Leak Detection and Repair	√	√	√
Metering With Commodity Rates	√		
Large Landscape Conservation Programs	√		√
High-Efficiency Washing Machine Rebate Programs	√		√
Public Information Programs	√	√	√
School Education Programs	√	√	√
Commercial, Industrial, and Institutional Programs	√		√
Wholesale Agency Assistance Programs		√	√
Conservation Pricing	√	√	√
Conservation Coordinator	√	√	√
Water Waste Prohibition	√		√
Residential ULFT Replacement Programs	√		√

4.2.1. DMM 1: Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers

This DMM is not applicable to wholesalers. FMWD, as a wholesaler, does not provide direct service to the public, but does provide wholesale deliveries to local retail agencies.

Water Survey Assistance - FMWD provides available support to local agencies in conducting water audits on such property. FMWD coordinated a survey conducted by Metropolitan of the common areas in a large homeowners association (HOA). The survey showed that the HOA has the potential to save over 11 million gallons of water annually by implementing the report’s recommendations. The HOA has begun implementing the recommendations.

As the region’s wholesale supplier, FMWD administers Metropolitan’s landscape programs for its retail agencies. These programs are aimed at helping residential and small commercial customers to be more water efficient. Current programs include Smart Timer Rebate Program, Rotating Nozzle Rebate Program, Turf Removal Program, and the California Friendly Landscape Program, as described below.

Smart Timer Rebate Program - 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 41 gallons per day per residence and reduce runoff and pollution by

49%. To date, 26 rebates have been given out to residential customers and 3 rebates to large landscape customers within FMWD's service area which translate to a water savings of 2.7 AFY, collectively.

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 in existing irrigation systems. To date, within the FMWD's service area, 223 rotating nozzles have been installed at residential properties representing a water savings of 0.892 AFY.

Turf Removal Program – Through this program, residential and small commercial customers of participating retail water agencies are eligible to receive a minimum of \$1 per square foot of turf removed for qualifying projects. To date 18,891 sq. ft. of turf grass have been replaced by synthetic turf on residential properties, translating to a water savings of 2.64 AFY for the FMWD service area.

California Friendly Landscape Training (Residential) - The California Friendly Landscape Training program provides education to residential homeowners and professional landscape contractors on a variety of landscape water efficiency practices they can employ. These classes are hosted by Metropolitan and/or the member agencies to encourage participation across the county. The residential training program consists of either a half-day Mini Class or individual, topic-specific, four-hour classes.

4.2.2. DMM 2: Residential Plumbing Retrofit

This DMM is not applicable to wholesalers. However, FMWD participates in the distribution of showerheads, aerators, and toilet tank leak detection tablets at all times. In 1999, FMWD and its retail agencies implemented an agreement with Metropolitan for participation in a residential ultra-low-flush toilet (ULFT) retrofit and a CII retrofit incentive program. The ULFT rebate program has been replaced with a high efficiency toilet (HET) rebate program. As of July 2010, FMWD is refunding \$50 per toilet for high-efficiency toilets through Metropolitan funds distributed for use at the agency's discretion within limits. In FY 2010-11, an estimated 150 toilets in the FMWD service area will be replaced.

4.2.3. DMM 3: System Water Audits, Leak Detection and Repair

FMWD monitors water loss in its wholesale distribution system on a daily basis. Staff reads production and delivery meters daily. Daily analysis of water produced versus water delivered is conducted providing a daily audit of losses. FMWD maintains a distribution system water loss factor of less than 1%. In FY 2009-2010, FMWD reported negative 1.3% non-revenue water which is likely due to timing of meter readings between the source meter (Metropolitan) and the delivery meters (the retail agencies). FMWD lined 640 feet of pipeline in 2010. This was a preventative measure to ensure that the

pipe did not fail. A 1,000 foot water main inspection is planned for 2012 in one of FMWD’s 24-inch main lines. Any need for repair will be determined at the time of inspection. FMWD-planned water audit activities are summarized in Table 4-2.

Table 4-2: Actual and Projected System Water Audits, Leak Detection and Repair

Water Audit by Year	2010	2011	2012	2013	2014	2015
% of Unaccounted Water	-1.3%	0.5%	0.5%	0.5%	0.5%	0.5%
Length of Mains to be Surveyed	0 ft	0 ft	1,000 ft	0 ft	0 ft	0 ft
Length of Lines to be Repaired	640 ft	0 ft	0 ft	0 ft	0 ft	0 ft
Projected Expenditures (\$)	\$330,000	-	\$75,000	-	-	-

FMWD has not developed a formal methodology to estimate the water savings attributable to this DMM. There are, however, real water savings as a result of FMWD’s leak detection and monitoring program which maintains an acceptable non-revenue water of less than 1%.

4.2.4. DMM 4: Metering with Commodity Rates

This DMM is not applicable to wholesalers. However, all water deliveries by FMWD are metered deliveries, using commodity rate components based on metered readings and established rates and charges schedules developed by FMWD. All water deliveries by retail agencies are metered as well to the end user.

4.2.5. DMM 5: Large Landscape Conservation Programs and Incentives

This DMM is not applicable to wholesalers. However, FMWD administers Metropolitan’s landscape programs for its retail agencies. These landscape programs target both residential and commercial customers. A description of each program and its estimated water savings within the FMWD service area is provided under DMM 1 above.

FMWD will also assist its retail agencies in the education of homeowners regarding the broader use of drought-tolerant landscape. Metropolitan provides refunds for weather-based irrigation controllers and provides a landscape water use efficiency program for large landscapes. In 2009-2010, FMWD provided matching incentives for customers to install weather-based irrigation controllers and synthetic turf. In 2010-11, FMWD is providing customer rebates for gutter collection rain barrels and turf replacement.

4.2.6. DMM 6: High-Efficiency Washing Machine Rebate Programs

This DMM is not applicable to wholesalers; however, FMWD has implemented an agreement with Metropolitan for participation in a high efficiency clothes washer

incentive program. Through FMWD, Metropolitan refunds \$135 per high efficiency clothes washer (HECW).

Participants must be willing to allow an inspection of the installed machine for verification of program compliance. Machines must have a water factor of 4.0 or less. Depending on use, these machines can save 10,000 gallons of water per year. Participants are encouraged to contact their local gas and/or electric utility since additional rebates may be available. As of FY 2010-11, 713 HECWs have been installed in single and multi-family homes within the FMWD's service area through this program, representing total water savings of approximately 19 AFY.

4.2.7. DMM 7: Public Information Programs

FMWD promotes water conservation and other resource efficiencies in coordination with Metropolitan. FMWD distributes public information directly to the public or through retail agencies providing literature, brochures, posters, videos, etc. FMWD also maintains a library of water resource education conservation films and videos for loan to local organizations. It also provides speakers to various groups upon request. FMWD will continue to provide public information services and materials to remind the public about water and other resource issues. FMWD has co-sponsored fairs for education on water supplies and conservation. It has also participated in various events to inform the public about water supplies and conservation. Tables 4-3 and 4-4 show FMWD's past, current, and planned public information programs from 2006-2015.

Table 4-3: FMWD Public Information Programs Activities (2006-2010)

Actual	2006	2007	2008	2009	2010
Paid Advertising	No	No	No	Yes	Yes
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Bill Showing Water Usage in Comparison to Previous Year's Usage *	No	No	No	No	No
Demonstration Gardens	Yes	Yes	Yes	Yes	Yes
Special Events, Media Events	No	Yes	Yes	Yes	Yes
Speaker's Bureau	No	No	No	Yes	Yes
Program to Coordinate with Other Government Agencies, Industry and Public Interest Groups and Media	No	Yes	Yes	Yes	Yes
Actual Expenditures (\$)	\$850	\$1,640	\$4,340	\$19,248	\$26,711

* This is done in the monthly Board package which the agencies have access to online.

Table 4-4: FMWD Public Information Programs Planned Activities (2011-2015)

Planned	2011	2012	2013	2014	2015
Paid Advertising	Yes	Yes	Yes	Yes	Yes
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Bill Showing Water Usage in Comparison to Previous Year's Usage	No	No	No	No	No
Demonstration Gardens	Yes	Yes	Yes	Yes	Yes
Special Events, Media Events	Yes	Yes	Yes	Yes	Yes
Speaker's Bureau	Yes	Yes	Yes	Yes	Yes
Program to Coordinate with Other Government Agencies, Industry and Public Interest Groups and Media	Yes	Yes	Yes	Yes	Yes
Planned Expenditures (\$)	\$25,000*	\$25,000	\$25,000	\$25,000	\$25,000

*\$25,000 budget is inclusive of all outreach programs

There is no method to evaluate the water savings attributable to this DMM, however, FMWD will continue to administer this DMM for its ability to educate and interact with customers.

4.2.8. DMM 8: School Education Programs

FMWD makes information/literature available to local school districts for utilization in local curriculum. FMWD also supports Metropolitan's extensive in-class education program for specific grade levels. FMWD has spoken and is available to speak at local schools. FMWD has also sponsored a local high school in the annual Solar Cup competition held by Metropolitan, where students build water crafts operated by solar power and have competitions at one of Metropolitan's reservoirs.

Tables 4-5 and 4-6 show past, current, and planned school education program by grade level from 2006-2015.

Table 4-5: FMWD School Education Programs (2006-2010)

Actual	2006	2007	2008	2009	2010
Grades K-3rd	Yes	Yes	Yes	Yes	Yes
Grades 4th - 6th	Yes	Yes	Yes	Yes	Yes
Grades 7th - 8th	Yes	Yes	Yes	Yes	Yes
High School	Yes	Yes	Yes	Yes	Yes
Actual Expenditures (\$)	*	*	*	*	\$3,175**

*Data not available.

**Material distributed is part of conservation material used at other events as well and costs are not broken out by type of event.

Table 4-6: FMWD Projected School Education Programs (2011-2015)

Planned	2011	2012	2013	2014	2015
Grades K-3rd	Yes	Yes	Yes	Yes	Yes
Grades 4th - 6th	Yes	Yes	Yes	Yes	Yes
Grades 7th - 8th	Yes	Yes	Yes	Yes	Yes
High School	Yes	Yes	Yes	Yes	Yes
Planned Expenditures (\$)	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500

There is no method to evaluate the water savings attributable to this DMM, however, FMWD will continue to administer this DMM for its ability to educate and interact with customers.

4.2.9. DMM 9: Conservation Programs for Commercial, Industrial and Institutional Accounts

This DMM is not applicable to wholesalers. FMWD has only very light commercial and no industrial water use within its boundaries. Institutional accounts consist of predominantly local schools and churches. In 1999, FMWD and its retail agencies implemented an agreement with Metropolitan for participation in a CII retrofit incentive project. Since then, this agreement has been renewed under the Metropolitan Save Water Save a Buck Program as described below.

Save Water Save a Buck – This program began in 2002 and offers rebates to assist CII customers in replacing high-flow plumbing fixtures with low-flow fixtures. Rebates are available only on those devices listed in Table 4-7 below 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 4-7: Retrofit Devices and Rebate Amounts Available Under Save Water Save a Buck Program

Retrofit Device	Rebate Amount
High Efficiency Toilet	\$50
Ultra-Low-Water or Zero Water Urinal	\$200
Connectionless Food Steamers	\$485 per compartment
Air-Cooled Ice Machines (Tier III)	\$300
Cooling Tower Conductivity Controller	\$625
pH / Conductivity Controller	\$1,750
Dry Vacuum Pumps	\$125 per HP
Water Pressurized Broom	\$110

CII customers represent a small portion of customer within FMWD service area. The majority of rebates given out under this program have been for HETs, ULFTs, and landscape devices. The estimated savings from these devices have been incorporated in their respective DMMs in this chapter.

4.2.10. DMM 10: Wholesale Agency Programs

FMWD provides financial incentives or equivalent resources, as appropriate and beneficial to retail agencies, to advance water conservation efforts and effectiveness. Incentives have thus far been in the form of rebates offered by Metropolitan through its SoCal Smart Water Program for residential customers and rebates offered by FMWD and Save a Buck Program for CII customers. In addition to rebate programs, FMWD continues to participate in other Metropolitan water use efficiency programs, such as the California Friendly Landscape and Gardening classes.

FMWD is currently budgeting approximately \$50,000 per year for its conservation programs. FMWD also receives additional funding from Metropolitan. In FY 2010-11, FMWD's conservation programs include a turf replacement program, rain barrel rebate program, landscaping contest, high efficiency toilet program and various outreach and education programs. The funding amount and source of funding are shown in Table 4-8.

Table 4-8: FMWD's Planned Conservation Program for FY 2010-11

Program	Proposed Funding	Funding Source	Estimated Benefits
High Efficiency Toilet Incentives	\$4,500	Metropolitan	90 toilets (1.28 gpf)
High Efficiency Toilet Incentives	\$3,000	FMWD	60 toilets (1.28 gpf)
Turf Replacement (Metropolitan funds)	\$28,500	Metropolitan	36 homes (800 sq ft each)
Turf Replacement	\$9,500	FMWD	12 homes (800 sq ft each)
Rain Barrels	\$10,000	FMWD	100 rain barrels
Landscaping Contest (Spring 2011)	\$2,550	FMWD	9 prizes
Other Programs including outreach	\$24,950	FMWD	Program specific
Total - Metropolitan Funding	\$33,000		
Total - FMWD Funding	\$50,000		

4.2.11. DMM 11: Conservation Pricing

FMWD's water rate structure includes conservation pricing. FMWD water rates are a mix of commodity rates with a two-tier inclining block for higher water use and charges. Since 2003, FMWD has passed Metropolitan's Tier 2 charges on to some of its agencies due to their individual high demand. With this Tier 2 rate, a premium is paid for water used greater than 90% of historical numbers.

4.2.12. DMM 12: Water Conservation Coordinator

FMWD has designated the administrative manager as FMWD's water conservation coordinator. This is not a full-time position, but time is devoted to coordination and oversight of conservation programs, particularly with Metropolitan and DMM implementations. The preparation of the CUWCC annual report is this person's responsibility. The coordinator administers Metropolitan's programs among FMWD's retail agencies. Table 4-9 shows past, current, and planned funding of the FMWD water conservation coordinator position from 2006-2015.

Table 4-9: Water Conservation Coordinator Funding

Actual	2006	2007	2008	2009	2010
# of Full-Time Positions	0	0	0	0	0
# of Part-Time Staff	1	1	1	1	1
Actual Expenditures (\$)	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000

Planned	2011	2012	2013	2014	2015
# of Full-Time Positions	0	0	0	0	0
# of Part-Time Staff	1	1	1	1	1
Planned Expenditures (\$)	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000

4.2.13. DMM 13: Water Waste Prohibition

FMWD Board of Directors adopted a Conservation Plan (Resolution No. 772-0409) in April 2009 to prevent water waste in its service area. The Conservation Plan is implemented in stages to reflect the increasing shortage of water supply. The Conservation Plan institutes five shortage stages with aggressively more severe water conservation measures. Stage 1 represents normal conditions, and Stage 5 is allocation. Permanent water conservation measures and water waste prohibitions have been established under Stage 1 as follows.

- (a) **Education Materials:** FMWD will offer educational materials to its customers in the efficient use of water to help customers conserve water.
- (b) **Leaks:** Leaks from any facility both inside and outside of a customer’s premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak.
- (c) **New Plumbing Fixtures:** All new plumbing fixtures installed within FMWD service area must conform to the following requirements.
 - a. Toilets shall use less than 1.6 gallons per flush.
 - b. Showerheads shall flow at less than 2.5 gallons per minute.
 - c. Non-residential lavatory faucets shall be metering or self-closing.
 - d. Urinals shall use not more than 1.5 gallons per flush.
- (d) **Recycled Water:** Where recycled water is available and appropriate, the use of potable water for irrigation purposes shall be considered a waste of potable water.
- (e) **Construction Activities:** Potable water shall not be used for construction activities such as compaction and dust control when recycled water is available and appropriate.
- (f) **Runoff Elimination:** The rate and extent of application of water shall be controlled by the consumer so as to eliminate runoff or overspray from the irrigated areas.

- (g) **Limits on Watering Hours:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m.
- (h) **Limit on Watering Duration:** Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device not continuously attended is limited to no more than ten (10) minutes watering per day per station.
- (i) **No Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards.
- (j) **Fountains and Water Features:** Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.
- (k) **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device.
- (l) **Drinking Water Served Upon Request Only**
- (m) **Commercial Lodging Establishments Conservation Notice**
- (n) **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services**
- (o) **Pre-Rinse Spray Valve:** Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.
- (p) **Windy and Rainy Days:** No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray, and on days when it is raining.
- (q) **Fire Hydrants:** The use of potable water from fire hydrants shall be limited to firefighting related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents.

The Conservation Plan is provided in Appendix A and described in more detail in Section 5.

FMWD also supports efforts to develop new state law regarding restriction on ion exchange-type water softeners.

4.2.14. DMM 14: Residential Ultra-Low-Flush Toilet Replacement Programs

This DMM is not applicable to wholesalers. However, FMWD (and thus its retail agencies) and Metropolitan had an agreement for participation in a Residential ULFT Retrofit and a CII Retrofit Incentive Project that lasted through May 2010. FMWD, through Metropolitan, currently offers rebates for high efficiency toilets (1.28 gallons per flush) for both residential and CII customers. Between 2004 and 2010, a total of 449 ULFTs and 172 HETs were installed, representing a water savings of approximately 23 AFY.

FMWD recognizes the importance of the DMMs in reducing water demand and will continue to implement the programs during normal supply periods. Also, FMWD and its distributing agencies would increase media attention to the water supply situation during a shortage and would step up public water education programs as well as continuing to advertise the importance to customers of installing ULF plumbing fixtures and outdoor conservation methods.

5. Water Supplies Contingency Plan

5.1. Overview

This section addresses items related to the urban water supplier's water shortage contingency plan. It documents the stages of action that FMWD would undertake in response to water supply shortages, including up to a 50 percent reduction in its water supplies, as documented in its Conservation Plan and Allocation Plan. FMWD's Conservation Plan (adopted April 2009) is included in its entirety in Appendix A, and its Allocation Plan (adopted April 2008) is included in its entirety in Appendix B.

5.2. Stages of Action

FMWD's Conservation Plan documents the shortage stages and associated water conservation measures that will be undertaken in each stage. FMWD also has an adopted Allocation Plan which documents its procedure for passing through a cutback in supplies from Metropolitan to its member agencies.

5.2.1. Metropolitan Shortage Stages of Action

Metropolitan's Water Surplus and Drought Management Plan (WSDM Plan) documents the stages of action that it would undertake in response to a water supply shortage, including up to a 50 percent reduction in its water supplies. FMWD's water supply shortage stages reflect Metropolitan's WSDM Plan. Furthermore, Metropolitan developed a Water Supply Allocation Plan (WSAP), which provides a standardized methodology for allocation of supplies during times of shortage. FMWD's Allocation Plan, which mostly mirrors the Metropolitan allocation plan, documents its methodology for allocating supplies among its member agencies during a shortage.

The following description of shortage stages is from Metropolitan's 2010 RUWMP, pages 2-22 to 2-23.

"The WSDM Plan distinguishes between Shortages, Severe Shortages, and Extreme Shortages. Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's ability to deliver water to its customers.

- *Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.*
- *Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a*

Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.

- *Extreme Shortage: Metropolitan must allocate available supply to full-service customers.*

The WSDM Plan also defines seven shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a ten percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.

When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, it is still able to meet all end-use demands for water. For shortage stages 1 through 4, Metropolitan will meet demands by withdrawing water from storage. At shortage stages 5 through 7, Metropolitan may undertake additional shortage management steps, including issuing public calls for extraordinary conservation, considering curtailment of Interim Agricultural Water Program deliveries in accordance with their discounted rates, exercising water transfer options, or purchasing water on the open market.

At shortage stage 7 Metropolitan will implement its WSAP to allocate available supply fairly and efficiently to full-service customers."

5.2.2. Metropolitan Water Supply Allocation Plan (WSAP)

In February 2008, Metropolitan's Board of Directors adopted a WSAP, which includes a methodology for calculating supply allocations in the event that Metropolitan enters a Shortage Stage 7 and is unable to meet the firm demands of its member agencies. It should be noted that the WSAP is not a rationing plan. Rather, it is a pricing plan where water is allocated at regular prices and agencies that choose to take more water pay penalties. The penalty pricing acts as a mechanism to discourage the use of water above the allocation.

According to Metropolitan, the approach seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level and takes into account growth, local investments, changes in supply conditions and the demand hardening aspects of non-potable recycled water use and the implementation of conservation savings programs. The methodology attempts to allocate supplies based on an estimate of an agency's relative need for imported water using the following process:

1. Determine an agency's retail water demands during a historical Base Period using wholesale demand (i.e., imported supplies) and local supply data.

2. Adjust Base Period retail demands for growth and changes in local supplies.
3. Provide an across-the-board allocation of imported supplies based on the declared regional shortage of water.
4. Provide an additional allocation of imported supplies based on (1) the agency's dependence on Metropolitan supplies and (2) the amount of conservation savings established within the member agency.

Base Period Calculations

The Base Period is calculated using local and imported water supply data from the three most recent non-shortage years, 2004-2006.

Base Period wholesale demands are based on the average of firm demands on Metropolitan during the Base Period, including full-service, seawater barrier, seasonal shift, and surface storage operating agreement demands.

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

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

Allocation Year Calculations

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

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

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

The adjustment for gains in local supplies is intended to account for planned or scheduled gains in local supply production above the Base Period, which are not due to extraordinary actions to increase water supply in the allocation year. These previously

scheduled increases in supply programs (e.g., SDCWA/IID) or local production are added to the base period local supplies. Again, new supplies from non-potable recycling projects are not counted as local supplies.

While the local agency does become more reliable with the addition of the new supplies – assuming that the new supplies are available during an allocation – the benefits of these programs are partially offset, because the impact of adding the new supplies to the Base Period local supplies is to reduce an agency’s dependence on Metropolitan, and thus, their allocation under the WSAP.

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

Table 5-1 below reflects the set of percentages used in the WSAP to establish water allocations for each agency.

Table 5-1: Water Allocation Percentages

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Allocation	Retail Impact Adjustment Maximum	Extraordinary Increase Percentage
1	5%	92.5%	0.0%	0%
2	10%	85.0%	0.0%	0%
3	15%	77.5%	7.5%	15%
4	20%	70.0%	10.0%	20%
5	25%	62.5%	12.5%	25%
6	30%	55.0%	15.0%	30%
7	35%	47.5%	17.5%	35%
8	40%	40.0%	20.0%	40%
9	45%	32.5%	22.5%	45%
10	50%	25.0%	25.0%	50%

5.2.3. FMWD Shortage Stages of Action

FMWD’s Conservation Plan identifies five water shortage stages corresponding to percent shortage from Metropolitan. The shortage stages range from Stage 1: Normal Water Conservation (0% shortage) to Stage 5 Critical (50% or greater shortage). Table 5-

2 documents FMWD’s shortage stages and associated shortage levels and water supply conditions.

Table 5-2: Water Supply Shortage Stages and Conditions – Rationing Stages

Stage No.	Water Supply Conditions	% Shortage
1	Normal Water Conservation. Foothill can meet all Member Agency demands. Voluntary water conservation applies.	0%
2	Increased Voluntary Conservation. Some supplies have been impacted, and consumers should increase efforts to conserve.	0% shortage for FMWD, Metropolitan is up to 10% short in core supplies but able to withdraw from storage to meet demands
3	Extraordinary Conservation. Metropolitan Water District of Southern California is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from consumers.	0% shortage from FMWD, Metropolitan is short more than 10% in core supplies but able to withdraw from storage to meet demands
4	Allocation. Metropolitan has implemented its allocation plan to its member agencies. Thus, supplies are limited.	Up to 50% shortage for FMWD
5	Critical. Water supplies are only available for health and safety needs.	50% or greater shortage for FMWD

Following Metropolitan’s implementation of its WSAP, which requires significant water conservation by its member agencies, including FMWD, FMWD adopted a water shortage Stage 4 Allocation in April 2009. Metropolitan’s final allocation to FMWD was 12,479 AF for FY 2009-2010AF. Metropolitan’s initial allocation to FMWD for FY 2010-2011 is 12,567 AF. FMWD has passed through the cutback to retail agencies based on the FMWD Allocation Plan (AP).

Foothill’s Allocation Plan, adopted in April 2008, mirrors Metropolitan’s, with the exception of the adjustment for conservation credits. Whereas, Metropolitan’s plan adjusts for demand hardening due to both active conservation and plumbing-code based conservation, Foothill used conservation rebates provided to agencies in 2004, 2005, and 2006 as the basis for the adjustment. Foothill’s conservation credit from Metropolitan is allocated to agencies based on the proportion of conservation rebates each agency received in comparison to the total in 2004, 2005, and 2006.

5.3. Three-Year Minimum Water Supply

Metropolitan’s 2010 RUWMP indicates that it can meet all demands based upon a historic dry year period using 1998-1999 through 2000-2001. Table 5-3 reflects a three-year minimum supply:

Table 5-3: Three-Year Estimated Minimum Water Supply (AFY)

Source	Normal (2011)	2012	2013	2014
Metropolitan	10,090	11,099	10,897	10,090

5.4. Catastrophic Supply Interruption

FMWD has developed an Unusual Occurrence Manual to ensure the most effective use of all FMWD resources for the benefit and protection of facilities and employees, in addition to the preservation of a reliable water supply for FMWD and its distributing agencies. This manual is a guideline that is used during regional power outages, earthquakes and other disasters that may occur.

Actions may include the use of emergency generators to provide power for pumping water into FMWD’s service area and the use of interconnections to provide water at elevation into FMWD’s service area. FMWD has standby emergency generators located at its pump stations and Operations Center/Office. These generators would be used for power outages caused by excess power demands or a disaster, such as an earthquake, when power is unavailable due to the damage to power facilities. The generators at the pump stations can run from 8-12 hours and the generator at the Operations Center/Office can run indefinitely based on the availability of natural gas.

FMWD has two emergency by-pass systems. One is located at the Main Pump station with a maximum flow of 5.2 MGD. Metered water gravity flows from the Altadena reservoirs to the La Cañada reservoirs via the 16” by-pass. The second by-pass is located at the Berkshire Pump Station with a maximum flow of 2.3 MGD. Metered water flows via an 8” by-pass from the La Crescenta reservoirs to the La Cañada reservoirs.

FMWD has an emergency portable pump located at the Main Pump Station that is attached to the by-passes. Water from the La Cañada reservoirs can be pumped up to the Altadena reservoirs. Also, water from Metropolitan can be pumped to either the Altadena or La Cañada reservoirs.

Table 5-4: Preparation Actions for Catastrophe

Possible Catastrophe	Preparation Actions
Regional Power Outage	Generators, Interconnections, Reservoirs
Earthquake	Generators, Interconnections, Reservoirs
Supply Contamination	Generators, Interconnections, Reservoirs
Terrorist Act which Interrupts Service	Generators, Interconnections, Reservoirs
Other(s)	Generators, Interconnections, Reservoirs

5.5. Prohibitions, Penalties and Consumption Reduction Methods

Prohibitions

FMWD’s Conservation Plan adopted five water shortage stages as described above. Table 5-5 provides examples of prohibitions and the corresponding water shortage stage when the prohibitions become mandatory for water conservation. A complete listing can be found in the conservation plan (Appendix A).

Table 5-5: Voluntary and Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Voluntary
Check for leaks and repair within 72 hours	Stage 1
Use Regulation of Recycled Water	Stage 1
Runoff Elimination	Stage 1
Irrigation Hours and Duration	Stage 1
No washing down of hard or paved surfaces	Stage 1
Drinking water served upon request	Stage 1
No Single Pass Cooling Systems	Stage 2
Odd/Even Day Outdoor Irrigation	Stage 3
3 days per week summer, 2 days per week winter irrigation	Stage 3
2 day limit per week year-round irrigation	Stage 4
Leak repair within 48 hours	Stage 4
Prohibition on filling lakes, ponds, pools	Stage 4
No new potable water services	Stage 4
No annexations	Stage 4
No irrigation	Stage 5
Leak repair within 24 hours	Stage 5

Penalties

Excess use penalties take effect during Stage 4 for FMWD’s member agencies, when the Allocation Plan is implemented. For stages 1 through 3, violations are enforced at the retail level by FMWD’s member agencies. The penalty rate structure mirrors Metropolitan’s ascending penalty block rate structure, which provides a lower penalty for minor over use of allocations, and a higher penalty for major over use of allocations. Table 5-6 reflects the penalty rate formulas. Penalty rates change as water rates change.

Table 5-6: Penalty Rate Formulas

12-Month Use Up to and Including	Base Water Rate	WSDM Penalty Rate Per AF	Preferential Rights Penalty Rate Per AF
100% of Allocation	FMWD Tier 1 or Tier 2	\$0	\$0
100% < = 115% of Allocation	FMWD Tier 1 or Tier 2	2 X Metropolitan Tier 2	1 X Metropolitan Tier 2
> 115% of Allocation	FMWD Tier 1 or Tier 2	4 X Metropolitan Tier 2	3 X Metropolitan Tier 2

Because FMWD’s preferential rights to water are higher than water allocated to Foothill, it is not expected that Foothill would be charged the full WSDM Penalty Rate for any over use of water. Until such time as FMWD is in a penalty situation with Metropolitan, penalty rates to its retail agencies are charged at 50% of the above rates. A more detailed explanation of these rates is provided in FMWD’s Allocation Plan shown in Appendix B.

Consumption Reduction Methods

Consumption reduction methods correspond to demand management measures identified during the five shortage stages, as summarized in Table 5-7. The projected reduction in usage is assumed to equal the shortage from Metropolitan.

Table 5-7: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Implement Stage 2: Increased Voluntary Conservation	Stage 2	Up to 10%
Implement Stage 3: Extraordinary Conservation	Stage 3	Up to 20%
Implement Stage 4: Allocation	Stage 4	Up to 50%
Implement Stage 5: Critical	Stage 5	>50%

5.6. Impacts to Revenue

FMWD board adopted a Reserve Policy in January 2005 (attached as Appendix C). This policy determines the desired level of reserve funds to be maintained to provide funds during emergency and other conditions.

The use of these reserves allows FMWD to minimize rate shock when revenues decrease due to lower water sales because of a water shortage or emergency. The reserves also allow FMWD to minimize rate shock when expenditures increase due to a water shortage or emergency. Over the long term, FMWD is able to increase rates moderately to build up these reserves once they have been used. Table 5-8 and 5-9 show proposed measures to overcome revenue and expenditure impacts, respectively.

Table 5-8: Proposed Measures to Overcome Revenue Impacts

Name of Measures
Rate Adjustment
Use of Reserves

Table 5-9: Proposed Measures to Overcome Expenditure Impacts

Name of Measures
Obtain Alternative Sources of Funding
Defer certain expenditures

5.7. Reduction Measuring Mechanism

Under normal water supply conditions, wholesale water production figures are recorded daily. Totals are available daily to management. Totals are reported monthly to the Board of Directors in the monthly financial and sales records report. Actual water use can be compared to historical use data to measure and ensure reductions in total water use (Table 5-10).

Table 5-10: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
Trending Charts	Production Data

6. Recycled Water

6.1. Agency Coordination

In response to the potentially limited future supply of imported water and its relative cost, FMWD has developed a local water supply program to improve long-term water supply reliability to its service area, including development of a recycled water program. FMWD has retained engineering, financial, and other consultants to evaluate the feasibility of developing recycled water in up to three phases; one near the Arroyo area of its service area, a second towards the Westside of its service area in the Verdugo Basin, and the third towards the eastside of its service in the Eaton Canyon area. The recycled water may be used for irrigation of large landscapes, such as California Transportation Department (CalTrans) freeway medians, parks and sports fields, as well as recharging groundwater basins. Comments have been received from the SWRCB and further refinements are being made to the Facilities Planning Study. The study is currently being updated to incorporate leach fields for recharge with some scenarios and include associated capital costs.

6.2. Wastewater Description and Disposal

FMWD does not provide wastewater services. Rather, the areas it serves rely on the Sanitation Districts of Los Angeles County (LACSD) for wastewater treatment and disposal and the Los Angeles/Glendale Water Reclamation Plan (LAGWRP). The County Sanitation Districts, which provides wastewater services within the FMWD service area are Districts 16 (Pasadena), 17 (Altadena), 28 (the area of La Cañada Flintridge surrounding the La Cañada Country Club), and 34 (the majority remainder of La Cañada Flintridge). The LAGWRP serves a small portion of the west side of La Cañada Flintridge and La Crescenta.

Seven Treatment plants, including the Joint Water Pollution Control Plant (JWPCP), are grouped into an integrated sewerage system, known as the Joint Outfall System, that treats approximately 90% of the Sanitation Districts' wastewater. These seven plants are all on a single network of sewers. The JWPCP is the downstream plant, and the other six are upstream plants. Flows from the upstream plants can be bypassed to a limited extent to the JWPCP. Solids from the upstream plants are returned to the sewer system and conveyed to the JWPCP for further treatment (anaerobic digestion and dewatering) and disposal.

Of the districts in the LACSD, only District 28 provides local wastewater treatment. The La Cañada WRP provides extended aeration secondary treatment for 200,000 gallons of

wastewater per day. The plant serves the Country Club and 425 surrounding homes. All of the disinfected, secondary effluent is put into the four lakes on the 105-acre Country Club golf course. Lake water (augmented by potable water during the summer) is used for landscape irrigation of the golf course.¹¹

Crescenta Valley Water District, a member agency of FMWD, operates a sewage collection system with approximately 6,300 connections. The system transports this wastewater outside CVWD's boundaries to a regional wastewater treatment plant owned by the Cities of Los Angeles and Glendale. CVWD pays a flow-based share of treatment and disposal costs to Los Angeles and has no ownership of the treated wastewater from the Los Angeles-Glendale Water Reclamation Plant (LAGWRP). CVWD generates approximately 550-600 million gallons of raw wastewater annually.¹² The LAGWRP receives about 20 million gallons per day of flows. Of these flows, about 4.5 million gallons are treated to tertiary levels and reused by the City of Los Angeles, and Glendale. Sludge is sent to the Los Angeles Hyperion plant for further processing. Any remaining tertiary treated water is sent to the Los Angeles River.¹³

In fiscal year 2007-08, the LACSD operated 11 wastewater treatment facilities, 10 of which are classified as water reclamation plants (WRPs). These facilities serve approximately five million people in 78 cities and unincorporated county areas within Los Angeles County. Effluent quality from the WRPs ranges from undisinfected secondary to coagulated, filtered, disinfected tertiary. During the fiscal year, LACSD facilities produced an average of 478.59 million gallons per day (MGD), or 536,278 AFY of effluent. Of the total effluent produced, 172.22 MGD (192,983 AFY) was recycled water suitable for reuse. The amount recycled is 36.0% of the total amount of effluent produced, a decrease of 1.6% from the preceding fiscal year. Water reclamation capacity at the 10 Districts' facilities is now 251.8 MGD (282,154 AFY). The remaining 306.36 MGD (343,296 AFY) was effluent discharged to the ocean from LACSD's Joint Water Pollution Control Plant (JWPCP) in the City of Carson.¹⁴

The District 28 Water Reclamation Plant (also known as the La Cañada Water Reclamation Plant or the Lanterman Treatment Plant) is a secondary wastewater treatment plant with a capacity of 200,000 gallons per day. The plant provides wastewater treatment for the residential area around the La Cañada Flintridge Country Club and presently treats about 100,000 gallons per day. The effluent is discharged into ponds at the country club and is then pumped and used for irrigation of the fairways and greens. Disinfected secondary effluent meets the regulatory requirements for controlled access golf course irrigation but not for landscape irrigation.

¹¹ Source: http://www.lacsd.org/about/wastewater_facilities/default.asp.

¹² Source: <http://www.cvwd.com/Resources/Documents/12-13-05.pdf>, page 40.

¹³ Source: http://www.lascewers.org/treatment_plants/la_glendale/flowchart/flowchart.htm.

¹⁴ Source: http://www.lacsd.org/info/water_reuse/refy0708/refy0708.asp.

The 100,000 gallons per day of effluent are adequate to meet the irrigation needs in the cooler months, although Mesa Crest Water Company (FMWD distributing agency) provides supplemental water to the ponds during the warmer summer months.

The District 28 Plant is the most expensive to operate in all of the LACSD water reclamation facilities, and there have been a number of investigations into alternative facilities that would allow for the abandonment of the facility. The most recent of these has resulted in the construction of a sewer to the northwest beyond Jet Propulsion Laboratory, which would allow for the discharge of raw wastewater from the plant's service area into the LACSD Joint Outfall System through the City of Pasadena's Linda Vista Trunk sewer. At present, LACSD only plans for the discharge of sludge from the District 28 plant into this line, since they recognize the value of the effluent as a water resource for the golf course¹⁵. There is also the possibility of capturing storm water flows and introducing those flows into the system for use to irrigate the adjacent golf course.

The remainder of the wastewater collected goes to either LACSD's Whittier Narrows Water Reclamation Plant in El Monte or LACSD's Joint Water Pollution Control Plant in Carson. LACSD does not monitor the amount of wastewater collected from the areas, but only measures the amount of wastewater that enters the plants. Also, LACSD has no way of quantifying the percentage of flow from each city as it enters the treatment plants.

Table 6-1 reflects the amount of wastewater collected and treated within FMWD's service area through the recycled water plant. For planning purposes, it is assumed that without expansion or modification of this plant, this system can reclaim on average of 120 AFY.

Table 6-1: Wastewater Collection and Treatment (AFY)

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035-opt
Wastewater Collected & Treated in Service Area	136	104	120	120	120	120	120
Volume that Meets Recycled Water Standards	136	104	120	120	120	120	120

6.3. Current Recycled Water Uses

Table 6-2 reflects that, currently 104 AFY of recycled water are used by La Cañada Flintridge Country Club for landscape irrigation. Please note that FMWD is not involved in the recycling or distribution process of this water.

¹⁵ Source: Preliminary Reclamation Assessment report by Morris Water Resources Consultants

Table 6-2: Current Recycled Water Uses (AFY)

User Type	Treatment Level	2010
Agriculture		
Landscape		
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Golf Course	Secondary	104
Total		104

6.4. Potential Recycled Water Uses

FMWD has initiated a Local, Reliable Water Supply Program (LRWSP) to reduce dependence on imported water supplies through development of recycled water as well as integrating storm water capture and recharge with recycled water and water conservation throughout the service area. Recycled water supplies currently comprise 1 percent of the total water supply used within the FMWD service area. FMWD plans to develop recycled water through the construction of up to three satellite membrane bioreactor plants as part of a Regional Water Recycling Project. Alternative means of bringing recycled water to the area are also being reviewed. Recycled water produced by these plants will be used to replace demands on potable supplies for use in greenbelt irrigation and groundwater recharge. Future recycled water development is in the planning stages currently, and the amount of additional local production is estimated at up to 1,400 AFY based on the draft facilities planning study.

Table 6-3 represents the projected recycled water use within FMWD’s service area through 2035. This table does not include the potential recycled water that may be developed since the study is still in draft form.

Table 6-3: Projected Future Use of Recycled Water in Service Area (AFY)

User Type	2010	2015	2020	2025	2030	2035-opt
Projected Use of Recycled Water ¹⁶	104	120	120	120	120	120

Table 6-4 compares the recycled water use projections from FMWD’s 2005 UWMP with actual 2010 recycled water use.

Table 6-4: Recycled Water Uses – 2005 Projections Compared with 2010 Actual (AFY)

User Type	2005 Projection for 2010	2010 Actual Use
Agriculture		
Landscape		
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Golf Course	120	104 ¹⁷
Total	120	104

6.4.1. Direct Non-Potable Reuse

FMWD is conducting a study to develop recycled water that would be used for direct non-potable reuse through the construction of up to three satellite MBR plants as part of a Regional Water Recycling Project.

6.4.2. Indirect Potable Reuse

FMWD is conducting a study to develop recycled water that would be used for indirect potable reuse through the construction of up to three satellite MBR plants as part of a Regional Water Recycling Project.

6.5. Optimization Plan

This Water Recycling Facilities Planning Study is being prepared to evaluate the feasibility of using recycled water to offset the use of imported water. This study, partially funded by a grant (\$75,000) from the State Water Resources Control Board,

¹⁶ Source: Foothill MWD water recycling fact sheet October 30, 2009, p.1., bullet 1

¹⁷ Source: La Cañada Water Reclamation Plant, 2009 Annual Monitoring Report, Sanitation District of Los Angeles County

addresses the Arroyo, Verdugo Basin, and Eaton Canyon phases of FMWD's recycled water program.

The Study Area for this assessment is separated into three separate hydrologic areas: (1) the Verdugo Basin Study Area, (2) the Arroyo Study Area, and (3) Eaton Canyon Study Area. The Verdugo Basin Study Area includes the service areas of FMWD member agencies within the Verdugo Basin watershed, including Crescenta Valley and portions of La Cañada. The Arroyo Study Area includes the service areas of FMWD member agencies within the Monk Hill subarea of the Raymond Basin, including La Cañada Irrigation District, Las Flores, Lincoln, Mesa Crest, Rubio, and Valley. The Eaton Canyon Study Area includes the service area of Kinneloa, located within the Pasadena subarea of the Raymond Basin.

Based on the draft Study, the Verdugo Basin Study Area has the potential to deliver 560 AFY to its Study area as well as the Arroyo Study area; the Arroyo Study Area has the potential to deliver 280 AFY to its study area, while the Eaton Canyon Study Area has the potential to deliver 560 AFY to its study area¹⁸.

Metropolitan, through its Local Resources Program, encourages the use of recycled water by providing a financial incentive of up to \$250 per acre-foot for each acre-foot of recycled water produced and delivered to a customer. Additional funding assistance is available by the Federal U.S. Bureau of Reclamation, as well as state funding through the State Water Resources Control Board grant programs.

FMWD recognizes that broad public acceptance of recycled water requires education and public involvement. FMWD has conducted a survey of a sample population regarding using recycled water. An overwhelming number of respondents in the service area responded positively to development of recycled water.

¹⁸ Source: FMWD Water Recycling Facilities Planning/Project Report. Wastewater stream that is currently committed to other entities may prohibit the development of the Eaton Canyon Study Area.

7. Future Water Supply Projects and Programs

7.1. Water Management Tools

Until recently, public education regarding conservation has been the predominant water management tool. In FY 2009-2010, FMWD offered matching Metropolitan rebates for weather-based irrigation controllers and synthetic turf. Consumer participation was low, and FMWD has revamped the program to achieve more consumer participation and to encourage greater conservation. FMWD provided landscape classes, and consumer interest was great, with one class having 90 participants and a waiting list of 40 people. FMWD is completing a recycled water facilities planning study for the construction of up to three membrane bioreactor plants.

7.2. Transfer or Exchange Opportunities

FMWD has two interties with the City of Pasadena that enable it to exchange water with the City. FMWD is considering two more interconnections with Pasadena, if needed for redundancy. In addition, FMWD's member agencies have the ability to transfer Raymond Basin water from one agency to another. Crescenta Valley Water District also has an emergency connection with the City of Glendale. CVWD has also received a grant to construct an emergency interconnection with the City of Los Angeles for 2 cfs of supply. Water would be delivered from Los Angeles to Crescenta Valley Water District, allowing FMWD to reduce or cease deliveries to Crescenta Valley Water District and increase deliveries to other agencies within its service area during emergencies. Water may also be delivered into Foothill's system from Crescenta Valley Water District and distributed to other retail agencies, if needed.

FMWD would consider third party water transfers if the total costs of such a transaction, including purchase and wheeling costs warrant such consideration. Metropolitan has stated that it will be 100% reliable and will be using transfer water as part of its strategy to meet that reliability target as described in its WSDM Plan.

7.3. Planned Water Supply Projects and Programs

A facility planning study is currently under way for development of recycled water within FMWD's service area. There are three locations that are being reviewed for the possibility of installing either membrane bioreactor plants or bringing recycled water from other areas as described in Section 6.

Metropolitan has updated its Integrated Resources Plan. This Plan projects demands and identifies a mix of supplies to meet those demands. These supplies include desalination,

recycling, conservation, brackish groundwater recovery and conjunctive use. Metropolitan has financial incentive programs in place for local agencies to develop these supplies. FMWD, as a member agency of Metropolitan, supports these incentive programs and contributes to these financial incentives through its payments for water from Metropolitan.

7.4. Desalination Opportunities

There are technologies in place to remove the salts in both brackish groundwater and ocean water for potable use. Because FMWD has no groundwater rights and is not adjacent to the ocean, it does not have any projects to remove salts from local supplies to replace imported water. However, it supports these projects through Metropolitan's programs where Metropolitan provides incentives to other agencies to treat these sources.

7.4.1. Groundwater

Neither the Raymond Basin nor Verdugo Basin contains brackish groundwater. Thus, FMWD is unable to participate in the desalination of brackish groundwater. However, FMWD supports Metropolitan's Local Resources Program (LRP), which provides incentives to Metropolitan's member agencies of up to \$250 per acre-foot for the production of desalinated ocean water or brackish groundwater.

7.4.2. Ocean Water

FMWD does not have the opportunities to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination. However, FMWD supports Metropolitan's Seawater Desalination Program (SDP), which provides incentives to Metropolitan's member agencies of up to \$250 per acre-foot for the production of desalinated ocean water. Although FMWD is not able to directly participate in seawater desalination, it participates indirectly by supporting Metropolitan's program.

8. UWMP Adoption Process

8.1. Overview

Recognizing that close coordination among other relevant public agencies is the key to the success of its Plan, FMWD also worked closely with many other entities to develop and update this planning document. These agencies include representation from diverse social, cultural, and economic elements of the population within FMWD's service area to assist in preparation of its plan.

This section provides the information required in Article 3 of the Water Code related to adoption and implementation of the UWMP. Table 8-1 summarizes external coordination and outreach activities carried out by FMWD and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix F.

Table 8-1: External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Notified city or county within supplier's service area that water supplier is preparing an updated UWMP (at least 60 days prior to public hearing)	January 31, 2011	Appendix G
Encouraged public involvement Held public hearing	May 16, 2011	Appendix H
Adopted UWMP		Appendix E
Submitted UWMP to DWR (no later than 30 days after adoption)		
Submitted UWMP to the California State Library and city or county within the supplier's service area (no later than 30 days after adoption)		
Made UWMP available for public review (no later than 30 days after filing with DWR)		

8.2. Public Participation

FMWD has actively encouraged community participation in its urban water management planning efforts by encouraging attendance and participation in the Board of Directors public meetings held monthly. Notification of the public meeting for consideration of adoption of FMWD's draft UWMP was printed in a local newspaper. Copies of the draft plan were made available at the office and on its website. On May 16, 2011, FMWD held a Public Hearing to receive comments on its draft Plan. All comments received

prior to and during the Public Hearing were taken into consideration in the preparation of the final report. Comments submitted and FMWD's responses to them are incorporated into Appendix D.

8.3. Agency Coordination

FMWD is a member agency of Metropolitan. FMWD staff met and coordinated the development of this plan with staff from Metropolitan, a regional wholesaler; FMWD also coordinated the development of this plan with staff from FMWD's member agencies.

Metropolitan adopted its own RUWMP Update at its November 2010 board meeting. Metropolitan and its member agencies have also adopted the Water Surplus and Drought Management Plan (WSDM Plan), an Integrated Resources Plan (IRP) and the Strategic Plan and Rate Structure. The WSDM Plan, combined with the 2010 IRP, establishes broad resource management strategies to ensure 100% reliability for non-discounted non-interruptible water demands through 2035. Throughout FMWD's UWMP, we have referenced Metropolitan's reports and Metropolitan's RUWMP. Metropolitan's WSDM Plan includes extensive research and contains many descriptions, graphs and tables applicable to FMWD's Plan. Importantly, FMWD is currently 100% reliant on Metropolitan as a water source. Although most of FMWD's member agencies have access to groundwater, FMWD does not. Thus, FMWD's water management options are limited in being able to maximize resources and minimize needs to import water. However, FMWD encourages conservation where it can and has entered into a conjunctive use program agreement with Metropolitan to minimize the need for imported water during supply shortages. Additionally, FMWD is studying the development of recycled water within its service area through the potential construction of up to three membrane bioreactor plants. A draft facility planning study has been submitted to the State Water Resources Control Board. Comments have been received and the planning study is being refined.

All water sources for Metropolitan are shared in common with other urban and agricultural interests in the area. Table 8-2 summarizes the efforts FMWD has undertaken to date for including various agencies in its planning process.

Table 8-2: Coordination with Appropriate Agencies

	Participated in Plan Development	Commented on Draft	Attended Public Meetings	Contacted for Assistance	Sent Copy of Draft Plan	Sent Notice of Intention to Adopt	Not Involved/No Information
Metropolitan Water District		X		X	X	X	
FMWD's Member Agencies		X		X	X	X	
Raymond Basin Management Board					X	X	
ULARA		X			X	X	
City of La Canada Flintridge					X	X	
City of Glendale					X	X	
County of Los Angeles					X	X	
City of Pasadena					X	X	

8.4. UWMP Submittal

8.4.1. Review of Implementation of 2005 UWMP

As required by California Water Code, FMWD summarizes the implementation of the Water Conservation and Water Recycling Programs to date, and compares the implementation to those as planned in its 2005 UWMP.

Comparison of 2005 Planned Water Conservation Programs with 2010 Actual Programs

As a wholesaler, FMWD did not contain a specific implementation plan in its 2005 UWMP. However, as a signatory to the MOU regarding urban water use efficiency, FMWD's commitment to implement BMP-based water use efficiency program continues today. For FMWD's specific achievements in the area of conservation, please see Section 4 of this Plan.

Comparison of 2005 Projected Recycled Water Use with 2010 Actual Use

Current recycled water projections for 2010 for FMWD's service area are about 14% less than previously forecasted for 2010 in the 2005 UWMP, as illustrated in Table 6-2. This is because of less wastewater stream being diverted to the recycled water plant in the service area.

8.4.2. Adoption and Filing of 2010 UWMP

FMWD prepared the initial draft of its UWMP during summer/fall 2010. The final plan was adopted by its Board of Directors on **DATE XX, 2010** and submitted to the DWR within 30 days of Board approval. Attached to the cover letter addressed to DWR and as Appendix E is a copy of the Resolution of Plan Adoption. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

Appendices

- A. FMWD Conservation Plan
- B. FMWD Allocation Plan
- C. FMWD Reserve Policy
- D. Public Comments and FMWD Responses
- E. Resolution of UWMP Adoption
- F. Urban Water Management Plan Checklist
- G. 60 Day Notification Letters
- H. Public Hearing Notice

Appendix A
FMWD Conservation Plan

RESOLUTION NO. 772-0409

A RESOLUTION OF THE BOARD OF DIRECTORS OF FOOTHILL MUNICIPAL WATER DISTRICT ADOPTING A CONSERVATION PLAN

**BE IT RESOLVED BY THE BOARD OF DIRECTORS OF FOOTHILL
MUNICIPAL WATER DISTRICT as follows:**

1. Purpose.

This resolution adopts a conservation plan. The plan will be implemented in stages to reflect the increasing shortage of water supply. The Board will regularly examine the adequacy of the water supply and from time-to-time, make findings concerning the stage of shortage, if any. The Board anticipates voluntary measures will be effective to address most shortages but the board will conduct a duly-noticed public hearing to consider mandatory water allocation if necessary.

2. Findings.

The State of California, particularly Southern California, is experiencing severe water shortages due to the simultaneous reductions in supplies through major aqueducts, such as the State Water Project of California Aqueduct, the Colorado River Aqueduct, and the City of Los Angeles Aqueduct. The shortage is exacerbated by reductions in supply caused by the implementation of environmental protection laws for fish species in the Sacramento Delta and the general and profound lack of rainfall. As a result, the District's source of supply – Metropolitan Water District of Southern California ("Metropolitan") – has increased voluntary conservation goals and is considering instituting an allocation plan which anticipates the potential for significant water conservation by its member agencies, including this District. The potential reductions in deliveries by Metropolitan will be manageable if the agencies of this District and their respective customers institute wise and progressive water conservation measures as described herein.

3. Shortage Stages.

The District will institute aggressively more severe water conservation measures, based on the then current shortage. For the purposes of this plan, this shortage condition will be described as one of the following stages:

- (a) Stage 1: Normal Water Conservation. Foothill can meet all Member Agency demands. Voluntary water conservation applies. (0% shortage.)
- (b) Stage 2: Increased Voluntary Conservation. Some supplies have been impacted and consumers should increase efforts to conserve. (0% shortage.)
- (c) Stage 3: Extraordinary Conservation. Metropolitan Water District of Southern California is withdrawing water from most of its storage programs to meet demands. Extraordinary conservation is called for from consumers. (0% shortage.)
- (d) Stage 4: Allocation. Metropolitan has implemented its allocation plan to its

member agencies thus supplies are limited. (Up to 50% shortage for the District)

(e) Stage 5: Critical. Water supplies are only available for health and safety needs. (50% or greater shortage for the District)

4. Stage 1 Measures.

During stage 1 through 5:

(a) **Education Materials:** The District will offer educational materials to its customers in the efficient use of water to help customers conserve water. The District will furnish customers with water conservation information.

(b) **Leaks:** Customers shall conserve water supplied by the District by the prevention and elimination of all waste of leakage of water. Leaks from any facility both inside and outside of a customer's premises must be repaired within seventy-two hours after the customer is notified of, or discovers the leak. Residents are requested to report any observed waste of water from surrounding properties or in the community and report to their local water provider for follow-up.

(c) **New Plumbing Fixtures:** All new plumbing fixtures installed within the District service area must conform to the following requirements:

- (1) Toilets shall use less than 1.6 gallons per flush.
- (2) Showerheads shall flow at less than 2.5 gallons per minute.
- (3) Non-residential lavatory faucets shall be metering or self-closing.
- (4) Urinals shall use not more than 1.5 gallons per flush.

(d) **Recycled Water:** Where recycled water is available and appropriate, the use of potable water for irrigation purposes shall be considered a waste of potable water. Upon written notice from the General Manager that recycled water is available and appropriate for use, the customer shall have 60 days to commence the use of recycled water. Thereafter, all potable water, which is delivered to the property for irrigation shall be charged at a rate of 150% of the then current potable water rate. As used in this section, "available" means a district-recycled water main is contiguous to the site in question.

As used in this section, "appropriate" means the proposed use is acceptable to the Department of Health Services and the Regional Water Quality Control Board.

(e) **Construction Activities:** Potable water shall not be used for construction activities such as compaction and dust control when recycled water is available and appropriate. As used in this paragraph, "available" also means the cost of required recycled water, when added to the cost of required recycled water conveyance facilities, is less than or equal to the cost of an equivalent amount of potable water priced at 150% of regular potable water rates, plus the cost of necessary potable water conveyance facilities. Both potable and nonpotable water for construction purposes including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner which will not result in runoff.

(f) **Runoff Elimination:** It is the desire of the District to effect conservation of water resources whenever possible, such measures being consistent with legal

responsibilities to seek to wisely utilize the water resources of the State of California and the District. No irrigation of new or existing parks, median strips, landscaped public areas or landscaped areas, lawns, or gardens surrounding single-family homes, condominiums, townhouses, apartments, and industrial parks shall occur in such a way as to waste water. The rate and extent of application of water shall be controlled by the consumer so as to eliminate runoff or overspray from the irrigated areas.

(g) **Limits on Watering Hours:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. Pacific Standard Time on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the purpose of adjusting or repairing an irrigation system.

(h) **Limit on Watering Duration:** Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device not continuously attended is limited to no more than ten (10) minutes watering per day per station. This subsection does not apply to landscape irrigation systems using only very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard.

(i) **No Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom.

(j) **Fountains and Water Features:** Re-circulating Water Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

(k) **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.

(l) **Drinking Water Served Upon Request Only:** Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

(m) **Commercial Lodging Establishments Conservation Notice:** Commercial lodging establishments are requested to post notices informing their guests about the District's water conservation policy and urging guests to conserve water.

(n) **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services:** Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.

(o) **Pre-Rinse Spray Valve:** Restaurants Required to Use Water Conserving Dish Wash Spray Valves: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

(p) **Windy and Rainy Days:** No watering, sprinkling or irrigating shall take place in any landscaped or vegetated areas on days when the wind is blowing causing overspray, and on days when it is raining.

(q) **Fire Hydrants:** The use of potable water from fire hydrants shall be limited to firefighting related activities or other activities immediately necessary to maintain the health, safety, and welfare of the residents of the District.

5. Stage 2 Measures.

(a) During Stage 2, the District shall encourage a reduction in water deliveries from the District to District customers.

(b) In addition to the prohibited uses of water identified in Section 4 above, the board may prohibit wasteful practices and implement conservation measures during a water shortage, including restrictions on the following:

(1) **No Installation of Single Pass Cooling Systems:** Installation of single pass cooling systems is prohibited in buildings requesting new water service.

(2) **No Installation of Non-re-circulating in Commercial Car Wash and Laundry Systems:** Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

(3) **Commercial Car Wash Systems:** Effective on July 1, 2009 all commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from their local water purveyor.

(4) **Outdoor Water Use:** Outdoor water use is limited to odd or even days, based on ending number of customer address.

6. Stage 3 Measures.

(a) During Stage 3, the District shall encourage a reduction in water deliveries from the District to District customers.

(b) In addition to the prohibited uses of water identified in Section 4 and 5 above, the board shall prohibit wasteful practices and implement conservation measures during a water shortage, including restrictions on the following:

(1) **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three days per week on Tuesdays, Thursdays and Saturdays. During the months of November

through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.

7. Stage 4 Measures.

(a) During Stage 4, the District shall encourage a reduction in water deliveries from the District to District customers based on the amount of water Metropolitan Water District of Southern California reduces to it. Based on the shortage level declared by Metropolitan, the District shall allocate its water to the retail agencies as described in Attachment A. The amount of water allocated to each agency will be adopted by separate resolution and changed through a modified resolution when Metropolitan changes its allocation to the District.

(b) In addition to the prohibited uses of water identified in Section 4, 5 and 6 above, the board shall prohibit wasteful practices and implement conservation measures during a water shortage, including restrictions on the following:

(1) **Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week on Tuesdays and Saturdays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for the express purpose of adjusting or repairing an irrigation system.

(2) **Obligation to Fix Leaks, Breaks or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the local water purveyor unless other arrangements are made with the local water purveyor.

(3) **Limits on Filling Ornamental Lakes or Ponds:** Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a supply shortage level under this plan.

(4) **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash

systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.

(5) **No New Potable Water Service:** Upon declaration of a Stage V Water Supply Shortage Critical condition, no new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability) will be issued, except under the following circumstances:

1. A valid, unexpired building permit has been issued for the project; or
2. The project is necessary to protect the public health, safety, and welfare; or
3. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the local water purveyor

(6) **No Annexations:** Upon the declaration of a Stage 5 Water Supply Shortage condition, the District will suspend consideration of annexations to its service area. This subsection does not apply to boundary corrections and annexations that will not result in any increased use of water.

8. Stage 5 Measures.

(a) During Stage 5, the District shall cease deliveries to District customers unless required for health and safety reasons and local agency water is not sufficient to meet needs.

(b) In addition to the prohibited uses of water identified in Section 4, 5, 6 and 7 above, the board shall prohibit wasteful practices and implement conservation measures during a water shortage, including restrictions on the following:

- (1) **No Watering or Irrigating:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. Any waivers to this restriction must be obtained from the local water purveyor.
- (2) **Obligation to Fix Leaks, Breaks or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty four (24) hours of notification by the local water purveyor unless other arrangements are made with the local water purveyor.

9. Implementation.

Commencing on the date this resolution is adopted and after Stage 3, 4 or 5 is declared and at each regular board meeting, the board of directors will consider a report by the General Manager concerning the then current water supply status. The board will change the stage designation as appropriate. However, the board will not impose mandatory measures without first conducting a duly-noticed public hearing pursuant to Water Code sections 350 *et seq.*, or 375 *et seq.*

10. Violation.

Any violation of this plan should be reported either to the areas local water purveyor or to the District at (818) 790-4036 or conserve@fmwd.com. District staff will contact the local water purveyor for follow up to the violation.

11. Other.

This resolution is effective immediately. The secretary shall forthwith transmit a certified copy of this resolution to each member agency of the District, Metropolitan, and each city located within the District.

PASSED, APPROVED AND ADOPTED on _____, 2009.

President

ATTEST:

Secretary

(SEAL)

Appendix B
FMWD Allocation Plan

Foothill Allocation Plan – Adopted April 2008

The plan mirrors Metropolitan's plan with three exceptions. The first exception is that since Foothill does not take delivery of any Interim Agricultural Program water, reference to those deliveries has been deleted.

The second exception is the adjustment for conservation credits. In Metropolitan's plan, an adjustment is made for demand hardening due to both active conservation and plumbing-code based conservation. This adjustment is calculated through an accounting model using estimates of various conservation factors. Metropolitan is unable to calculate this adjustment to the sub-agency level. Foothill does not have this type of model and it would be expensive to create one. As a solution, the rebates that Foothill has provided to agencies in 2004, 2005 and 2006 is used as the basis for the adjustment. Foothill's conservation credit is allocated to agencies based on the proportion of conservation credits each agency received in comparison to the total in 2004, 2005 and 2006.

The third is because of the way the water is allocated, without a further adjustment, total water allocated to Foothill's member agencies will never match the total water allocated to Foothill. Thus, an adjustment has been added to prorate the difference between the amount allocated to Foothill by Metropolitan and the initial allocation by Foothill.

Additionally, Foothill will reconcile over use and under use of member agency allocations at the same time that Metropolitan does, typically at the end of every 12 months. Any allocation that is under used by agencies will be pooled together in one pot to be distributed to those agencies that over use their allocation. The agencies taking any of that pooled water will be charged the regular Foothill Tier 1 or Tier 2 rate for having taken the water plus 50% of Metropolitan's penalty rate. Any penalties assessed would go into the Water Resource and Conservation Fund. Once the pooled water is used, agencies will pay the Foothill Tier 1 or Tier 2 rate for taking the water plus 100% of the Metropolitan penalty rate.

Supply Allocation Formula Elements

The following are the elements of the allocation formula:

Base Period – A three-year average of historical water use utilizing calendar years 2004, 2005 and 2006 will be used. Water use is divided into three components, total retail demand, locally produced water and imported water.

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

Local Supply Adjustment – Gains and losses in local supply from the base period used and the time of allocation would be made if approved by Metropolitan.

Extraordinary Increases in Local Supply – These increases are previously unscheduled water transfers or groundwater overproduction. Only a portion of these increases would count in the base period local production. This portion would be tied to the Regional Shortage Level and is calculated in such a manner to ensure that agencies are not discouraged from producing or developing these extraordinary increases.

Conservation Savings – An adjustment is made for demand hardening due to active conservation based on rebates provided by Foothill in 2004, 2005 and 2006. The

conservation credit Foothill receives is allocated to agencies based on the proportion of conservation credits each agency received in comparison to the total in 2004, 2005 and 2006.

Conservation Rate Structure – This plan defines a conservation rate structure as one in which there is at least two tiers of volumetric water rates with a price differential between the top and bottom tiers of at least 10 percent. Agencies may receive .5% of an adjustment on the appropriate portion of the base period retail demand by submitting documentation showing proof of this rate structure and the amount of retail demand covered by the rate structure. Foothill will submit the documentation to Metropolitan. Once Metropolitan approves the adjustment, Foothill will pass it through to the appropriate retail agency.

Regional Shortage Percentage – This is the percentage of shortage between supplies and demands and will be declared by Metropolitan's board.

Wholesale Minimum Allocation – This is the first step in the formula and provides the minimum imported water allocation. It is set at one and a half times the Regional Shortage Percentage, meaning no agency can be allocated imported water deeper than one and a half times the Regional Shortage Percentage. For example, if the Regional Shortage Percentage is 20%, then no agency would receive an imported water allocation greater than a 30% reduction in imported water demands.

Retail Impact Adjustment Maximum – This adjustment occurs when a Regional Shortage is greater than 10%. It is the maximum additional allocation an agency may receive based on impacts to retail customers. Those agencies with less local supplies would receive a higher adjustment than those agencies with more local supplies. This adjustment's maximum percentage is one-half of the Regional Shortage Percentage. For example, if the Regional Shortage Percentage is 20%, then no agency would receive an adjustment greater than 10% of its dependence of imported water.

The following table reflects the set of percentages used to establish water allocations for agencies.

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Allocation	Retail Impact Adjustment Maximum	Extraordinary Increase Percentage
1	5%	92.5%	0.0%	0%
2	10%	85.0%	0.0%	0%
3	15%	77.5%	7.5%	15%
4	20%	70.0%	10.0%	20%
5	25%	62.5%	12.5%	25%
6	30%	55.0%	15.0%	30%
7	35%	47.5%	17.5%	35%
8	40%	40.0%	20.0%	40%
9	45%	32.5%	22.5%	45%
10	50%	25.0%	25.0%	50%

Total FMWD Allocation – A preliminary allocation is provided to agencies based on calculations that mirror Metropolitan's plan (except for conservation as described above). Without a further adjustment, total water allocated to Foothill's member agencies will never match the total water allocated to Foothill. Thus, an adjustment has been added to prorate the difference between the amount allocated to Foothill by Metropolitan and the initial allocation by Foothill.

The elements listed above along with the appropriate percentages are entered into a model which then provides the allocation for each member agency. Attachment A reflects preliminary

allocations to Foothill's member agencies based upon receiving a certain amount of water from Metropolitan as reflected by the number with the arrow pointing to it. The allocations are based on regional shortage levels 2, 4, 6, 8 and 10.

Penalty Rates - Member agency allocations would be enforced through a penalty rate structure. It is recommended that this penalty rate structure mirror Metropolitan's ascending penalty rate block structure. This structure provides a lower penalty for minor over use of allocations, and a higher penalty for major over use of allocations. The structure and applicable rates are listed in the table below.

Use Up to and Including:	Base Water Rate	WSDM Penalty Rate Per AF	Preferential Rights Penalty Rate Per AF
100% of Allocation	FMWD Tier 1 or Tier 2	\$0	\$0
100% < = 115% of Allocation	FMWD Tier 1 or Tier 2	2 X MWD Tier 2	1 X MWD Tier 2
> 115% of Allocation	FMWD Tier 1 or Tier 2	4 X MWD Tier 2	3 X MWD Tier 2

Because Foothill's preferential rights to water are higher than water allocated to Foothill, it is not expected that Foothill would be charged the full WSDM Penalty Rate for any over use of water. Thus, using rates in effect as of March 2009, the following would be an example of penalty rates with the recognition of preferential rights.

Use Up to and Including:	Altadena	La Canada	La Crescenta
100% of Allocation	\$854	\$848	\$930
100% < = 115% of Allocation	\$1,549	\$1,543	\$1,625
> 115% of Allocation	\$2,939	\$2,933	\$3,015

Penalty rates will change with rate increases from Metropolitan. The penalty rate does not coincide with when the water was overused but when the assessment for the over usage occurs. Thus over usage may occur in 2009. A rate increase occurs on January 1, 2010 and penalty rates are assessed June 30, 2010. The penalty rate will be the rate in effect on June 30, 2010.

Foothill will reconcile over use and under use at the same time as Metropolitan (typically the end of 12 months) although monthly calculations will be provided. Should Foothill not be in a penalty mode but some member agencies have over used their allocation, the under use by other agencies will be pooled together and distributed proportionately to the allocation of those agencies that over used their allocation. The agencies would be charged Foothill's regular Tier 1 or Tier 2 rate for having delivered the water and 50% of the appropriate penalty rate. The two tables below provide examples of how this would work. The first table reflects penalty rates to agencies should Foothill have used less than its Metropolitan allocation. The second table reflects penalty rates to agencies should Foothill have used more than its Metropolitan allocation using the example rates shown above.

In the first table, seven agencies are reflected in the first column. The second column (B) shows the amount of allocation per agency. The third column (C) reflects the actual use by agency. Column D shows how much each agency under used or over used. Agency 4 and Agency 5 have over used their allocations by a total of 275 AF. Agency 4 has over used its allocation by 120% while Agency 5 has over used its allocation by 113% as reflected in column E.

Because Metropolitan has tiered penalty rates, two different penalty rates will apply to Agency 4 which has exceeded the first tier percentage from Metropolitan. Thus the first 115% of over use is penalized at 50% of the lower tier (1 X the MWD Tier 2 rate) and the remainder of the over use is penalized at 50% of the higher tier (3 X MWD tier 2 rate). Agency 5 is penalized at only the lower penalty of 50% of 1 X the MWD tier 2 rate since its usage did not exceed 115% of its allocation. The penalties would be placed in the Water Resource and Conservation Fund. In addition to the penalties shown, the agency would pay the FMWD Tier 1 or Tier 2 rate for delivery of the water.

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
	Allocation	Actual Use	Under/(Over) Use	Percentage Over Use	50% of 1 X MWD Tier 2 Rate	50% of 3 X MWD Tier 2 Rate	Total Penalty
Agency 1	1,800	1,750	50	0%	\$ -	\$ -	\$ -
Agency 2	2,200	2,000	200	0%	\$ -	\$ -	\$ -
Agency 3	500	450	50	0%	\$ -	\$ -	\$ -
Agency 4	1,000	1,200	(200)	120%	\$ 52,125	\$ 52,125	\$ 104,250
Agency 5	600	675	(75)	113%	\$ 26,063	\$ -	\$ 26,063
Agency 6	650	550	100	0%	\$ -	\$ -	\$ -
Agency 7	1,900	1,700	200	0%	\$ -	\$ -	\$ -
TOTAL	8,650	8,325	325	0%	\$ 78,188	\$ 52,125	\$ 130,313

In the second table, seven agencies are again reflected in the first column. The second column (B) shows the amount of allocation per agency. The third column (C) reflects the actual use by agency. The highlighted areas show the change from the first table. Column D shows how much each agency under used or over used. Agency 4 and Agency 5 have over used their allocations by a total of 275 AF. However, Foothill has also exceeded its Metropolitan allocation by 30 AF. Thus, Foothill must also pay a penalty to Metropolitan and this penalty is proportioned to the agencies that over used their allocation.

Agency 4 has over used its allocation by 200 AF and Agency 5 has over used its allocation by 75 AF as reflected in column D. Agency 4's allocation is 63% of the 1,600 AF of allocation between the two agencies and Agency 5's allocation is 38%. Thus 63% (18.8 AF) of the 30 AF of Foothill's over usage is assigned to Agency 4 and 38% (11.3 AF) of the 30 AF of Foothill's over usage is assigned to Agency 5 as reflected in Column F. This over usage is charged 100% of Metropolitan's penalty rate since it needs to be passed through to Metropolitan. In this case, the penalty rate is 1 X the Tier 2 rate since Foothill has not exceeded 115% of its allocation and is within its preferential rights. The dollars are reflected in Column G.

The next set of calculations address the remaining 245 AF of over usage by Agency 4 and Agency 5. Because Metropolitan has tiered penalty rates, two different penalty rates will apply to Agency 4 which has exceeded the first tier percentage from Metropolitan as reflected in Column I. Thus the first 115% of over use is penalized at 50% of the lower tier (1 X the MWD Tier 2 rate) as reflected in column J and the remainder of the over use is penalized at 50% of the higher tier (3 X MWD tier 2 rate) as reflected in column K. Agency 5 is penalized at only the lower penalty of 50% of 1 X the MWD tier 2 rate since its usage did not exceed 115% of its allocation. These penalties would be placed in the Water Resource and Conservation Fund.

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
	Allocation	Actual Use	Under (Over) Use	Percentage Allocation of Agencies that Over Used	Proportion of AF Use Above Foothill Allocation	1 X MWD Tier 2 Penalty	Distribution of Unused Pool (245 AF)	Percentage Over Use	50% of 1 X MWD Tier 2 Rate	50% of 3 X MWD Tier 2 Rate	Total Penalty
Agency 1	1,800	1,750	50	n/a	0	\$ -	n/a	0%	\$ -	\$ -	\$ -
Agency 2	2,200	2,150	50	n/a	0	\$ -	n/a	0%	\$ -	\$ -	\$ -
Agency 3	500	450	50	n/a	0	\$ -	n/a	0%	\$ -	\$ -	\$ -
Agency 4	1,000	1,200	(200)	63%	18.6	\$ 13,031	153	120%	\$ 52,125	\$ 52,125	\$117,281
Agency 5	600	675	(75)	38%	11.3	\$ 7,819	92	113%	\$ 26,063	\$ -	\$ 33,881
Agency 6	650	575	75	n/a	0	\$ -	n/a	0%	\$ -	\$ -	\$ -
Agency 7	1,900	1,880	20	n/a	0	\$ -	n/a	0%	\$ -	\$ -	\$ -
TOTAL	8,650	8,680	(30)	100%	30.0	\$ 20,850	245	100.3%	\$ 78,188	\$ 52,125	\$151,163

Allocation Example

The following two examples reflect how water would be allocated during a regional shortage. The first example assumes a shortage at Level 2. The second example assumes a shortage at Level 4. The first 5 steps are required for both examples and provide the basis for applying the allocation formula.

Step 1: Base Period Retail Demand

Base Period Retail Demand is calculated by adding together base period local supplies and base period wholesale water demands. A three-year average of supplies is used for this calculation.

In this example, assume:

Element	Acre-Feet
Base Year Local Supplies Produced	1,630 AF
Base Year Foothill Firm Deliveries	914 AF
Base Year Foothill In-Lieu Deliveries	400 AF
Base Year Retail Demands	2,900 AF

Step 2: Growth Adjustment

A growth adjustment is then applied to the retail demands. For Los Angeles County that adjustment is in this example .88%.

Element	Acre-Feet
Base Year Retail Demands	2,900 AF
Growth Adjustment (.88% X 2,900 AF)	51 AF
Allocation Year Retail Demands	2,951 AF

Step 3: Adjustment for Changes in Local Supply

This calculation is done so that local supplies to be produced in the allocation year are projected. In this example, Foothill had delivered 400 AF of in-lieu water in the base period. Since in-lieu deliveries are interruptible and it is expected that an agency will produce that

water when interrupted, that 400 AF is now added to expected local production so that it is projected that local supplies in the allocation year will be 2,030 AF.

Element	Acre-Feet
Base Year Local Supplies Produced	1,630 AF
Base Year Foothill In-Lieu Deliveries	400 AF
Allocation Year Local Supplies	2,030 AF

Other gains and losses to local supplies are included in this calculation as well. These include losses due to groundwater quality issues and gains due to increased supplies from local sources.

Step 4: Calculate Wholesale Water needs in an Allocation Year

Based on having developed allocation year retail demands and allocation year local supplies, wholesale demands can be calculated. In this example, those demands are 921 AF.

Element	Acre-Feet
Allocation Year Retail Demands	2,951 AF
Allocation Year Local Supplies	2,030 AF
Allocation Year Foothill Demands	921 AF

Dependence on Foothill can now be calculated as 31% or 921 AF of Allocation Year Foothill Demands divided by 2,951 AF of Allocation Year Retail Demands.

Step 5: Calculate Base Period Conservation Savings

Conservation savings during the base period is calculated based on rebates provided by Foothill in 2004, 2005 and 2006. In this example, the conservation hardening is calculated at 100 AF.

Example at Level 2 Regional Shortage (10%)

The allocation formula is now applied to the above information for a Level 2 Regional Shortage of 10%.

Step 1: Calculate Wholesale Minimum Allocation

The Wholesale Minimum Allocation is calculated by multiplying the Wholesale Minimum Allocation Percentage by the Allocation Year Metropolitan Demands.

Element	Acre-Feet/%
Allocation Year Foothill Demands	951 AF
Wholesale Minimum Allocation Percentage	85%
Wholesale Minimum Allocation	783 AF

At a minimum, the agency in this example will receive 783 AF of allocation from Foothill under Regional Shortage Level 2.

Step 2: Conservation Hardening Credit

The Conservation Hardening Credit is calculated by multiplying the agency's Base Period Conservation savings by the estimated retail level shortage for the agency. In this Level, it is

100% minus the Allocation Year Local Supplies plus the Wholesale Minimum Allocation divided by Allocation Year Retail Demands which is then multiplied by the amount of conservation in the Base Period.

Element	Acre-Feet/%
Allocation Year Local Supplies	2,030 AF
Wholesale Minimum Allocation	783 AF
Allocation Year Retail Demands	2,951 AF
Conservation Hardening Credit	5%
Base Period Conservation Savings	100 AF
Conservation Hardening Credit	5 AF

A credit for conservation rate structure would also be included in this area and an adjustment of .5% would be made to retail demands that qualify.

Step 3: Preliminary FMWD Allocation

The numbers derived above would be added together to calculate the preliminary FMWD allocation.

Element	Acre-Feet/%
Wholesale Minimum Allocation	783 AF
Conservation Hardening Credit	5 AF
Preliminary FMWD Allocation	788 AF

Step 4: Total FMWD Allocation

Since Metropolitan's allocation and Foothill's Preliminary Allocation to all agencies does not match a final adjustment prorating the difference is made. In this instance, Foothill's allocation has over allocated by 57 AF. Thus, the percentage of preliminary allocation for the sample agency is multiplied by the over allocation. The preliminary allocation is then reduced by that portion of over allocation to obtain the Total FMWD Allocation.

Element	Acre-Feet/%
Preliminary FMWD Allocation	788 AF
Total FMWD Supplies Allocated	10,008 AF
Proportion of Agency's Allocation	7.9%
Preliminary Allocation Adjustment	(57 AF)
Total Allocation	783 AF

Thus, this example agency's allocation is 783 AF under a Level 2 Regional Storage.

Example at Level 4 Regional Shortage (20%)

The allocation formula is now applied to the above information for a Level 4 Regional Shortage of 20%.

Step 1: Calculate Wholesale Minimum Allocation

The Wholesale Minimum Allocation is calculated by multiplying the Wholesale Minimum Allocation Percentage by the Allocation Year Metropolitan Demands.

Element	Acre-Feet/%
Allocation Year Foothill Demands	921 AF
Wholesale Minimum Allocation Percentage	70%
Wholesale Minimum Allocation	645 AF

At a minimum, the agency in this example will receive 645 AF of allocation from Foothill under Regional Shortage Level 4.

Step 2: Calculate Retail Impact Adjustment Allocation

This step does not occur in the Level 1 or Level 2 Regional Shortage. However, since this example reflects a Level 4 Regional Shortage, this step must now be calculated.

The Dependence on Foothill percentage has been calculated above for this example as 31%. Under a Level 4, the Retail Impact Adjustment Maximum is 10%. Thus 10% of 31% is calculated for this agency as the Retail Impact Adjustment Factor or 3.1%. Next the Dependence on Foothill percentage is multiplied by the Retail Impact Adjustment Factor which is then multiplied by the Allocation Year Foothill Demands to derive the Retail Impact Adjustment Allocation of 9 AF.

Element	Acre-Feet/%
Dependence on Foothill Percentage	31%
Retail Impact Adjustment Maximum	10%
Retail Impact Adjustment Factor	3.1%
Allocation Year Foothill Demands	921 AF
Retail Impact Adjustment Allocation	9 AF

Step 3: Calculate Conservation hardening Credit

The Conservation Hardening Credit is calculated by multiplying the agency's Base Period Conservation savings by the estimated retail level shortage for the agency. In this Level, it is 100% minus the sum of the Allocation Year Local Supplies plus the Wholesale Minimum Allocation plus the Retail Impact Adjustment Allocation divided by Allocation Year Retail Demands which is then multiplied by the amount of conservation in the Base Period.

Element	Acre-Feet/%
Allocation Year Local Supplies	2,030 AF
Wholesale Minimum Allocation	645 AF
Allocation Year Retail Demands	2,951 AF
Retail Impact Adjustment Allocation	9 AF
Conservation Hardening Credit	9%
Base Period Conservation Savings	100 AF
Conservation Hardening Credit	9 AF

A credit for conservation rate structure would also be included in this area and an adjustment of .5% would be made to retail demands that qualify.

Step 4: Preliminary FMWD Allocation

The numbers derived above would be added together to calculate the preliminary FMWD allocation.

Element	Acre-Feet
Wholesale Minimum Allocation	645 AF
Retail Impact Adjustment Allocation	9 AF
Conservation Hardening Credit	9AF
Total Allocation	663 AF

Step 5: Total FMWD Allocation

Since Metropolitan's allocation and Foothill's Preliminary Allocation to all agencies does not match a final adjustment prorating the difference is made. In this instance, Foothill's allocation has over allocated by 198 AF. Thus, the percentage of preliminary allocation for the sample agency is multiplied by the over allocation. The preliminary allocation is then reduced by that portion of over allocation to obtain the Total FMWD Allocation.

Element	Acre-Feet/%
Preliminary FMWD Allocation	663 AF
Total FMWD Supplies Allocated	8,896 AF
Proportion of Agency's Allocation	7.45%
Preliminary Allocation Adjustment	(198 AF)
Total Allocation	648 AF

Thus, this example agency's allocation is 648 AF under a Level 4 Regional Shortage.

Appendix C
FMWD Reserve Policy

4-1.003 Reserves²³

The Board has adopted the following reserve policy and shall periodically review the reserve funding levels to ensure they are adequate to meet the current and projected needs.

- (a) Operating Reserve. This reserve funds three months of General and Administrative expenses up to a maximum of \$2,000,000 to cover payroll, employee expenses and partial Metropolitan payments. This reserve also funds emergency repairs up to 50% of the fund balance of \$1,000,000, whichever is less.
- (b) Water Rate Stabilization. This reserve funds up to \$500,000 to cover fluctuations in the cost of water.
- (c) Rehabilitation and Replacement. This reserve funds scheduled and unscheduled repairs and replacements of assets. This level of reserve is based on the balance of the funds not otherwise allocated. The maximum balance should not exceed \$2,000,000.
- (d) Capital Improvement. This reserve funds up to \$1,500,000 of capital projects under the planning budget and is used in conjunction with outside funding. Studies that will produce projects in terms of facilities, pipelines, reservoirs, and pump stations are funded from this reserve.
- (e) Water Resources and Conservation. This fund will be made up of collections of the District's Tier 2 surcharge that are not paid to Metropolitan. The dollars will be expended only for Water Resource or Conservation projects or programs.

²³ Amended by Res. No. 767-0109 January 26, 2009

Appendix D

Public Comments and FMWD Responses

To Be Provided At A Later Date

Appendix E

Resolution of UWMP Adoption

To Be Provided At A Later Date

Appendix F

Urban Water Management Plan Checklist

Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 8.3
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Appendix G
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 8.4
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 8.4
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Section 8.2
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Appendix H
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix E
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 8.4

No.	UWMP requirement a	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 8.4
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 8.4
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 1.3.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.2.1 Section 2.2.3
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M	Section 2.2.2
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.2.2
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.2
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 2.4
2	Wholesalers: Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. Retailers: Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 2.4.3

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 2.4
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 2.3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 2.5
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 2.5.2
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 3.1
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Not applicable
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Not applicable
16	Describe the groundwater basin.	10631(b)(2)		Section 3.3
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Not applicable

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Not applicable
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Not applicable
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Not applicable
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Not applicable
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 7.2
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 7.3
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 7.4
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 6.1
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 6.2

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 6.2
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 6.3
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 6.4
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 6.4
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 6.5
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 6.5
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING ^b				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 3
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 3.5.1
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 3.5.2
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.2

No.	UWMP requirement ^a	Calif. Water	
		Code reference	UWMP location
		Additional clarification	
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)	Section 5.3
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)	Section 5.4
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)	Section 5.5
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)	Section 5.5
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)	Section 5.5
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)	Section 5.6
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)	Appendix A
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Section 5.7
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	Section 3.5.2.1 Four years 2010, 2015, 2020, 2025, and 2030

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 3.5.3 Section 3.5.4 Section 3.5.5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 4
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 4
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 4
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 4
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Section 4

^a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

^b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review

Appendix G
60 Day Notification Letters



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Shan Kwan
Pasadena Water & Power
150 S. Los Robles, Suite 200
Pasadena, CA 91101

Dear Mr. Kwan,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

Foothill Municipal Water District
4536 Hampton Road
La Canada Flintridge, Ca 91011

Attention: Karen Oblak

Please refer to our website www.fmwd.com for updates on schedule and a draft of the Plan when it is available. The draft will be available 30 days prior to the public hearing.

Should no comments be made during the public meeting recommending changes, the Plan may be adopted by the District's Board of Directors on that day. Otherwise, a meeting will take place with a response or an updated Plan for adoption.

Sincerely,

A handwritten signature in black ink, appearing to read "Nima Jazmadarian", written over a horizontal line.

Nima Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Dennis Erdman
Crescenta Valley Water District
2700 Foothill Blvd.
La Crescenta, CA 91214

Dear Mr. Erdman,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

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Sincerely,

A handwritten signature in black ink, appearing to read 'Nina Jazmadarian', is written over the printed name.

Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Doug Caister
La Canada Irrigation District
PO Box 39
La Canada, CA 91012

Dear Mr. Caister,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Bill Kimberling
Las Flores Water Company
PO Box 426
Altadena, CA 91003-0426

Dear Mr. Kimberling,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

Foothill Municipal Water District
4536 Hampton Road
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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Bob Hayward
Las Flores Water Company
564 West Harriet
Altadena, CA 91001-4537

Dear Mr. Hayward,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

Foothill Municipal Water District
4536 Hampton Road
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Nina Jazmarians
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Tim Flynn
Mesa Crest Water Company
PO Box 257
La Canada, CA 91012

Dear Mr. Flynn,

Notice of Intention to Adopt Urban Water Management Plan

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4536 Hampton Road
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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Ms. Lillian Woods
Rubio Canon Land & Water Association
PO Box 398
Altadena, CA 91103

Dear Ms. Woods,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Bob Fan
Valley Water Company
PO Box 706
La Canada, CA 91012

Dear Mr. Fan,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Tony Zampielo
Raymond Basin Management Board
725 North Azusa Ave.
Azusa, CA 91702

Dear Mr. Zampielo,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Mark Alexander
City of La Canada Flintridge
1327 Foothill Blvd.
La Canada Flintridge, CA 91011

Dear Mr. Alexander,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Richard C. Slade (ULARA)
Richard C. Slade & Assoc., LLC
12750 Ventura Blvd., #202
Studio City, CA 91604

Dear Mr. Slade,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmedarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Peter Kavounas
City of Glendale
613 E. Broadway
Glendale, CA 91206

Dear Mr. Kavounas,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Ms. Anne Russett
County of Los Angeles
320 W. Temple, 13th Floor
Los Angeles, CA 90012

Dear Ms. Russett,

Notice of Intention to Adopt Urban Water Management Plan

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Jeff Kightlinger
Metropolitan Water District of Southern California
700 N. Alameda St.
Los Angeles, CA 90012

Dear Mr. Kightlinger,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

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Nina Jazmadarian
General Manager



FOOTHILL MUNICIPAL WATER DISTRICT

ALTADENA • La CAÑADA FLINTRIDGE • La CRESCENTA

January 31, 2011

Mr. Melvin Matthews
Kinneloa Irrigation District
PO Box 5578
Pasadena, CA 91117-0578

Dear Mr. Matthews,

Notice of Intention to Adopt Urban Water Management Plan

This letter serves as notice that the District is intending to adopt an update to its Urban Water Management Plan. A public hearing will be scheduled in the April/May timeframe for comments. Comments may be submitted in writing before that time to:

Foothill Municipal Water District
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Sincerely,

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Nina Jazmradafian
General Manager

Appendix H
Public Hearing Notice

NOTICE OF PUBLIC HEARING
DRAFT URBAN WATER MANAGEMENT PLAN

The Foothill Municipal Water District is required to adopt its Urban Water Management Plan (Plan) and to submit the Plan to the State Department of Water Resources by **August 1, 2011**. Accordingly, Foothill has prepared its Draft Plan and its Board of Directors will conduct a public hearing and consider adoption of the Draft Plan at **3:00 PM on Monday, May 16, 2011**. The Public Hearing will be held at Foothill Municipal Water District in the Conference Room of the Robert Williams Operations and Administration Center at 4536 Hampton Road, La Canada Flintridge, California.

Copies of the Draft Plan are available for public inspection at Foothill's Hampton Road office. Copies are also available at the Altadena Public Library and the La Canada Public Library. Comments or questions regarding the Draft Plan should be directed to the District's Office at the above cited address or by telephone to (818) 790-4036.



8001 Irvine Center Drive, Suite 1100
Irvine, CA 92618
949.450.9901 Fax 949.450.9902

**MALCOLM
PIRNIE**



The Water Division of ARCADIS