



Crescenta Valley Water District

Final

2010 Urban Water Management Plan

July 2011



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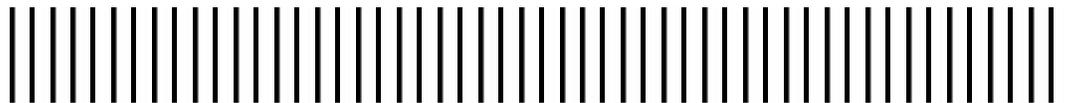


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2700 Foothill Blvd • La Crescenta, CA 91214

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Acronyms Used in the Report

Act	Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
Basin	Verdugo Groundwater Basin
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
Board	Metropolitan's Board of Directors
CDHS	California Department of Health Services
CDPH	California Department of Public Health
cfs	cubic feet per second
CII	Commercial Industrial Institutional
CIMIS	California Irrigation Management Information System
COG	Council of Governments
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Crescenta Valley Water District
DBPs	Disinfection Byproducts
DMM	Demand Management Measure
DWR	Department of Water Resources
ET _o	Evapotranspiration
FMWD	Foothill Municipal Water District
GCI	Glendale/CVWD Interconnection
GPCD	gallons per capita per day
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IRP	Integrated Resources Plan
IWA	International Water Association
LACSD	Sanitation Districts of Los Angeles County
LADWP	Los Angeles Department of Water and Power
LAGWRP	Los Angeles/Glendale Water Reclamation Plant
LCID	La Cañada Irrigation District
LRWSP	Local, Reliable Water Supply Program
MAF	million acre-feet
MBR	membrane bioreactor
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
MOU	Memorandum of Understanding
MTBE	Methyl tertiary butyl ether

NDMA	N-nitrosodimethylamine
NMFS	National Marine and Fisheries Service
PPCPs	Pharmaceuticals and Personal Care Products
QSA	Quantification Settlement Agreement
RHNA	Regional Housing Needs Assessment
RUWMP	Regional Urban Water Management Plan
SBx7-7	Senate Bill x7-7
SCADA	Supervisory Control and Data Acquisition
SCAG	Southern California Association of Governments
SDP	Seawater Desalination Program
SWP	State Water Project
TAF	thousand acre-feet
TDS	Total Dissolved Solid
ULARA	Upper Los Angeles River Area
ULFT	Ultra-Low-Flow Toilet
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
VOCs	Volatile Organic Compounds
WBIC	weather-base irrigation controller
WSAP	Water Supply Allocation Plan
WSDM	Water Surplus Drought Management Plan

Executive Summary

This report serves as the 2010 update of the Crescenta Valley Water District's (CVWD) Urban Water Management Plan (UWMP). The UWMP has been prepared consistent with the requirements under Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act), which were added by Statute 1983, Chapter 1009, and became effective on January 1, 1984. The Act requires "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet 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 to be adopted by July 1, 2011.

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 Conservation Act of 2009 or SBx7-7 enacted in 2009 is the water conservation component of the 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.

Service Area and Facilities

CVWD provides water to a population of approximately 35,000 throughout its service area. CVWD receives its water from two main sources, the Verdugo Groundwater Basin (Basin), and imported water from Metropolitan Water District of Southern California (Metropolitan) through the Foothill Municipal Water District (FMWD). CVWD provides potable drinking water to its customers via 12 local groundwater wells, and imported water supply through three Metropolitan connections and an inter-tie system with the City of Glendale as well as the La Cañada Irrigation District.

Water Demand

Currently, the total water demand for the 35,000 people served by CVWD is approximately 4,400 acre-feet annually consisting of potable water.

CVWD has selected to comply with **Option 3** of the SBx7-7 compliance options. However, the minimum required target applies and CVWD's 2015 interim water-use target is 146.3 GPCD, and the 2020 final water-use target is **140.1 GPCD**.

Water Sources and Supply Reliability

Sixty one percent of CVWD's source water is local ground water supply in the Basin. The majority of CVWD's ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. Local groundwater is disinfected with chlorine before blending with Metropolitan's surface water. The remaining 39% of CVWD's source water is imported surface water supplied by Foothill Municipal Water District (FMWD), which is a member agency to Metropolitan. 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.

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. Metropolitan's 2010 RUWMP finds that Metropolitan is able to meet full service demands of its member agencies with existing supplies from 2015 through 2035 during normal years, single dry year, and multiple dry years. CVWD is therefore capable of meeting the water demands of its customers in normal, single dry, and multiple dry years between 2015 and 2035, as illustrated in Table 3-12, Table 3-13, and Table 3-14, respectively.

Future Water Supply Projects

FMWD, CVWD's wholesale provider has initiated a Local, Reliable Water Supply Program (LRWSP) to reduce dependence on imported water supplies through development of recycled water as well as increased storm water capture and recharge and water conservation throughout the service area. Recycled water supplies currently comprise 1% of the total water supply within the FMWD service area, which could benefit CVWD in the future. FMWD plans to develop recycled water through the construction of up to three satellite membrane bioreactor (MBR) 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 currently in the planning stages, and the amount of additional local production is not known.

CVWD is working towards the development of the Crescenta Valley County Park Multiuse Project. This Project will allow CVWD to increase groundwater storage in the Basin by installation and maintenance of underground infiltration galleries underneath portions of the existing park. This will be accomplished by utilizing the existing Los Angeles County flood control channels (Verdugo Wash) and surface flow within the Crescenta Valley to divert storm water during the rainy season to proposed underground

infiltration basins within the recreational areas. The project will potentially increase the local water supply by an annual average of 340 ac-ft per year, thus enhancing CVWD's groundwater resource and reducing dependence on imported supplies. Also, through the process of capture, treatment and reuse of storm water and dry weather flow, the project could potentially reduce pollutant load from contaminating the Los Angeles River.

In addition, CVWD will be installing a new interconnection with the City of Los Angeles, Department of Water and Power (LADWP) that should be complete by the end of 2011. LADWP/CVWD interconnection allows for CVWD to receive up to 2.2 cfs and have the ability to back-feed FMWD. This emergency connection would be able to supply an additional 1.9 MGD.

As funding permits, CVWD plans to rehabilitate its older groundwater wells with new technologies over the ten (10) year period starting in 2015. The existing wells are between 55 to 80 years old and have reached the end of their useful life. CVWD's current program is to perform at least two (2) well rehabilitations a year which includes cleaning the well casing with chemical treatment and installation of a liner to extend the life of a well.

1. Introduction

1.1. Urban Water Management Plan Requirements

Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act), require "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 within thirty (30) days after adoption.

This UWMP provides DWR with information on the present and future water resources and demands and provides an assessment of CVWD's water resource needs. Specifically, this document will provide water supply planning for a 25-year planning period in 5-year increments. The plan identifies water supplies for existing and projected demands, quantifies water demands during normal year, single-dry year, and multiple-dry years, and identifies supply reliability under the three hydrologic conditions. This document 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. The Water Conservation Act of 2009 or SBx7-7 enacted in 2009 is the water conservation component of the Delta package. It stemmed from the Governor's vision to achieve a 20% statewide reduction in per capita water-use by 2020. 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. Urban retail water suppliers must include in their 2010 UWMPs the following information from their 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, Water and Sewer Service Priority for Housing Affordable to Low-Income Households. 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 UWMP 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 CVWD's water utility. The UWMP Checklist has been completed, which identifies the location of Act requirements in this Plan and is included as Appendix A.

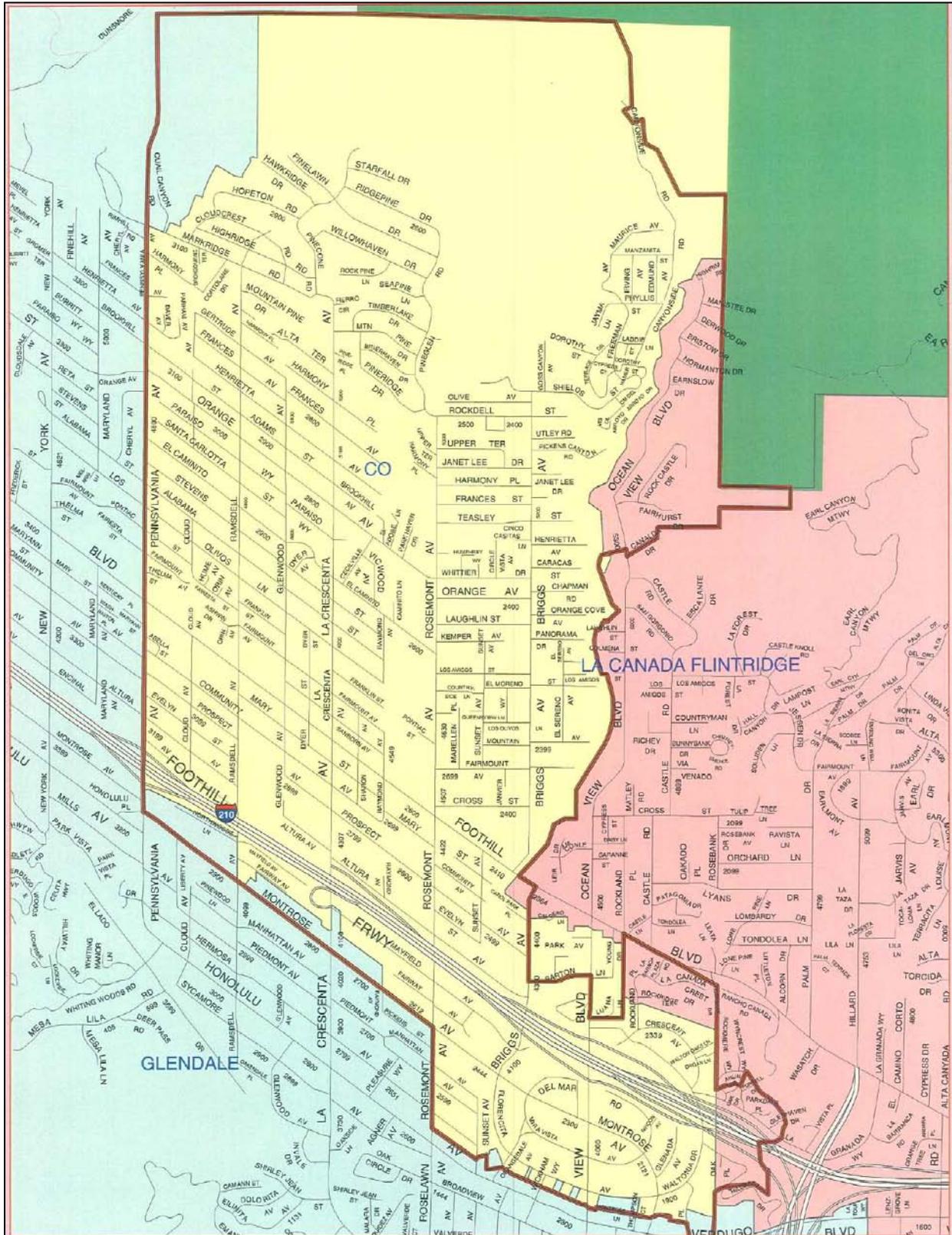


Figure 1-1: Regional Location of Urban Water Supplier



1.2. Agency Overview

CVWD was incorporated in 1950 to serve water to a rapidly growing residential community north of the City of Los Angeles.

CVWD supplies water to approximately 35,000 people in the Crescenta Valley, which includes the unincorporated areas of La Crescenta, Montrose, and portions of Glendale and La Cañada-Flintridge. CVWD has a 5-member Board of Directors that participate in the management of the District. The current members of the Board of Directors are:

- Kathy Ross – Board President
- Judy Tejada – Board Director
- Kerry Erickson – Board Director
- James Bodnar – Board Director
- Ken Putnam – Board Director

1.3. Service Area and Facilities

1.3.1. CVWD's Service Area

CVWD's service area comprises approximately four square miles within the unincorporated areas of La Crescenta and Montrose, as well as portions of the cities of Glendale and La Cañada-Flintridge in Los Angeles County. The service area ranges in elevation from approximately 1,200 feet to almost 3,000 feet above sea level, due to its location next to the San Gabriel Mountains and sloping terrain.

1.3.2. CVWD's Water Facilities

CVWD's water sources are 12 local groundwater wells, with an average depth of 200 ft., one mountain tunnel (gravity fed), and imported water supply through three separate Foothill Municipal Water District (FMWD)/Metropolitan Water District (Metropolitan) connections and inter-tie systems with the City of Glendale as well as La Cañada Irrigation District. On a long term basis, approximately 60% of CVWD's annual water demand is met by the local groundwater supply and 40% by imported water. This ratio does change depending on the water supply conditions, weather, and demand. CVWD operates 11 separate water pressure zones served by 14 pumping stations and 17 storage reservoirs totaling 17.5 million gallons.

2. Water Demand

2.1. Overview

Currently, the total water demand for the 35,000 people served by CVWD is approximately 4,400 acre-feet annually consisting of potable 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 demands (from a historical baseline) by 2020. Due to great water conservation efforts in the past decade, CVWD is on its way to meeting this requirement on its own.

This section will explore in detail CVWD'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, to satisfy SBx7-7 requirements, this section will provide details of CVWD's SBx7-7 compliance method selection, baseline water-use calculation, and its 2015 and 2020 water-use targets.

2.2. Factors Affecting Demand

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

2.2.1. Climate Characteristics

CVWD has a Mediterranean climate, with a "foothill" characteristic, specifically, but with some coastal influence. Summers are warm to hot, and dry while winters are cool and have an annual average precipitation of approximately 23.5 inches.

Another feature of this foothill Mediterranean climate is the frequency of high-velocity, low-humidity, northeasterly winds in the fall and early winter. Therefore, CVWD is highly prone to wildfire danger during these periods. Adequate storage of reservoir water supply is deemed critical by the local fire jurisdictions. The average evapotranspiration (ET_o) is 54 inches per year which is more than twice the annual average rainfall. This translates to a high demand for landscape irrigation for homes, commercial properties, and parks. Moreover, a region with low rainfall like Southern California is also more prone to droughts. Average annual ET_o, temperatures and rainfall are shown in Table 2-1.

Table 2-1: Climate Characteristics

	Standard Monthly Average ETo (inches) [1]	Annual Rainfall (inches) [2]	Average Temperature (°F) [3]
Jan	1.90	4.97	53.3
Feb	2.33	5.78	54.2
Mar	3.65	4.18	55.7
Apr	4.91	1.43	56.3
May	6.07	0.53	62.6
Jun	6.93	0.19	66.0
Jul	7.71	0.04	71.7
Aug	7.24	0.18	73.0
Sep	5.34	0.47	71.5
Oct	3.99	0.97	64.3
Nov	2.43	1.88	60.7
Dec	1.95	2.99	55.2
Annual	54.44	23.60	62.0

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

[2] Data provided by Crescenta Valley Water District from station FC251. Average from 1970-2010.

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

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

2.2.2. Demographics

CVWD serves a population of 35,000. Because there is no correlation between the latest Census Blocks and CVWD’s service boundaries, CVWD’s current population was estimated through an analysis of number of connections and average household size. The population within CVWD’s service area is expected to increase by 4% in the next 25 years, or 0.17% annually. Table 2-2 shows the population projections for the next 25 years based on CVWD’s analysis.

There is no industry in CVWD’s service area and there are less than 5% commercial or institutional accounts. CVWD does not anticipate any significant increases in employment for the area based on the land availability and the zoning. The 0.17% annual average increase was obtained from the California Department of Finance statistical

records. Densification will occur as single family lots are converted to multi-family dwellings where it is allowed by zoning classification and the governing agency.

Table 2-2: Population – Current and Projected

	2010	2015	2020	2025	2030	2035-opt
Service Area Population	35,000	35,300	35,600	35,900	36,200	36,500

2.2.3. Land Use

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

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

2.3. Water-Use by Customer Type

The knowledge of an agency’s water consumption by type of use or by customer class is key to developing that agency’s water-use profile which identifies when, where, how, and how much water is used, and by whom within the agency’s service area. A comprehensive water-use profile is critical to the assessment of impacts of prior water conservation efforts as well as to the development of future conservation programs.

This section provides an overview of CVWD’s water consumption by customer type in 2005 and 2010, as well as projections for 2015 to 2035. The customer classes are categorized as follows: single-family residential, multi-family residential, commercial/industrial/institutional (CII), dedicated landscape, and agriculture. Other water uses including sales to other agencies and non-revenue water are also discussed in this section.

2.3.1. Overview

CVWD has maintained approximately 8,100 customer connections to its potable water distribution system since 2005. CVWD is projecting a 5% increase in the number of connections through to 2035. All water connections in CVWD’s service area are metered.

Approximately 88% of CVWD’s water demand is residential. Commercial and dedicated landscape sectors consume approximately 8% of CVWD’s potable water supply. A small portion of CVWD’s demand is from government/institutional establishments such as municipal buildings. CVWD does not provide any sales to agriculture, nor other agencies, saline water intrusion barriers, groundwater recharge, or conjunctive use.

Tables 2-3 and 2-4 provide a summary of the past, current, and projected water-use by customer class and the number of water service customers by sector in five-year increments from 2005 through to 2035.

Table 2-3: Past, Current and Projected Service Accounts by Water-Use Sector

Calendar Year	Number of Accounts by Water-Use Sector					
	Single Family	Multi-Family	Commercial	Institutional/Gov	Landscape	Total Accounts
2005	6,842	705	369	72	39	8,027
2010	6,879	709	371	72	39	8,070
2015	6,948	716	375	73	40	8,151
2020	7,018	723	378	74	40	8,233
2025	7,087	730	382	75	40	8,315
2030	7,157	737	386	75	41	8,397
2035	7,227	745	390	76	41	8,479

Table 2-4: Past, Current and Projected Water Demand by Water-Use Sector

Calendar Year	Water Demand by Water-Use Sectors (AFY)					
	Single Family	Multi-Family	Commercial	Institutional/Gov	Landscape	Total Demand
2005	3,361	1,015	228	185	184	4,973
2010	2,989	903	203	165	164	4,422
2015	3,481	1,051	236	192	191	5,150
2020	3,514	1,061	238	193	192	5,200
2025	3,548	1,072	241	195	194	5,250
2030	3,582	1,082	243	197	196	5,300
2035	3,599	1,087	244	198	197	5,325

2.3.2. Residential

The great majority (88%) of water sold by CVWD in the current year (2010) goes to residential use. This percentage appears to be the same as the last UWMP update in 2005. Per capita trends are estimated due to the uncertainty of the population estimates in CVWD’s service area. However, the population growth within the area is relatively

small. Water consumption by the residential sector is projected to remain at about 90% through the 25-year planning horizon.

2.3.3. Non-Residential

In 2010 non-residential demand was approximately 12% of the overall demand and is expected to remain so through 2035. CII uses (excluding large landscape) represent a combined 8% of CVWD’s total demand. Demands from government/institutional establishments are expected to remain around 4% of CVWD’s total water demands for the next 25 years.

2.3.4. Other Water Uses

2.3.4.1. Sales to Other Agencies

CVWD does not sell water to other agencies except in cases of emergency.

2.3.4.2. Non-Revenue Water

Non-revenue water is defined by the International Water Association (IWA) as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. Non-revenue water consists of three components: unbilled authorized consumption (e.g. hydrant flushing, fire fighting, and blow-off water from well start-ups), real losses (e.g. leakage in mains and service lines), and apparent losses (unauthorized consumption and metering inaccuracies).

CVWD’s non-revenue water accounts for about 7% of CVWD’s total demand (Table 2-5).

Table 2-5: Additional Water Uses and Losses (AFY)

Water-Use	2005	2010	2015	2020	2025	2030	2035-opt
Saline Barriers							
Groundwater Recharge							
Conjunctive Use							
Raw Water							
Recycled Water							
Flushing	-	2	2	2	2	2	2
Unaccounted-for System Losses	350	325	325	340	360	360	360
Total	350	327	327	342	362	362	362

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 Bay Delta legislative package. It seeks to implement Governor Schwarzenegger's 2008 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 targets to help achieve water-use reduction targets. The retail water supplier is to select one of the four target-setting methods (compliance options). 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 must still report the water-use target for its individual service area. The bill also includes reporting requirements for the 2010, 2015, and 2020 UWMPs. An agency that does not comply with SBx7-7 requirement will not be eligible for water related grants or loans, from the state on and after July 16, 2016. However, if an agency that is not in compliance documents a plan and obtains funding approval to come into compliance then could become eligible for grants or loans.

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 SBx7-7 requirement options. The four options are:

- *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 commensurate 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.
 - CVWD falls in the South Coast hydrologic region which has a 2020 target of 149 GPCD¹.
- *Option 4* requires the subtraction of Total Savings from the Base GPCD:
 - Total Savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings.

¹ California Department of Water Resources 20x2020 Water Conservation Plan (April 30, 2009)
www.water.ca.gov/wateruseefficiency/sb7/docs/20x2020plan.pdf

State Hydrologic Region Targets

The 20x2020 Water Conservation Plan proposed Statewide Interim and Final 2020 targets. In addition, interim and final targets are established for each of the State's 10 hydrologic regions based on population, climate, and water-use. The hydrologic region targets were incorporated into the Water Conservation Bill of 2009. Current water-use and conservation targets vary among the regions due to many factors, such as land use patterns (lot sizes, square footage of irrigated landscape), and industrial and socioeconomic characteristics (the cost of water and income level of residents)².

CVWD's Compliance Option Selection

CVWD has selected compliance **Option 3**.

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

2.4.3. Baseline Water-Use

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

Since CVWD does not use recycled water, a 10-year instead of a 15-year rolling average was calculated. CVWD's baseline water-use is **152.4 GPCD**, which was obtained from the 10-year period January 1, 1996 to December 31, 2005.

Tables 2-6 and 2-7 provide the base period ranges used to calculate the baseline water-use for CVWD as well as the service area population and annual water-use data from the base daily per capita water-use. Data provided in Table 2-6 was used to calculate the continuous 10-year average baseline. Moreover, regardless of the compliance method adopted by CVWD, it will need to meet the minimum water-use target of 5% reduction from a five-year baseline as calculated in Table 2-7.

² California Department of Water Resources 2010 Final UWMP Guidebook (March 2011)

Table 2-6: Base Daily per Capita Water-Use – 10-year range

Highest Available Baseline [1]		Beginning	Ending
10 Year Avg		January 1, 1996	December 31, 2005
Calendar Year	Service Area Population	Gross Water-Use (gallons per day)	Daily Per Capita Water-Use
1996	31,277	4,710,600	151
1997	31,530	4,907,772	156
1998	31,784	4,531,334	143
1999	32,040	5,006,650	156
2000	32,299	5,104,085	158
2001	32,559	5,030,984	155
2002	32,822	5,170,823	158
2003	33,086	5,110,451	154
2004	33,353	5,111,645	153
2005	33,622	4,755,257	141
Base Daily Per Capita Water-Use:			152.4

[1] The most recent year in base period must end no earlier than December 31, 2004, and no later than December 31, 2010. The base period cannot exceed 10 years unless at least 10 percent of 2008 retail deliveries were met with recycled water.

Table 2-7: Base Daily per Capita Water-Use – 5-year range

Highest Available Baseline [2]		Beginning	Ending
5 Year Avg		January 1, 2003	December 31, 2007
Calendar Year	Service Area Population	Gross Water-Use (gallons per day)	Daily Per Capita Water-Use
2003	33,086	5,110,451	154
2004	33,353	5,111,645	153
2005	33,622	4,755,257	141
2006	33,893	4,876,725	144
2007	34,167	4,932,677	144
Base Daily Per Capita Water-Use:			147.5

[2] The base period must end no earlier than December 31, 2007, and no later than December 31, 2010.

2.4.4. SBx7-7 Water-Use Targets

Under Compliance Option 3, CVWD has chosen to achieve 95% of the State’s hydrologic region target of 141.6 GPCD by 2020. However, the minimum required calendar year target calculated from the five-year base daily GPCD found in Table 2-7 comes to 140.1 GPCD in 2020. Therefore, the required minimum target applies for CVWD.

Under the minimum required target, CVWD’s 2015 interim water-use target is 146.3 GPCD, and the 2020 final water-use target is **140.1 GPCD** as summarized in Table 2-8.

Table 2-8: Preferred Compliance Option and Water-Use Targets

	Baseline	2015 Target	2020 Target
Option 3 - 95% of State Hydrologic Region Targets	152.4	146.3	140.1

2.4.5. Water-Use Reduction Plan

In order to meet the SBx7-7 targets, CVWD will continue to implement the water-use efficiency measures described in Section 4 of this UWMP and continue to participate in water-use efficiency programs offered by its regional wholesaler, FWMD and Metropolitan. FMWD’s conservation measures are detailed in FMWD’s UWMP Section 4, and Metropolitan’s conservation measures are detailed in Metropolitan’s 2010 RUWMP Section 3.4.

Additionally, Metropolitan in collaboration with its member agencies is in the process of developing a Long Term Conservation Plan,³ which seeks an aggressive water-use efficiency target in order to achieve a 20% reduction in per capita water-use by 2020 for the entire Metropolitan service area.

Metropolitan Long Term Conservation Plan

Metropolitan’s Long Term Conservation Plan will build on Metropolitan’s traditional programs of incentives, education and broad outreach while developing a new vision of water-use efficiency by altering the public’s perspective on water through market transformation. The overarching goals of the Long Term Conservation Plan are as follows:

- Achieve the 2010 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.

³ Metropolitan Water District of Southern California Long Term Conservation Plan Working Draft Version 6 (November 30, 2010)

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 and its member agencies will implement the five strategies through a traditional program, a market acceleration program, and legislation and regulation. The five strategies include:

- **Use catalysts for market transformation.** Metropolitan and member agencies will pursue market transformation to affect the market and consumer choices for water efficient devices and services.
- **Encourage action through outreach and education.** Metropolitan and member agencies 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 and member agencies 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 and member agencies will form strategic alliances with partners to leverage resources, opportunities and existing momentum that support market transformation.
- **Advance water efficiency standards.** Metropolitan and member agencies 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 three complementary programs: traditional and market acceleration programs, and legislation and regulation. 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.

Legislation and Regulation: These are important tools and often the primary means for ensuring future water savings from devices and services. Regulations, ordinances and codes establish conditions that will ensure a minimum level of water-use efficiency for a particular device or service in the future. Markets are dynamic, and the influences on manufactures, retailers, and consumers are constantly changing. Any progress made on changing consumer preferences that consists of a market share of efficient products, is protected through legislation and regulations that require a minimum efficiency standard. This benefits both water agencies and manufacturers who invest in bringing water-efficiency technologies to the market. Legislation and regulation are also effective exit strategies to discontinue traditional incentive programs so that resources can be redirected to new technologies and approaches.

Implementation of the combined programs, Traditional - Market Acceleration – Legislation and Regulation, will be closely coordinated between Metropolitan, member agencies and sub-agencies to maximize synergies. An adaptive management approach will be employed using research, implementation and evaluation to guide decisions on program activities and intensity.

Periodic Review

A periodic review of conservation actions to measure progress towards the water savings goals will be an integral component of the effort. The review will include work that is completed or in progress. It will consider factors that have affected the results as well as the opportunities to improve cost effectiveness and water savings.

2.5. Demand Projections

2.5.1. 25 Year Projections

One of the main objectives of this UWMP is to provide CVWD’s future water demand outlook. Currently, CVWD’s total annual water demand is 4,422 acre-feet comprised of 61% local groundwater and 39% imported water.

As illustrated in Table 2-9, CVWD’s water demand is expected to increase by 20% in the next 25 years.

Table 2-9: Current and Projected Water Demands (AFY)

Water Supply Sources	2010	2015	2020	2025	2030	2035-opt
FMWD (Imported Treated Full Service (non-int.))	1,721	1,856	1,906	1,956	2,006	2,031
Verdugo Basin GW	2,701	3,294	3,294	3,294	3,294	3,294
Total	4,422	5,150	5,200	5,250	5,300	5,325

Table 2-10 shows the projected demands for imported water that CVWD has provided to FMWD its wholesale agency illustrating the amount of water CVWD wishes to purchase from FMWD over the next 25 years.

Table 2-10: CVWD's Demand Projections Provided to Wholesale Suppliers (AFY)

Wholesaler	2015	2020	2025	2030	2035-opt
FMWD	1,856	1,906	1,956	2,006	2,031

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 multi-family level. These projections assist retail suppliers with compliance with Section 65589.7 of the Government Code, which requires suppliers to grant a priority for the provision of service to low-income households. Consistent with this Code section, a low-income household is defined as a household earning 80% of the County of Los Angeles’ median income or less.

In order to identify the low-income housing projections within its service area, DWR⁴ recommends that retail suppliers rely on both the Housing Element and General Plans or 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 (CDHCD).

The RHNA process quantifies the need for housing by income group within each jurisdiction during a 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

⁴ California Department of Water Resources, Guidebook to Assist Urban Water Suppliers to Prepare a 2010 UWMP, Final (March 2011)

RHNA is to prioritize local resource allocation and to help decide how to address existing and future housing needs.

For the purpose of this 2010 UWMP, the percentages of low-income households for CVWD’s service area were obtained from RHNA Subcommittee's report titled Draft RHNA Methodology Framework dated April 19th 2011. It is estimated that 2,688 households within CVWD’s service area are allocated to low-income household (1,744 single family and 944 multi-family households). This number of household translates to approximately 30% of CVWD’s water demands.

Table 2-11 provides a breakdown of the projected water needs for low-income single-family and multi-family units. For example, the total single-family residential demand is projected to be 3,481 AFY in 2015 and 3,599 AFY in 2035. The projected water demands for housing needed for single-family low-income households is 1,044 and 1,080 AFY for 2015 and 2035, respectively.

Table 2-11: Projected Water Demands for Housing Needed for Low-income Households (AFY)

Water-Use Sector	2015	2020	2025	2030	2035
Total Retail Demand	5,150	5,200	5,250	5,300	5,325
Total Residential Demand	4,532	4,576	4,620	4,664	4,686
<i>Total Low-income Households Demand</i>	<i>1,360</i>	<i>1,373</i>	<i>1,386</i>	<i>1,399</i>	<i>1,406</i>
SF Residential Demand - Total	3,481	3,514	3,548	3,582	3,599
<i>SF Residential Demand - Low-income Households</i>	<i>1,044</i>	<i>1,054</i>	<i>1,064</i>	<i>1,075</i>	<i>1,080</i>
MF Residential Demand - Total	1,051	1,061	1,072	1,082	1,087
<i>MF Residential Demand - Low-income Households</i>	<i>315</i>	<i>318</i>	<i>321</i>	<i>325</i>	<i>326</i>

3. Water Sources and Supply Reliability

3.1. Overview

Sixty one percent of CVWD’s source water is local ground water supply in the Verdugo Basin. The majority of CVWD’s ground water wells are located along the Verdugo Wash, south of Honolulu Avenue. Local groundwater is disinfected with chlorine before blending with Metropolitan’s surface water. The remaining 39% of CVWD’s source water is imported surface water supplied by FMWD, which is a member agency to Metropolitan. 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. The imported water supply numbers shown here represent only the amount of supplies projected to meet demands and not the full supply capacity.

Figure 3-1 provides a projection of CVWD’s water supply sources for the next 25 years.

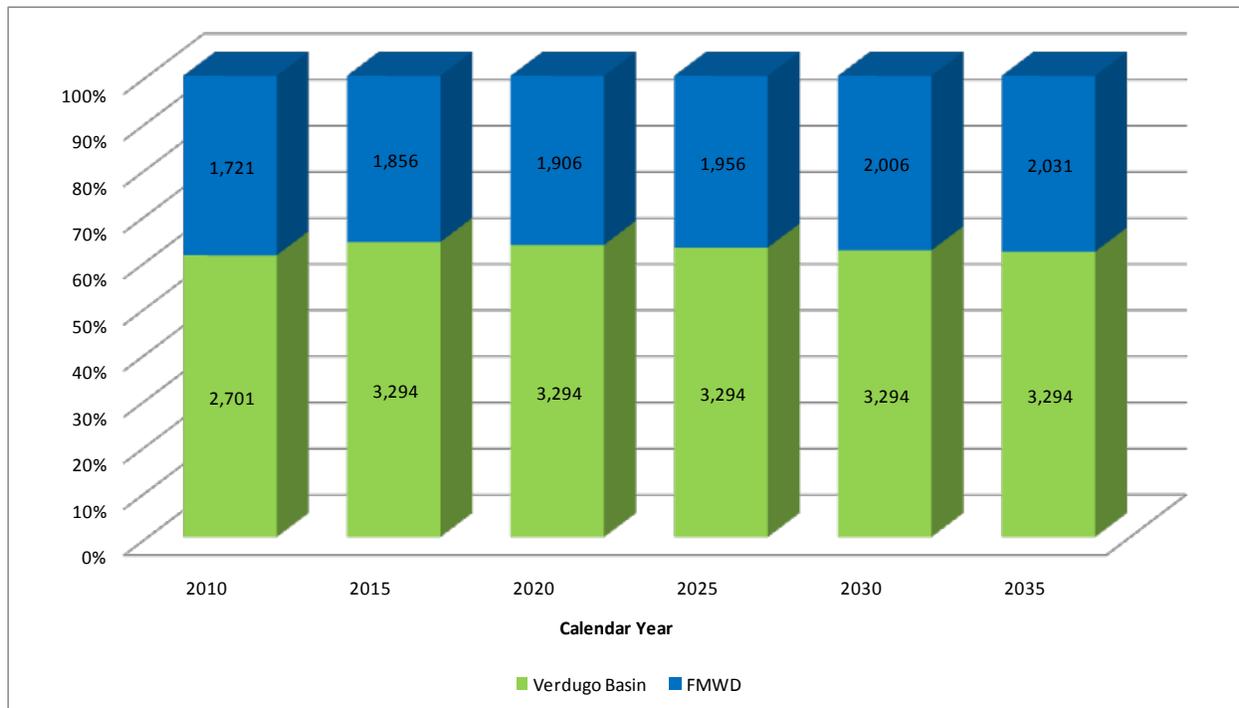


Figure 3-1: Current and Projected Water Supplies (AFY)

3.2. Imported Water

CVWD currently relies on 1,721 AFY of imported water wholesaled by Metropolitan through FMWD to supplement local groundwater. Imported water represents approximately 39% of CVWD's total water supply. Metropolitan's principal sources of water originate from two sources - the Colorado River via the Colorado Aqueduct and the Lake Oroville watershed in Northern California through the SWP. This water is treated at Metropolitan's Weymouth Treatment Plant. In 2009, the Weymouth Treatment Plant received a blend of 25% Colorado River and 75% SWP.

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.

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: average year, single dry-year, and multiple dry-years.

Colorado River Supplies

Colorado River Aqueduct 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 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 which were 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 State Banks Pumping Plant 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 Metropolitan 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 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 3-1, 3-2, and 3-3 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 3-1: Metropolitan Average Year Projected Supply Capability and Demands for 2015 to 2035

Forecast Year	2015	2020	2025	2030	2035
Average Year Supply Capability¹ and Projected Demands Average of 1922-2004 Hydrologies (acre-feet per year)					
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.

Source: Metropolitan's 2010 RUWMP

**Table 3-2: 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	1,991,000	1,889,000	1,921,000	1,974,000	2,039,000
IID-SDCWA Transfers and Canal Linings	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.

Source: Metropolitan's 2010 RUWMP

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

Forecast Year	2015	2020	2025	2030	2035
Multiple Dry-Year Supply Capability¹ and Projected Demands Repeat of 1990-1992 Hydrology (acre-feet per year)					
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.

Source: Metropolitan's 2010 RUWMP

3.2.2. CVWD’s Imported Water Supply Projections

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

California Water Code section 10631 (k) requires the wholesale agency to provide information to the urban retail water supplier for inclusion in its UWMP that identifies and quantifies the existing and planned sources of water available from the wholesale agency. Table 3-4 indicates the wholesaler’s water availability projections by source for the next 25 years as provided to CVWD by FMWD.

Table 3-4: Wholesaler Identified & Quantified Existing and Planned Sources of Water (AFY)

Wholesaler Sources	2015	2020	2025	2030	2035-opt
FMWD	1,956	2,281	2,396	2,516	2,646

3.3. Groundwater

CVWD owns and operates 12 production wells in the Verdugo Groundwater Basin (Basin). The Basin is an adjudicated basin within the Upper Los Angeles River Area (ULARA). The Basin has an adjudicated "safe yield" of 7,150 acre-feet per year (AFY). CVWD shares groundwater rights in this basin with the City of Glendale. As the only two water-rights holders in the Basin, CVWD has an annual entitlement of 3,294 acre-feet and the City of Glendale has an annual entitlement of 3,856 acre-feet.

From 2000 to 2010, CVWD has pumped groundwater ranging from 2,575 to more than 3,412 acre-feet. The Basin was adjudicated in a court decision in 1979 and is administered by the ULARA Watermaster. A copy of the ULARA judgment is included in this UWMP as Appendix B. CVWD’s prescriptive rights in the Basin are 3,294 AFY. To date, the neighboring City of Glendale, as the only other Basin rights holder, has not pumped its full adjudication (3,856 AFY) in the Basin. In any year, the Watermaster may allow excess pumping within the Basin by either party as long as the total yield of 7,150 acre-feet annually is not exceeded.

The water quality of the Basin is high in nitrates and selected wells show the presence of Volatile Organic Compounds (VOCs) (Tetrachloroethylene (PCE)) above the California Department of Public Health (CDPH) maximum contaminant levels (MCLs).

Groundwater containing nitrate is either blended with imported water and/or treated at CVWD’s Glenwood Nitrate Reclamation Facility to meet drinking water standards. Blending with other well water or imported water is sufficient to supply water at less than

the MCL for PCE as approved by CDPH. During the past 5 years, there have been wells with MTBE levels above the CDPH allowed maximum contaminant level (MCL). Wells with MTBE levels above the secondary standard were taken out of service. At the present time, MTBE is not present in any of the District's wells above the secondary CDPH standard. MTBE levels are monitored weekly throughout CVWD.

It is CVWD's goal to maintain full groundwater pumping capabilities in the Basin to pump its adjudicated right of 3,294 AF every year. As shown in Table 3-5, CVWD has a projection of 3,294 AFY of groundwater. The City of Glendale is working on a new project that is planned to be constructed within the next few years that will replace their existing wells, which may result in their ability to increase their water production. Since the 2005 UWMP, CVWD implemented a long-term capital improvement program to rehabilitate its original 12 wells. In addition, CVWD is planning to install a least 2 new wells to replace the older wells within the next 5 years.

Table 3-5: Groundwater Pump Rights (AFY)

Basin Name	Pumping Right (AFY)
Verdugo Basin	3,294
Total	3,294

Table 3-6 shows CVWD's recent groundwater production from the Basin in the past 5 years from 2005 to 2009.

Table 3-6: Amount of Groundwater Pumped in the Past 5 Years (AFY)

Basin Name(s)	2005	2006	2007	2008	2009
Verdugo Basin	3,051	3,687	3,144	3,222	3,084
% of Total Water Supply	57%	67%	57%	61%	66%

Table 3-7 shows the amount of groundwater projected to be pumped from the Basin by CVWD over the next 25 years. It is CVWD's goal to pump its entire adjudication every year. Various problems with CVWD's wells have made that prohibitive in the past three years. This is a contributing factor to CVWD's intention to embark on a well rehabilitation and development plan over the next several years.

Table 3-7: Amount of Groundwater Projected to be Pumped (AFY)

Basin Name(s)	2015	2020	2025	2030	2035-opt
Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
% of Total Water Supply	63%	59%	58%	57%	55%

3.4. Supply Reliability

3.4.1. Overview

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, dry, and multiple dry water years. CVWD depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. Development of groundwater augments the reliability of the imported water system. There are various factors that may impact reliability of supplies, such as legal, environmental, water quality and climate, 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 2015 through 2035 during normal years, single dry year, and multiple dry years.

Metropolitan’s 2010 Integrated 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 3-8 shows the reliability of the wholesaler’s supply for single dry year and multiple dry year scenarios.

Table 3-8: 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. FMWD’s 2010 UWMP states that it will meet full service demands to its customers from 2015 through 2035. Table 3-9 shows the basis of water year data used to predict drought supply availability.

Table 3-9: Metropolitan’s 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

3.4.2. Factors Impacting Reliability

The Act requires a description of the reliability of the water supply and vulnerability to seasonal or climatic shortage. CVWD relies on local groundwater and import supplies provided by Metropolitan through FMWD. 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 run-off, operation of water pumps and other factors has led to historical restrictions in SWP supply deliveries. SWP delivery restrictions due to these 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 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 CRA contains high levels of salts. The operational constraint is that this water needs to be blended with SWP supplies to meet the target salinity of 500 mg/L of total dissolved solids (TDS). Another water quality concern is related to the quagga mussel. Controlling the spread and impacts of quagga mussels within the CRA requires extensive maintenance and results in reduced operational flexibility.

Climate Change – Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning even more challenging. The areas of concern for California include the reduction in the 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 believed, however, that climatic factors would have more of an impact than the others. Climatic conditions have been projected based on historical patterns; however severe pattern changes may occur in the future. Table 3-10 shows the factors resulting in inconsistency of supply.

Table 3-10: Factors Resulting in Inconsistency of Supply

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

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

3.4.2.1. Water Quality

Imported Water - Metropolitan is responsible for providing water of a high quality throughout its service area. The water that Metropolitan delivers is tested both for currently regulated contaminants and for additional contaminants of concern as over 300,000 water quality tests are conducted each year to regulate the safety of its water supplies. Metropolitan’s supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year’s availability of the source, is then treated and delivered throughout Metropolitan’s service area.

Metropolitan’s primary sources face individual water quality issues of concern. The CRA water source contains a higher level of total dissolved solids (TDS) and a lower level of organic material, while the SWP contains a lower TDS level while its level of organic materials is much higher, lending to the formation of disinfection byproducts (DBPs). 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.

Groundwater – CVWD’s water system is and has been in compliance with all CDPH water quality standards. Groundwater quality does not impact water supply at this time

due to CVWD’s Nitrate treatment plant and the ability to blend waters below the MCL for PCE, Nitrate and MTBE.

In 2006, CVWD experienced Methyl tertiary butyl ether (MTBE) levels above the public health goal and removed a well from service. That well was placed back into service in May 2008. However, another well was taken out of service in September 2008 due to high levels of MTBE. That well was placed back into service in March 2011. MTBE levels contributed to a reduction in groundwater pumping below the adjudicated amount in 2009 and 2010. Currently, all wells are in production and contain only trace amounts of MTBE.

In order to assure continued production, a Granular Activated Carbon treatment plant has been designed and would be able to be constructed within 6 months if necessary. Should complete contamination of CVWD’s groundwater occur for a temporary or extended period of time due to high concentrations of MTBE, imported water would be used to meet CVWD demand. A maximum of 5.3 million gallons per day can be obtained from FMWD, CVWD’s wholesale provider and 3.2 million gallons per day is available from CVWD’s emergency connection with the City of Glendale. Additionally, CVWD will be completing a second emergency interconnection with the City of Los Angeles by the end of 2011. This would supply an additional 1.9 million gallons per day. The available supply of imported water exceeds CVWD’s highest historical and projected daily demand.

Table 3-11 shows the impact in acre-feet per year that water quality would have on supply.

Table 3-11: 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
Local	0	0	0	0	0	0

3.4.3. Normal-Year Reliability Comparison

CVWD has entitlements and/or written contracts to receive imported water from Metropolitan via the regional distribution system. 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. All imported water supplies assumed in this section are available to CVWD from existing water transmission facilities. Table 3-12 shows supply and demand under normal year conditions. Additional water supplies are projected to be available from Metropolitan; however, it is not included here since projected supplies meet projected demands; however based on

Metropolitan’s projections, CVWD will always be able to purchase enough water to meet demand.

Table 3-12: Projected Normal Water Supply and Demand (AFY)

	2015	2020	2025	2030	2035
Total Demand	5,150	5,200	5,250	5,300	5,325
Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
Imported	1,856	1,906	1,956	2,006	2,031
Total Supply	5,150	5,200	5,250	5,300	5,325

3.4.4. Single Dry-Year Reliability Comparison

CVWD has documented that it is 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 3-13 compiles supply and demand projections for a single dry water year. The available imported supply is greater than shown; however, it is not included because all demands are met; however based on Metropolitan’s projections, CVWD will always be able to purchase enough water to meet demand.

Table 3-13: Projected Single-Dry Year Water Supply and Demand (AFY)

	2015	2020	2025	2030	2035
Total Demand	5,686	5,741	5,796	5,851	5,879
Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
Imported	2,392	2,447	2,502	2,557	2,585
Total Supply	5,686	5,741	5,796	5,851	5,879

3.4.5. Multiple Dry-Year Reliability Comparison

CVWD is capable of providing their customers all their water 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. This is true even if the demand projections were to be increased by a large margin. Table 3-14 shows supply and demand projections under multiple dry-year conditions. It should be noted that during these multiple dry periods CVWD was able to pump its entire adjudication from Verdugo Groundwater Basin. It is also expected to see a demand reduction with implantation of demand management measures outlined in Section 4.2. Metropolitan’s reliability for multiple dry-years is discussed in Section 5.3.

Table 3-14: Projected Multiple Dry Year Period Supply and Demand (AFY)

		2015	2020	2025	2030	2035
First Year Supply	Total Demand	5,686	5,741	5,796	5,851	5,879
	Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
	Imported	2,392	2,447	2,502	2,557	2,585
	Total Supply	5,686	5,741	5,796	5,851	5,879
Second Year Supply	Total Demand	5,577	5,632	5,686	5,740	5,767
	Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
	Imported	2,283	2,338	2,392	2,446	2,473
	Total Supply	5,577	5,632	5,686	5,740	5,767
Third Year Supply	Total Demand	5,150	5,200	5,250	5,300	5,325
	Verdugo Basin GW	3,294	3,294	3,294	3,294	3,294
	Imported	1,856	1,906	1,956	2,006	2,031
	Total Supply	5,150	5,200	5,250	5,300	5,325

4. Demand Management Measures

4.1. Overview

Water conservation, often called demand-side management, can be defined as practices, techniques, and technologies that improve the efficiency of water-use. Such practices are referred to as Demand Management Measures (DMM). Increased efficiency expands the use of the water resource, freeing up water supplies for other uses, such as population growth, new industry, and environmental conservation.

The increasing efforts in water conservation are spurred by a number of factors: growing competition for limited supplies, increasing costs and difficulties in developing new supplies, optimization of existing facilities, delay of capital investments in capacity expansion, and growing public support for the conservation of limited natural resources and adequate water supplies to preserve environmental integrity.

CVWD recognizes the importance of water conservation and has made water-use efficiency an integral part of water-use planning. DMM as defined by the Act correspond to the California Urban Water Conservation Council's (CUWCC) Best Management Practices (BMPs). CVWD is currently implementing all applicable DMMs described in the Act. While, CVWD is not a signatory to the Memorandum of Understanding regarding Urban Water Conservation in California and is not a member of CUWCC, CVWD is actively participating in many water conservation activities. CVWD is in compliance with the CUWCC BMP's with the exception of volumetric wastewater rates. CVWD is planning on implementing volumetric wastewater rates by 2015.

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

4.2. Water-Use Efficiency Programs

CVWD actively participates in various Metropolitan residential and CII rebate programs, as well as local school and public education and outreach programs. CVWD also works cooperatively with FMWD, its regional wholesaler for technical and financial support needed to implement the DMMs.

Moreover, a Water Conservation Ordinance was adopted by CVWD Board of Directors in 2009 to reduce consumption and prohibit wasting water for all water-users within CVWD. This ordinance is described in more detail under Section 4.2.13.

Table 4-1 provides an overview of CVWD’s DMM program status and Table 4-2 provides CVWD’s Water Conservation Program budget for FY 2009-10.

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

Section	Demand Management Measure (DMM)	DMM Status		
		Past	Current	Future
4.2.1	Residential Water Surveys		X	
4.2.2	Residential Plumbing Retrofits		X	
4.2.3	System Water Audits, Leak Detection and Repair		X	
4.2.4	Metering with Commodity Rates		X	
4.2.5	Large Landscape Conservation Programs		X	
4.2.6	High-Efficiency Washing Machine Rebates		X	
4.2.7	Public Information Programs		X	
4.2.8	School Education Programs		X	
4.2.9	Commercial, Industrial and Institutional Programs		X	
4.2.10	Wholesale Agency Assistance		N/A	
4.2.11	Conservation Pricing		X	
4.2.12	Conservation Coordinator		X	
4.2.13	Water Waste Prohibition		X	
4.2.14	Residential ULFT Replacement Programs	X		

Table 4-2: CVWD’s Water-Use Efficiency Programs Budget for FY 2010-11

DMM	Program Description	Budget
DMM 1	Water Audits	\$6,000
DMM 2	Water Conservation Promotional items	\$7,000
DMM 5	Turf Replacement Program	\$25,000
DMM 5	Synthetic Turf Project	\$2,500
DMM 5	Water Conservation Garden signs, plant tags, and walkway makeover	\$1,500
DMM 5	Water Conservation classes	\$2,500
DMM 6	Supplemental Rebates for Washers	\$5,000
DMM 7	Pipeline Newsletter	\$9,000
DMM 7	Water Conservation Signs (Alert Sign Re-do's)	\$3,000
DMM 7	Water Conservation Brochures and Materials	\$11,000
DMM 7	Community Activities Booths and Registration and supplies	\$6,500
DMM 8	School Program (Water where did you go) K-6 assembly	\$5,850
DMM 8	Water Conservation books for Schools and Library	\$2,500
DMM 14	HET Toilet Rebates for General Community	\$10,000
Others	Rain Barrel Rebate	\$2,250
Others	Waterless Carwash rebate	\$1,500
Others	Fire Department Waterless Carwash set-up	\$1,300
Others	Water Conservation Intern Program	\$15,000
Total		\$117,400

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

CVWD offers formal water audits for qualified residents (those using over 22 units of water per billing period). There is a budget limit of \$6,000 per year which covers 48 audits. The service is performed by a contractor, WaterWise Consulting. At the present time it is CVWD’s intention to outsource water audits. The firm WaterWise is available to take over this program and a copy of the survey form is attached as Appendix C. In addition to audits, CVWD’s customer service staff respond to residential and commercial requests for investigation of high water bills. The investigation consists of meter leak tests, meter accuracy testing, property leak checks, irrigation system analysis, or a complete “on-premises” water audit. A water bill adjustment is given to all customers who demonstrate that they have repaired an on-site leak along with proof of the repair. This appears to be an effective water conservation measure although savings cannot be quantified until audit forms are developed and utilized.

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

CVWD also participates in various FMWD/Metropolitan programs aimed at increasing landscape water-use efficiency for residential customers, including rebate programs which provide financial incentives for residential customers to purchase weather-based irrigation controllers (WBIC), rotating nozzles, and replace turf grass with, native/drought tolerant plants, and/or permeable paving. These devices have the potential to save 37 gallons per day per residence for WBIC, 3.6 gallons per day per rotating nozzle, and 0.125 gallons per day per square foot of turf grass replaced.

Between 2004 and 2010, 300 WBIC and 198 rotating nozzles rebates were given out to residential customers representing a combined life time water savings of 128 AF. Between 2008 and 2010, 93,000 sq. ft. of turf grass was replaced by synthetic turf, native/drought tolerant plants, and/or permeable paving translating to a savings of 13 AFY or a life time savings of 130 AF.

4.2.2. DMM 2: Residential Plumbing Retrofit

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

Additionally, CVWD through FMWD/Metropolitan offered rebates for ultra low-flush toilets (ULFTs). Between 2004 and 2009, a total of 515 ULFTs were distributed under this program to single-family and multi-family homes within CVWD's service area representing a cumulative water savings of 68 acre-feet. The high efficiency toilet (HET) rebate program has since replaced the ULFT program as discussed under Section 4.2.14 DMM 14.

CVWD also works with the local building/planning departments of the City of La Cañada Flintridge, City of Glendale, and County of Los Angeles to assure enforcement of the ULFT installation requirements for new construction, and supports the prohibition of sale of toilets using more than 1.6 gallons per flush. Developers needs for fire-flow certificates, "will-serve" certificates, and ultimately water service connections are used as ways to insure compliance.

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

CVWD monitors water loss in its distribution system on an annual basis. It is CVWD’s highest priority to repair all known distribution system and service connection leaks immediately. In the past five years, non-revenue water averaged 7.4%.

A significant portion of non-revenue water could be attributed to meter inaccuracy. CVWD has embarked on a meter replacement program to replace all meters installed prior to 1990. Approximately 2,300 meters are still to be replaced. Due to financial considerations, the automatic meter reading (AMR) project has been placed on hold. It is CVWD’s plan to install an AMR system within the next five years with Board approval. The proposed AMR system will assist CVWD in leak detection on the customer's side of the meter.

It appears that distribution system leaks are the most-likely culprit for loss of water. CVWD has and will be continuing on its water main replacement program and is planning on a 20-year schedule to replace its deficient pipelines. CVWD prioritized its pipe replacement program by leak history, pipe size, fire-flow rates, and age. CVWD will be completing a new water master plan that will further address deficiencies in the system.

CVWD 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 the proactive pre-screening leak detection and repair programs which maintain an acceptable non-revenue water of 7%.

4.2.4. DMM 4: Metering with Commodity Rates

All CVWD water accounts are metered and billed monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly abbreviated as Kgal. A new four-tier water rate structure replaced the flat rate structure (\$3.32 per Kgal plus a monthly fixed charge based upon meter size) in 2008. The new rate structure is a four-tier increasing block rate (Table 4-3).

Table 4-3: CVWD’s Four-Tier Water Rate Structure

Single Family	Water-Use Range:	Local Cost:	FMWD Cost:	Total Unit Cost:
Tier 1	0 - 10 units	\$1.70/unit	\$1.90/unit	\$3.60/unit
Tier 2	11-33 units	\$2.63/unit	\$1.90/unit	\$4.53/unit
Tier 3	34-50 units	\$4.05/unit	\$1.90/unit	\$5.95/unit
Tier 4	50 + Units	\$5.55/unit	\$1.90/unit	\$7.45/unit

Table 4-4: CVWD’s Irrigation Usage Charge

	Water-Use Range:	Local Cost:	FMWD Cost:	Total Unit Cost:
Tier 1	0 - 70 units	\$2.63/unit	\$1.90/unit	\$4.53/unit
Tier 2	71 + units	\$5.55/unit	\$1.90/unit	\$7.45/unit

CVWD offers a senior low-income 20% discount on all water/sewer bills where the single family dwelling account holder meets specific age and annual income criteria.

4.2.5. DMM 5: Large Landscape Conservation Programs and Incentives

CVWD supports large landscape conservation through FMWD/Metropolitan’s regional programs including:

Save Water Save A Buck Rebate Program – As a member agency of FMWD, CVWD takes part in the Save Water Save a Buck Rebate Program which offers financial incentives to CII customers who purchase approved Weather Based Irrigation Controllers (WBICs) and rotating nozzles.

Turf Removal Program – On behalf of its member agencies, FMWD provides matching incentives for customers to replace turf grass with drought tolerant/native plants, and permeable paving. CVWD provides a rebate of \$0.50 per square foot of turf removed up to \$800. The same amount of rebate is provided for drought tolerant plants and permeable paving. CVWD’s participation in the turf grass removal rebate program resulted in the removal of 93,000 sq. ft. of turf representing 13 AFY of savings or a lifetime savings of 130 acre-feet.

California Friendly Landscape Training – On behalf of its member agencies, FMWD supports Metropolitan’s California Friendly Landscape Training, which provides education to residential homeowners and professional landscape contractors on a variety of landscape water-use efficiency practices they can employ. These classes are hosted by Metropolitan’s member agencies to encourage participation across the county. The Professional Training Program course consists of four consecutive classes in landscape water management, each building upon principles presented in the preceding class. Each participant receives a bound handbook containing educational materials for each class. These classes are offered throughout the year and taught in both English and Spanish languages.

In addition, CVWD takes advantage of regional and local efforts which target and market to large landscape properties using bill inserts and direct marketing efforts.

CVWD also sponsors two to three independent water efficient gardening classes per year. Topics include turf removal, design, placement, irrigation, plant selection, composting, gardening with worms, and efficient watering practices.

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

Starting in 2002, CVWD passed along Metropolitan's high efficiency washing machine rebate. CVWD promotes the program on its website, through its bi-monthly news publication and has flyers posted at the administration office and distributed at local events.

Residents in CVWD's service area are eligible to receive a \$135 rebate when they purchase a new High Efficiency Clothes Washer (HECW) as CVWD supplements Metropolitan's rebate. Rebates are available on a first-come, first-served basis, while funds last. Participants must be willing to allow an inspection of the installed machine for verification of program compliance. To qualify for a rebate, the HECW must have a water factor of 4.0 or less. An HECW with a water factor of 4 will use approximately 15 gallons of water per load compared to a conventional top-loading clothes washer which can use 40 gallons or more per load. Depending on use, these machines can save 10,000 gallons of water per year. Participants are encouraged to contact their local gas and/or electric utility as additional rebates may be available. Between 2004 and 2010, CVWD has given out 556 high-efficiency washing machine rebates to its customers. This equates to a water savings of 48 acre-feet to date.

4.2.7. DMM 7: Public Information Programs

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

Table 4-5 shows past, current, and planned public information programs within CVWD's service area from 2006-2015.

Table 4-5: Public Information Programs

Actual	2006	2007	2008	2009	2010
Paid Advertising	Yes	Yes	Yes	Yes	Yes
Public Service Announcement	Yes	Yes	Yes	Yes	Yes
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Bill Showing Water Usage in Comparison to Previous Year's Usage	No	Yes	Yes	Yes	Yes
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

Planned	2011	2012	2013	2014	2015
Paid Advertising	Yes	Yes	Yes	Yes	Yes
Public Service Announcement	Yes	Yes	Yes	Yes	Yes
Bill Inserts/Newsletters/Brochures	Yes	Yes	Yes	Yes	Yes
Bill Showing Water Usage in Comparison to Previous Year's Usage	Yes	Yes	Yes	Yes	Yes
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

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

4.2.8. DMM 8: School Education Programs

All of CVWD's schools fall under the Glendale Unified School District. Glendale Water and Power (GWP) has made a strong commitment to support educational excellence in

the Glendale Unified schools. With this in mind, GWP provides "LivingWise", a water and energy classroom program to sixth grade students in both public and private Glendale schools. Since the program began in 2001, more than 80 teachers and more than 6,000 Glendale students have participated in this successful project.

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

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

In addition to Glendale's program, CVWD offers to speak and conduct hands on activities in the classroom using Admiral Splash and other water related materials. Admiral Splash, which is produced by Metropolitan, is geared towards the fourth and fifth grades. Incorporating lessons in geography and science, students learn about the water cycle, water conservation, urban water run-off and water pollution.

CVWD also sponsors school assemblies from "Shows that Teach". "Shows that Teach" offers different lessons that always include water conservation, but are geared towards, the water cycle, water runoff, water quality, and water supplies and distribution systems. Each elementary school in CVWD's service area is invited to participate every-other-year.

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

CVWD has a relatively small number of commercial (330) accounts and no industrial accounts. The vast majority of businesses within CVWD do serve as small mom and pop shops or local restaurants. CVWD currently offers financial incentives under Metropolitan's Save Water Save A Buck Rebate Program which offers rebates for various water efficient devices to some CII customers.

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 4-6 below and must replace higher water-use devices. Installation of these 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 in accordance with the program as described below.

Table 4-6: 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
Weather Based Irrigation Controller and Computer Irrigation Controller	\$25 per station
Rotating Nozzles for Pop-up Spray Head Retrofits	\$3 (minimum of 25 per rebate)
Large Rotary Nozzles	\$7 (minimum of 8 sets per rebate)

CVWD also provided a list of restaurants to Metropolitan for retrofit of a pre-rinse spray valve. In 2004, 12 local restaurants had pre-rinse spray valves installed within their establishment.

Due to very limited number of CII customers, CVWD has no formal plans to initiate an active CII replacement program beyond the programs that Metropolitan offers.

4.2.10. DMM 10: Wholesale Agency Programs

CVWD is a retail water agency. Therefore, this DMM does not apply. CVWD is a member agency of FMWD. FMWD provides financial incentives or equivalent resources,

as appropriate and beneficial to distributing retail agencies, to advance water conservation efforts and effectiveness.

4.2.11. DMM 11: Conservation Pricing

All of CVWD's utility water accounts are metered and billed bi-monthly based on commodity rates. CVWD has a commodity rate structure based upon a billing unit of 1,000 gallons, commonly abbreviated as Kgal. A new four-tier water rate structure replaced the flat rate structure (\$3.32 per Kgal plus a monthly fixed charge based upon meter size) in 2008. The new rate structure is a four-tier increasing block rate as summarized in Section 4.2.4 above.

CVWD operates a domestic sewage collection system for its customers. CVWD's sewer service rates are a fixed (non-commodity) monthly fee for residential customers but are based upon water usage for commercial customers (commodity-based). Schools are charged for sewer service based upon average daily attendance (indirect commodity based).

CVWD does offer a water conservation pricing incentive to any sewer customer sector. A 10% discount off the customer's monthly sewer fees are applied in a bi-monthly billing period where the residential or commercial account water used that period are at 12 billing units or less ($\leq 12,000$ gallons). There is currently no accurate method to assess the water savings being accomplished by this DMM.

CVWD has not conducted an evaluation of the water savings attributable to this DMM, however, CVWD will continue to make customers aware of the rate structure and use it as a tool to affect water conservation. CVWD also has plans to establish a new sewer rate structure that would provide further conservation incentive to customers.

Table 4-7 below provides a summary of CVWD's water and sewer rate structures.

Table 4-7: Conservation Pricing

RETAILERS			
Residential	Water	Sewer	
Water Rate Structure- Tiered Rates: Tier 1 – 1-10 units (unit=1,000 gals) Tier 2 – 11-33 units Tier 3 – 34-50 units Tier 4 – 51 units and above	\$3.60 \$4.53 \$5.95 \$7.45	Sewer Rate Structure	\$27.50/mo.
Year Rate Effective	01/2011	Year Rate Effective	01/1/2010
Commercial			
Water Rate Structure	\$4.53 per unit	Sewer Rate Structure	Based on water-use
Year Rate Effective	01/2011	Year Rate Effective	01/01/2010
Industrial			
Water Rate Structure	NA	Sewer Rate Structure	
Year Rate Effective		Year Rate Effective	
Institutional/Government			
Water Rate Structure	\$4.53 per 1000 gals	Sewer Rate Structure	Based on use
Year Rate Effective	01/2011	Year Rate Effective	01/1/2010
Irrigation			
Water Rate Structure -Tiered Rates: Tier 1 – 1-70 units Tier 2 – 70 units and above	\$4.53 \$7.45	Sewer Rate Structure	NA
Year Rate Effective	01/2011	Year Rate Effective	NA
Other			
Water Rate Structure for Primary Schools (based on ADA)	\$4.53 per 1000 gals 01/2011	Sewer Rate Structure Effective 01/2010	\$66.00 / 100 students
Water Rate Structure for Jr. High and High Schools (based on ADA)	\$4.53 per 1000 gals 1/2011	Sewer Rate Structure Effective 01/2010	\$132.10 / 100 students
WHOLESALERS			
Water Rate Structure	NA	Sewer Rate Structure	NA
Year Rate Effective	NA	Year Rate Effective	NA

4.2.12. DMM 12: Water Conservation Coordinator

CVWD created a Program Specialist position in 2003. The Program Specialist's duties include coordination work related to water quality, conservation, education, public outreach, safety, and environmental reporting. A Water Conservation Specialist position was added in 2008 to provide administrative support to CVWD's water-use efficiency programs.

4.2.13. DMM 13: Water Waste Prohibition

CVWD adopted its updated Water Conservation Program as part of CVWD's Rules and Regulations in April 2010. The Rules and Regulations specify water waste prohibitions for five stages – 1) Normal, 2) Increased Voluntary, 3) Extraordinary, 4) Rationing, and 5) Critical. Prohibitions apply to the following:

- Water hose usage
- Overspray and runoff
- Decorative fountains, similar structures, and swimming pools
- Leaks
- Hand watering
- Vehicle washing
- Construction water restrictions
- Use of fire hydrants
- Drinking water upon requests (at hotels, restaurants, etc)
- Pre-rinse spray valves
- Posting of CVWD's water conservation policy notice at the one hotel located in CVWD's service area
- Landscape irrigation
 - Irrigation times
 - Irrigation days

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

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

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

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

CVWD, in concert with FMWD and Metropolitan, has an agreement for participation in a Residential ULFT Retrofit and a CII Retrofit Incentive Project that lasted through June 2009.

A new program offered by FMWD, through Metropolitan offers rebates for HETs (1.28 gallons per flush) for both residential and CII customers. The ULFT portion of this program concluded in June 2009.

CVWD is currently supplementing the rebate amount for HET's adding an additional 50% to the dollar amount.

Between 2004 and 2010, 515 ULFTs and 614 HETs have been installed within CVWD's service area representing a combined water savings of 72 acre-feet to date.

5. Water Supplies Contingency Plan

5.1. Overview

Recent water supply challenges throughout the American Southwest and the State of California have resulted in the development of a number of policy actions that water agencies would implement in the event of a water shortage. In Southern California, the development of such policies has occurred at both the wholesale and retail levels. This section describes new and existing policies that Metropolitan, FMWD and CVWD have in place to respond to water supply shortages, including a catastrophic interruption and up to a 50% reduction in water supply.

5.2. Shortage Actions

5.2.1. Metropolitan

As an importer of water from multiple sources, including both the Colorado River, State Water Project and Sierra Nevada Mountain runoff, a number of water supply challenges have impacted the reliability of Metropolitan's imported supplies. In response to these challenges, Metropolitan has implemented existing policies as well as developed new ones.

The first action that Metropolitan implements in the event of a water shortage is the suspension and/or reduction of its interruptible supplies, which are supplies sold at a discount in return for the buyers agreeing to be the first to be cut back in the event of a shortage. Metropolitan currently has two interruptible programs for agricultural users and groundwater replenishment, under which supplies were either suspended or reduced in 2007.

Additionally, in preparation for the possibility of being unable to meet the "firm demands" (non-interruptible supplies) of its member agencies, in February 2008, Metropolitan's Board of Directors (Board) adopted the Water Supply Allocation Plan (WSAP), which was subsequently updated in June 2009.

Metropolitan's plan includes the specific formula for calculating member agency supply allocations and the key implementation elements necessary for administering an allocation. Metropolitan's WSAP is the foundation for the urban water shortage contingency analysis required under Water Code Section 10632 and is part of Metropolitan's 2010 RUWMP.

Metropolitan's WSAP was developed in consideration of the principles and guidelines described in Metropolitan's 1999 Water Surplus and Drought Management Plan (WSDM), with the objective of creating an equitable needs-based allocation. The plan's formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of Metropolitan supplies of up to 50%. The formula takes into account: impact on retail customers and the economy; growth and population; changes in supply conditions; investments in local resources; demand hardening aspects of non-potable recycled water-use; implementation of conservation savings program; participation in Metropolitan's interruptible programs; and investments in facilities.

The formula is calculated in three steps: base period calculations, allocation year calculations, and supply allocation calculations. The first two steps involve standard computations, while the third step contains specific methodology developed for the WSAP.

Step 1: Base Period Calculations – The first step in calculating a water supply allocation is to estimate water supply and demand using a historical-based period with established water supply and delivery data. The base period for each of the different categories of demand and supply is calculated using data from the three most recent non-shortage years, 2004-2006.

Step 2: Allocation Year Calculations – The next step in calculating the water supply allocation is estimating water needs in the allocation year. This is done by adjusting the base period estimates of retail demand for population or economic growth and changes in local supplies.

Step 3: Supply Allocation Calculations – The final step is calculating the water supply allocation for each member agency based on the allocation year water needs identified in Step 2. Each element and its application in the allocation formula are discussed in detail in Metropolitan's WSAP.

In order to implement the WSAP, in April each year, the Board makes a determination on the level of the regional shortage, based on specific criteria. If it is determined that allocations are necessary, they go into effect in July for that year and remain for a 12-month period, although the schedule is at the discretion of the Board.

Metropolitan's 2010 RUWMP forecasts that Metropolitan will be able to meet projected firm water demands throughout the forecast period from 2015 to 2035. However, these projections do not mean that Metropolitan would not implement its WSAP during this period.

5.2.2. Foothill Municipal Water District (FMWD)

FMWD's shortage action plan mirrors Metropolitan's plan with three exceptions. The first exception is, since FMWD 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 such as CVWD. FMWD does not have this type of model, and it would be expensive to create one. As a solution, the rebates that FMWD has provided to agencies in 2004, 2005 and 2006 are used as the basis for the adjustment. FMWD's conservation credit is allocated to each sub-agency based on the proportion of conservation credits each agency received in comparison to the total in 2004, 2005 and 2006.

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

Additionally, FMWD 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 FMWD's agencies will be pooled together in one pot to be distributed to those agencies that over used their allocation. The agencies taking any of that pooled water will be charged the regular FMWD Tier 1 or Tier 2 rate for having taken the water plus 50% of Metropolitan's penalty rate. Any penalties assessed would go into FMWD's Water Resource and Conservation Fund. Once the pooled water is used, agencies will pay the FMWD Tier 1 or Tier 2 rate for taking the water plus 100% of the Metropolitan penalty rate.

5.2.2.1. Supply Allocation Formula Elements

The following are the elements of FMWD's 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 FMWD in 2004, 2005 and 2006. The conservation credit FMWD 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%. 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. FMWD will submit the documentation to Metropolitan. Once Metropolitan approves the adjustment, FMWD 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 the 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 greater 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.

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 FMWD’s member agencies will never match the total water allocated to FMWD. Thus, an adjustment has been added to prorate the difference between the amount allocated to FMWD by Metropolitan and the initial allocation by FMWD.

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.

5.2.2.2. Conservation Plan Ordinance

The FMWD Board of Directors adopted Water Conservation Plan Ordinance No. 772-0409 in April 2009. Ordinance No. 772-0409 establishes a comprehensive staged water conservation program that will encourage reduced water consumption within the FMWD through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the FMWD.

5.2.3. Crescenta Valley Water District

CVWD has adopted a Water Conservation Program. The purpose of this program is to provide water conservation regulations, in a phased approach, to minimize the effect of a shortage of water supplies on the customers of CVWD during various critical stages of a water shortage. Along with permanent water conservation requirements, CVWD’s Water Conservation Program consists of the following five stages found in Table 5-1 to respond to a reduction in potable water available to CVWD for distribution to its customers with Phase 1 conservation requirements in effect at all times unless a mandatory conservation stage has been implemented by CVWD Board of Directors.

Table 5-1: Water Supply Shortage Stages and Conditions – Rationing Stages

Stage No.	Water Supply Conditions	% Shortage
Phase 1 - Color Code “Blue” – Normal Water Conservation Alert	FMWD can meet all Member Agency Demands.	0%
Phase 2 - Color Code “Green” – Increased Voluntary Water Conservation Alert	Some supplies have been impacted and customers should increase efforts to conserve .	15%
Phase 3 - Color Code “Yellow” – Extraordinary Water Conservation Alert	Metropolitan Water District of Southern California is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers.	30%
Phase 4 - Color Code “Orange” – Rationing Water Conservation Alert	Metropolitan Water District of Southern California has implemented its allocation plan to its member agencies.	40%
Phase 5 - Color Code “Red” – Critical Water Conservation Alert	Water supplies are only available for health and safety needs.	50%

5.3. Three-Year Minimum Water Supply

As a matter of practice, Metropolitan does not provide annual estimates of the minimum supplies available to its member agencies. As such, Metropolitan member agencies must develop their own estimates for the purposes of meeting the requirements of the Act.

Section 135 of the Metropolitan Water District Act declares that a member agency has the right to invoke its “preferential right” to water, which grants each member agency a preferential right to purchase a percentage of Metropolitan’s available supplies based on specified, cumulative financial contributions to Metropolitan. Each year, Metropolitan calculates and distributes each member agency’s percentage of preferential rights. However, since Metropolitan’s creation in 1927, no member agency has ever invoked these rights as a means of acquiring limited supplies from Metropolitan.

As an alternative to preferential rights, Metropolitan adopted the WSAP in February 2008. Under the WSAP, member agencies are allowed to purchase a specified level of supplies without the imposition of penalty rates. The WSAP uses a combination of estimated total retail demands and historical local supply production within the member agency service area to estimate the firm demands on Metropolitan from each member agency in a given year. Based on a number of factors, including storage and supply

conditions, Metropolitan then determines whether it has the ability to meet these firm demands or will need to allocate its limited supplies among its member agencies. Thus, implicit in Metropolitan's decision not to implement an allocation of its supplies is that at a minimum Metropolitan will be able to meet the firm demands identified for each of the member agencies.

In order to estimate the minimum available supplies from Metropolitan for the period 2011-2013, an analysis was performed to assess the likelihood that Metropolitan would re-implement mandatory water-use restrictions in the event of a 1990-92 hydrologic condition. Specific water management actions during times of water shortage are governed by Metropolitan's Water Shortage and Drought Management Plan (WSDM Plan). Adopted by the Board in 1999, the WSDM Plan provides a general framework for potential storage actions during shortages, but recognizes that storage withdrawals are not isolated actions but part of a set of resource management actions along with water transfers and conservation. As such, there is no specific criterion for which water management actions are to be taken at specific levels of storage. The implementation of mandatory restrictions is solely at the discretion of the Board and there are no set criteria that require the Board to implement restrictions. Given these conditions, the analysis relies upon a review of recent water operations and transactions that Metropolitan has implemented during the recent drought.

The first step in the analysis was a review of projected SWP allocations to Metropolitan, based on historical hydrologies. As with the recent drought, potential impacts to SWP supplies from further drought and the recently implemented biological opinions are anticipated to be the biggest challenges facing Metropolitan in the coming three years.

A review of projected SWP allocations from the DWR's State Water Project Delivery Reliability Report 2009 (2009 SWP Reliability Report) was made to estimate a range of conservative supply assumptions regarding the availability of SWP supplies. The 2009 SWP Reliability Report provides estimates of the current (2009) and future (2029) SWP delivery reliability and incorporates regulatory requirements for SWP and Central Valley Project (CVP) operations in accordance with U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) biological opinions. Estimates of future reliability also reflect potential impacts of climate change and sea level rise.

The analysis assumes a maximum SWP allocation available to Metropolitan of 2,011,500 AF and a Metropolitan storage level of 1,700,000 AF at 2010 year-end. The analysis also assumes a stable water supply from the Colorado River in the amount of 1,150,000 AF through 2015. Although the Colorado River watershed has also experienced drought in recent years, Metropolitan has implemented a number of supply programs that should ensure that supplies from this source are relatively steady for the next three years. Based

on estimated firm water demands on Metropolitan of 2.12 MAF, the annual surplus or deficit was calculated for each year of the three-year period.

A review of recent Metropolitan water management actions under shortage conditions was then undertaken to estimate the level of storage withdrawals and water transfers that Metropolitan may exercise under the 1990-92 hydrologic conditions. For this analysis, it was assumed that, if Metropolitan storage levels were greater than 2 MAF at the beginning of any year, Metropolitan would be willing to take up to 600 TAF out of storage in that year. Where Metropolitan storage supplies were between 1.2 MAF and 2 MAF at the beginning of the year, it was assumed that Metropolitan would be willing to take up to 400 TAF in that year. At storage levels below 1.2 MAF, it was assumed that Metropolitan would take up to 200 TAF in a given year.

It was also assumed that Metropolitan would be willing to purchase up to 300 TAF of water transfer in any given year. For years where demands still exceeded supplies after accounting for storage withdrawals, transfer purchases were estimated and compared against the 300 TAF limit.

Table 5-2: Metropolitan Shortage Conditions

Study Year	Actual Year	SWP Allocation (%)	SWP (AF)	CRA (AF)	Total (AF)	Demand (AF)	Surplus/ Shortage (AF)	Storage at YE (AF)	Transfers (AF)
2011	1990	30%	603,450	1,108,000	1,711,450	2,124,000	(400,000)	1,300,000	(12,550)
2012	1991	27%	542,820	1,108,000	1,650,820	2,123,000	(200,000)	1,100,000	(272,180)
2013	1992	26%	522,990	1,108,000	1,630,990	2,123,000	(200,000)	900,000	(292,010)

Based on the analysis above, Metropolitan would be able to meet “firm” demands under the driest three-year hydrologic scenario using the recent water management actions described above without re-implementing mandatory water-use restrictions on its member agencies. Given the assumed absence of mandatory restrictions, the estimated minimum imported water supplies available to FMWD from Metropolitan is assumed to be equal to Metropolitan’s estimate of demand for “firm” supplies for FMWD, which Metropolitan uses when considering whether to impose mandatory restrictions. Thus, the estimate of the minimum imported supplies available to FMWD is 10,090 AF.

FMWD has also adopted a shortage allocation plan and accompanying allocation model that estimates “firm” demands on FMWD. Assuming FMWD would not be imposing mandatory restrictions if Metropolitan is not, the estimate of “firm” demands in FMWD’s allocation model has been used to estimate the minimum imported supplies available to

each of FMWD’s member agencies for 2011-13. Thus, the estimate of the minimum imported supplies available to CVWD is 2,968 AF⁵.

As captured in its 2010 RUWMP, Metropolitan believes that the water supply and demand management actions it is undertaking will increase its reliability throughout the 25-year period addressed in its plan. Thus for purposes of this estimate, it is assumed that Metropolitan and FMWD will be able to maintain the identified supply amounts throughout the three-year period.

Metropolitan projects reliability for full service demands from 2015 out to the year 2035. Based on the FMWD WSAP, CVWD is expected to fully meet demands for the next three years assuming Metropolitan and FMWD are not in shortage, and zero allocations are imposed for imported supplies. Normal year supplies are based on the Base Period supply in the FMWD WSAP, which is the average of the last three non-shortage calendar years 2004, 2005, and 2006. The three year estimated minimum water supply is listed in Table 5-3.

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

Source	Normal (2011)	2012	2013	2014
Imported Supply	2,340	2,968	2,968	2,968
Local Supplies	3,217	2,704	2,704	2,704
<i>Total</i>	<i>5,557</i>	<i>5,672</i>	<i>5,672</i>	<i>5,672</i>

5.4. Catastrophic Supply Interruption

Given the great distances that imported supplies travel to reach the FMWD service area, the region is vulnerable to interruptions along hundreds of miles of aqueducts, pipelines and other facilities associated with delivering the supplies to the region. Additionally, CVWD’s water supply is distributed to customers through an intricate network of pipes, storage tanks and pumps that are susceptible to damage from earthquakes and other disasters.

5.4.1. Metropolitan

Metropolitan has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM and WSAP Plans. Metropolitan also developed an Emergency Storage Requirement to mitigate against potential interruption in water supplies resulting from catastrophic occurrences within the Southern California region, including seismic events along the San Andreas Fault. In

⁵ FMWD Water Shortage Allocation model (2009)

addition, Metropolitan is working with the State to implement a comprehensive improvement plan to address catastrophic occurrences that could occur outside of the Southern California region, such as a maximum probable seismic event in the Delta that would cause levee failure and disruption of SWP deliveries. For greater detail on Metropolitan's planned responses to catastrophic interruption, please refer to Metropolitan's RUWMP.

5.4.2. Crescenta Valley Water District

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

Power Outage – In the event of a power outage, CVWD maintains five (5) emergency standby power generators. One of the emergency generators is stationary and dedicated to power water supply wells and the auxiliary equipment at the Glenwood Operations Center. Three (3) emergency generators are portable and are mounted on trailers. They can be mobilized to any pump station for movement of water out of a reservoir into a higher pressure zone. Each pump station site is equipped with emergency power receptacles and transfer switches that allow personnel to hook up the portable generators. The fourth generator is located at CVWD's Administrative Office. CVWD also has Universal Power Supply (UPS) systems on the computer systems at the Administrative Office, the SCADA systems at the Glenwood Operations Facility and at booster station at well sites. In addition, FMWD operates standby emergency generators that could be used by CVWD.

Water Outage – In the event of a water outage, CVWD has the ability to receive water from the City of Glendale and the La Cañada Irrigation District through emergency water supply interconnections. In addition, CVWD will be installing a new interconnection with the City of Los Angeles Department of Water and Power (LADWP) that should be complete by the end of 2011.

City of Glendale Interconnection:

- Glendale/CVWD Interconnection (GCI) was installed in 2004 and allows for CVWD to receive up to 5.0 cfs from Glendale.
- Glendale and CVWD also have an agreement for emergency hydrant-to-hydrant interconnections that allow CVWD to take water from Glendale or for Glendale to take water from CVWD.

La Cañada Irrigation District (LCID) Interconnection:

- CVWD has an interconnection with LCID that allows CVWD to take water from LCID into CVWD's Zone 3.
- LCID has two (2) interconnections with CVWD that allows LCID to take water from CVWD into LCID westerly zones.

LADWP Interconnection:

- LADWP/CVWD interconnection allows for CVWD to receive up to 2.2 cfs and have the ability to back-feed FMWD.
- FMWD also has two bypass systems that would allow them flexibility to move LADWP water in emergency situations.

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

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

Preparation actions for possible catastrophes are listed in Table 5-4.

Table 5-4: Preparation Actions for Catastrophe

Possible Catastrophe	Preparation Actions
Regional Power Outage	<ul style="list-style-type: none"> • Emergency Preparedness and Disaster Response Plan • Standby Emergency Power Generators • Interconnections with nearby agencies • Water Agency Response Network Membership • Supplemental Water Supplies
Earthquake	
Supply Contamination	
Terrorist Act which Interrupts Service	
Other(s)	

5.5. Prohibitions, Penalties and Consumption Reduction Methods

Prohibitions

The FMWD Water Conservation Plan Ordinance No. 772-0409 lists water conservation requirements which shall take effect upon implementation by the FMWD Board of

Directors. Combined with CVWD’s Water Conservation Plan, these prohibitions shall promote the efficient use of water, reduce or eliminate water waste, complement CVWD’s Water Quality regulations and urban runoff reduction efforts, and enable implementation of CVWD’s Water Shortage Contingency Measures. Prohibitions include, but are not limited to: restrictions on outdoor watering, washing of vehicles, food preparation establishments, repairing of leaks and other malfunctions, swimming pools, decorative water features, construction activities, and water service provisions which can be found in Table 5-5.

Table 5-5: Mandatory Prohibitions

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

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

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
requested to post notices giving their guests the option of not laundering towels and linens daily.	
Where applicable, restaurants must utilize water conserving nozzles.	Phase 1-Color Code "Blue"
Outdoor watering only on assigned odd or even days.	Phase 2 – Color Code "Green" Phase 3 – Color Code "Yellow"
Residential and commercial landscape irrigation is limited to no more than three (3) days per week on Tuesday, Thursday and Saturday. Watering limits are seven (7) minutes per watering station. Exempt are public areas owned or operated by School Districts or public use areas greater than 4,000 square feet.	Phase 4 -Color Code "Orange"
The filling, refilling or adding of water to indoor and outdoor pools, wading pools, or spas is prohibited. Exemptions: Commercial Repairs mandated by the Federal Virginia Graeme Baker Act, or adding water for the prevention of equipment failure is permissible, however, the District strongly urges that a cover be used to prevent evaporation and thereby reducing the frequency of refilling.	Phase 4 - Color Code "Orange"
The use of water to clean, maintain, fill, or refill decorative fountains or similar structures is prohibited. Exemptions: Adding water for the prevention of equipment failure is permissible.	Phase 4 - Color Code "Orange"
Vehicle washing is restricted to the use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.	Phase 4 - Color Code "Orange"
Fix leaks within 48 hours.	Phase 4 - Color Code "Orange"
All outdoor water-use is prohibited.	Phase 5 - Color Code "Red"
Fix any leaks within 24 hours.	Phase 5 - Color Code "Red"

Consumption Reduction Methods

Methods to reduce the use of potable water exist in all water shortage levels and are listed in Table 5-6.

Table 5-6: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Phase 1 Conservation Measures	“Blue”	0
Phase 2 Conservation Measures	“Green”	15%
Phase 3 Conservation Measures	“Yellow”	30%
Phase 4 Conservation Measures	“Orange”	40%
Phase 5 Conservation Measures	“Red”	50%

Penalties

Any customer who violates provisions of CVWD’s Water Conservation Plan Ordinance by either excess use of water or by specific violation of one or more of the applicable water-use restrictions for a particular mandatory conservation stage may be cited by CVWD and may be subject to written notices, surcharges, fines, flow restrictions, service disconnection, and/or service termination which are detailed in Table 5-7.

Table 5-7: Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Written Notice (Warning)	First Violation (Any Phase)
Written Notice with Description of Penalties	Second Violation (Any Phase)
Flow restrictors (With associated Fees)	Third Violation (Any Phase)
Discontinuation of water service	Flagrant Disregard of ordinance or Multiple Violations (Any Phase)

5.6. Impacts to Revenue

CVWD has established a target reserve of funds within its annual budget that addresses the issue of lost revenue during a water shortage or drought situation. CVWD has an established reserve level that includes a 25% rate stabilization fund that can offset short-term loss of revenue. The total target reserve level consists of \$750,000, two months of operations and maintenance costs (less the cost of imported water) and 25% of expected revenue. In the case of a long-term water shortage or drought situation, CVWD has instituted a tiered rate structure on its customers to offset the loss of revenue that will occur. Such measures are listed in Tables 5-8 and 5-9.

Table 5-8: Proposed Measures to Overcome Revenue Impacts

Name of Measures
Reserve Funds
Rate Stabilization Fund
Rate Structure Adjustment

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

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

During local water shortage emergencies due to a natural disaster, production figures will be monitored daily by the General Manager and the Management staff. Reports will be provided to the CVWD Board of Directors as necessary.

Water-Use Monitoring Mechanisms are listed in Table 5-10.

Table 5-10: Water-Use Monitoring Mechanisms

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

6. Recycled Water

6.1. Agency Coordination

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

Table 6-1: Participating Agencies

Participating Agencies	Participated
Water Agencies	FMWD, Metropolitan
Wastewater Agencies	City of Los Angeles
Groundwater Agencies	ULARA
Planning Agencies	LA County, City of Glendale

6.2. Wastewater Description and Disposal

CVWD operates a sewage collection system with approximately 6,300 connections. The system transports this wastewater outside CVWD boundaries to a regional wastewater treatment plant owned by the City of Los Angeles. CVWD pays a flow-based share of treatment and disposal costs to the City of Los Angeles and the treated effluent from the Los Angeles-Glendale Water Reclamation Plant (LAGWRP). CVWD generates approximately 550-600 million gallons of raw wastewater annually.

6.3. Current Recycled Water Uses

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

6.4. Potential Recycled Water Uses

FMWD, CVWD’s wholesale provider has initiated a Local, Reliable Water Supply Program (LRWSP) to reduce dependence on imported water supplies through development of recycled water as well as increased storm water capture and recharge and

water conservation throughout the service area. Recycled water supplies currently comprise 1% of the total water supply within the FMWD service area, which could benefit CVWD in the future. FMWD plans to develop recycled water through the construction of up to three satellite membrane bioreactor (MBR) 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 currently in the planning stages, and the amount of additional local production is not known.

6.4.1. Direct Non-Potable Reuse

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

6.4.2. Indirect Potable Reuse

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

6.5. Optimization Plan

Since CVWD is not using recycled water at this time, it is not practical to provide a recycled water optimization plan as part of the 2010 UWMP. CVWD is investigating receiving recycled water if it becomes available to serve some of the large development areas.

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

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

7. Future Water Supply Projects and Programs

7.1. Water Management Tools

Resource optimization, such as local groundwater, storm water recharge and recycled feasibility studies to minimize the needs for imported water, is key for CVWD to meet future water demands.

CVWD can meet projected demands with existing facilities and distribution system. With the eventual replacement of older wells with new and more efficient wells in addition to the continued efforts in reducing water waste, CVWD can meet projected demands with existing facilities and distribution system.

7.2. Transfer or Exchange Opportunities

CVWD relies on efforts of FMWD and Metropolitan to pursue transfer or exchange opportunities. At this time, CVWD is not currently involved in any transfer or exchange opportunities.

7.3. Planned Water Supply Projects and Programs

Groundwater Recharge

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

LADWP Interconnection

CVWD will be installing a new interconnection with LADWP that should be complete by the end of 2011. LADWP/CVWD interconnection allows for CVWD to receive up to 2.2

cfs and have the ability to back-feed FMWD. This emergency connection would be able to supply an additional 1.9 MGD.

New Wells

CVWD is planning to replace its older groundwater wells with new modern constructed wells over the ten (10) year period starting in 2015. The existing wells are between 55 to 80 years old and have reached the end of their useful life. CVWD’s current program is to perform at least two (2) well rehabilitations a year which includes cleaning the well casing with chemical treatment and installation of steel liner to extend the life of a well. As shown in Table 7-1, CVWD will start in 2015 with replacement of Well 14, which includes land acquisition, design, new piping to either the Glenwood or Mills plant, drilling of the new well and abandonment of the old well. Well rehabilitation and construction is dependent on available funding and approval from the Board of Directors.

Table 7-1: Well Replacement Schedule

CVWD - Well Replacement Project - 2015 - 2025											
Well No.	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1		X									
2											X
5									X		
6			X								
7										X	
8						X					
9					X						
10				X							
11							X				
12								X			
14	X										

7.4. Desalination Opportunities

CVWD does not have opportunities to directly develop desalinated supplies. It does not border the ocean and cannot participate directly in ocean desalination. However, CVWD supports 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 CVWD is not able to directly participate in seawater desalination, it participates indirectly by supporting Metropolitan’s program.

7.4.1. Groundwater

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

7.4.2. Ocean Water

CVWD does not border the ocean and cannot participate directly in ocean desalination opportunities.

8. UWMP Adoption Process

8.1. Overview

Recognizing that close coordination among other relevant public agencies is the key to the success of its UWMP, CVWD worked closely with other entities to develop and update this planning document. CVWD also encouraged public involvement through a holding of a public hearing for customers or for the public to learn and ask questions about their water supply.

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 CVWD and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix A.

Table 8-1: External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Encouraged public involvement (Public Hearing)	May 19, 2011 & May 26, 2011	Appendix E
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)	March 3, 2011	Appendix D
Held public hearing	June 21, 2011	Appendix E
Adopted UWMP	June 21, 2011	Appendix F
Submitted UWMP to DWR (no later than 30 days after adoption)	July 21, 2011	
Submitted UWMP to the California State Library and city or county within the supplier's service area (no later than 30 days after adoption)	July 21, 2011	
Made UWMP available for public review (no later than 30 days after filing with DWR)	August 20, 2011	

This UWMP was adopted by the Board of Directors on June 21, 2011. A copy of the adopted resolution is provided in Appendix F.

A change from the 2004 legislative session to the 2009 legislative session required CVWD to notify any city or county within its service area at least 60 days prior to the public hearing. CVWD sent a Letter of Notification to the County of Los Angeles, City

of Glendale, City of La Cañada Flintridge, FMWD, and ULARA on March 3, 2011 that it is in the process of preparing an updated UWMP (Appendix D).

8.2. Public Participation

CVWD has actively encouraged community participation in its urban water management planning efforts by encouraging attendance and participation in the CVWD Board of Directors public meetings held bi-monthly.

8.3. Agency Coordination

All of CVWD’s water supply planning relates to the policies, rules, and regulations of its regional and local providers. CVWD is dependent on imported water from Metropolitan via FMWD and local groundwater from the Basin which is an adjudicated basin within the ULARA. CVWD is also a member of the Administrative Committee, which oversees the ULARA Watermaster. The Watermaster is responsible for coordinating all groundwater pumping activities within the Basin. As such, CVWD involved these entities in the development of its 2010 UWMP at various levels of contribution as summarized in Table 8-2.

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
FMWD	X	X	X	X	X	X	
City of Glendale	X	X	X	X	X	X	
ULARA		X		X	X	X	
City of La Cañada Flintridge			X	X	X	X	
LA County						X	

8.4. UWMP Submittal

8.4.1. Review of Implementation of 2005 UWMP

As required by California Water Code, CVWD summarizes the implementation of the Water Conservation Programs to date, and compares the implementation to those as

planned in its 2005 UWMP. All the planned conservation programs shown in the 2005 UWMP were implemented by 2010.

Comparison of 2005 Planned Water Conservation Programs with 2010 Actual Programs

CVWD recognizes the importance of water conservation and has made water-use efficiency an integral part of water-use planning. CVWD is not a California Urban Water Conservation Council (CUWCC) signatory; however, it is currently implementing all 14 DMMs described in the Act. DMMs as defined by the Act correspond to the CUWCC's BMPs. For CVWD's specific achievements in the area of conservation, please see Section 4 of this Plan.

8.4.2. Filing of 2010 UWMP

The CVWD Board of Directors reviewed the Final Draft Plan on June 21, 2011. The five-member CVWD Board of Directors approved the 2010 UWMP on June 21, 2011. See Appendix F for the resolution approving the Plan.

By July 21, 2011, CVWD's Adopted 2010 UWMP was filed with DWR, California State Library, County of Los Angeles and cities within its service area.

Appendices

- A. Urban Water Management Plan Checklist
- B. ULARA Judgment
- C. Water Conservation Program, Water Survey Report
- D. 60 Day Notification Letters
- E. Public Hearing Notice
- F. Copy of Plan Adoption

Appendix A

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 D
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 E
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix F
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
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 2.2.3
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 2.4.3 Section 2.4.4
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	Appendix E Section 2.4.5

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		Not applicable
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.	Section 3.3
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)		Section 3.3 Appendix B

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)		Section 3.3
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)		Section 3.3
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.	Section 3.3
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 3.4.1
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 3.4.2
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	Additional clarification	UWMP location
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 C
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	Four years 2010, 2015, 2020, 2025, and 2030	Section 3.4.2.1

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 3.4.3 Section 3.4.4 Section 3.4.5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measure 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.	Not applicable
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.	not applicable

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 B
ULARA Judgment

1 1. RECITALS

2 This matter was originally tried before the Honorable Edmund M.
3 Moor, without jury, commencing on March 1, 1966, and concluding with
4 entry of Findings, Conclusions and Judgment on March 14, 1968, after
5 more than 181 trial days. Los Angeles appealed from said judgment and
6 the California Supreme Court, by unanimous opinion, (14 Cal. 3d 199)
7 reversed and remanded the case; after trial of some remaining issues
8 on remand, and consistent with the opinion of the Supreme Court, and
9 pursuant to stipulations, the Court signed and filed Findings of Fact
10 and Conclusions of Law. Good cause thereby appearing,

11 IT IS ORDERED, ADJUDGED AND DECREED:

12 2. DEFINITIONS AND ATTACHMENTS

13 2.1 Definitions of Terms. As used in this Judgment, the
14 following terms shall have the meanings herein set forth:

15 [1] Basin or Ground Water Basin -- A subsurface geologic
16 formation with defined boundary conditions, containing a ground
17 water reservoir, which is capable of yielding a significant
18 quantity of ground water.

19 [2] Burbank -- Defendant City of Burbank.

20 [3] Crescenta Valley -- Defendant Crescenta Valley County
21 Water district.

22 [4] Colorado Aqueduct -- The aqueduct facilities and system
23 owned and operated by MWD for the importation of water from the
24 Colorado River to its service area.

25 [5] Deep Rock -- Defendant Evelyn M. Pendleton, dba Deep
26 Rock Artesian Water Company.
27
28

1 [6] Delivered Water -- Water utilized in a water supply
2 distribution system, including reclaimed water.

3 [7] Eagle Rock Basin -- The separate ground water basin
4 underlying the area shown as such on Attachment "A".

5 [8] Extract or Extraction -- To produce ground water, or
6 its production, by pumping or any other means.

7 [9] Fiscal Year -- July 1 through June 30 of the following
8 calendar year.

9 [10] Foremost -- Defendant Foremost Foods Company, successor
10 to defendant Sparkletts Drinking Water Corp.

11 [11] Forest Lawn -- Collectively, defendants Forest Lawn
12 Cemetery Association, Forest Lawn Company, Forest Lawn Memorial-
13 Park Association, and American Security and Fidelity Corporation.

14 [12] Gage F-57 -- The surface stream gaging station operated
15 by Los Angeles County Flood Control District and situated in Los
16 Angeles Narrows immediately upstream from the intersection of the
17 Los Angeles River and Arroyo Seco, at which point the surface
18 outflow from ULARA is measured.

19 [13] Glendale -- Defendant City of Glendale.

20 [14] Ground Water -- Water beneath the surface of the ground
21 and within the zone of saturation.

22 [15] Hersch & Plumb -- Defendants David and Eleanor A.
23 Hersch and Gerald B. and Lucille Plumb, successors to Wellesley
24 and Duckworth defendants.

25 [16] Import Return Water -- Ground water derived from
26 percolation attributable to delivered imported water.

1 [17] Imported Water -- Water used within ULARA, which is
2 derived from sources outside said watershed. Said term does not
3 include inter-basin transfers wholly within ULARA.

4 [18] In Lieu Storage -- The act of accumulating ground water
5 in a basin by intentional reduction of extractions of ground
6 water which a party has a right to extract.

7 [19] Lockheed -- Defendant Lockheed Aircraft Corporation.

8 [20] Los Angeles -- Plaintiff City of Los Angeles, acting by
9 and through its Department of Water and Power.

10 [21] Los Angeles Narrows -- The physiographic area northerly
11 of Gage F-57 bounded on the east by the San Rafael and Repetto
12 Hills and on the west by the Elysian Hills, through which all
13 natural outflow of the San Fernando Basin and the Los Angeles
14 River flow en route to the Pacific Ocean.

15 [22] MWD -- The Metropolitan Water District of Southern
16 California, a public agency of the State of California.

17 [23] Native Safe Yield -- That portion of the safe yield of
18 a basin derived from native waters.

19 [24] Native Waters -- Surface and ground waters derived from
20 precipitation within ULARA.

21 [25] Overdraft -- A condition which exists when the total
22 annual extractions of ground water from a basin exceed its safe
23 yield, and when any temporary surplus has been removed.

24 [26] Owens-Mono Aqueduct -- The aqueduct facilities owned
25 and operated by Los Angeles for importation to ULARA water from
26 the Owens River and Mono Basin watersheds easterly of the Sierra-
27 Nevada in Central California.

1 [27] Private Defendants -- Collectively, all of those
2 defendants who are parties, other than Glendale, Burbank, San
3 Fernando and Crescenta Valley.

4 [28] Reclaimed Water -- Water which, as a result of
5 processing of waste water, is made suitable for and used for a
6 controlled beneficial use.

7 [29] Regulatory Storage Capacity -- The volume of storage
8 capacity of San Fernando Basin which is required to regulate the
9 safe yield of the basin, without significant loss, during any
10 long-term base period of water supply.

11 [30] Rising Water -- The effluent from a ground water basin
12 which appears as surface flow.

13 [31] Rising Water Outflow -- The quantity of rising water
14 which occurs within a ground water basin and does not rejoin the
15 ground water body or is not captured prior to flowing past a
16 point of discharge from the basin.

17 [32] Safe Yield - The maximum quantity of water which can be
18 extracted annually from a ground water basin under a given set of
19 cultural conditions and extraction patterns, based on the long-
20 term supply, without causing a continuing reduction of water in
21 storage.

22 [33] San Fernando -- Defendant City of San Fernando.

23 [34] San Fernando Basin -- The separate ground water basin
24 underlying the area shown as such on Attachment "A".

25 [35] Sportsman's Lodge -- Defendant Sportsman's Lodge
26 Banquet Association.

27 [36] Stored Water -- Ground water in a basin consisting of
28 either (1) imported or reclaimed water which is intentionally

1 spread, or (2) safe yield water which is allowed to accumulate by
2 In Lieu Storage. Said ground waters are distinguished and
3 separately accounted for in a ground water basin, notwithstanding
4 that the same may be physically commingled with other waters in
5 the basin.

6 [37] Sylmar Basin -- The separate ground water basin
7 underlying the area indicated as such on Attachment "A".

8 [38] Temporary Surplus - The amount of ground water which
9 would be required to be removed from a basin in order to avoid
10 waste under safe yield operation.

11 [39] Toluca Lake -- Defendant Toluca Lake Property Owners
12 Association.

13 [40] ULARA or Upper Los Angeles River Area - The Upper Los
14 Angeles River watershed, being the surface drainage area of the
15 Los Angeles River tributary to Gage F-57.

16 [41] Underlying Pueblo Waters -- Native ground waters in the
17 San Fernando Basin which underlie safe yield and stored waters.

18 [42] Valhalla -- Collectively, Valhalla Properties, Valhalla
19 Memorial Park, Valhalla Mausoleum Park.

20 [43] Van de Kamp -- Defendant Van de Kamp's Holland Dutch
21 Bakers, Inc.

22 [44] Verdugo Basin -- The separate ground water basin
23 underlying the area shown as such on Attachment "A".

24 [45] Water Year -- October 1 through September 30 of the
25 following calendar year.

26 Geographic Names, not herein specifically defined, are used to
27 refer to the places and locations thereof as shown on Attachment "A".
28

1 Angeles River at Gage F-57. Said watershed contains a total of
2 329,000 acres, consisting of approximately 123,000 acres of
3 valley fill area and 206,000 acres of hill and mountain area,
4 located primarily in the County of Los Angeles, with a small
5 portion in the County of Ventura. Its boundaries are shown on
6 Attachment "A". The San Gabriel Mountains form the northerly
7 portion of the watershed, and from them two major washes--the
8 Pacoima and the Tujunga--discharge southerly. Tujunga Wash
9 traverses the valley fill in a southerly direction and joins the
10 Los Angeles River, which follows an easterly course along the
11 base of the Santa Monica Mountains before it turns south through
12 the Los Narrows. The waters of Pacoima Wash as and when they
13 flow out of Sylmar Basin are tributary to San Fernando Basin.
14 Lesser tributary washes run from the Simi Hills and the Santa
15 Susana Mountains in the westerly portion of the watershed. Other
16 minor washes, including Verdugo Wash, drain the easterly portion
17 of the watershed which consists of the Verdugo Mountains, the
18 Elysian, San Rafael and Repetto Hills. Each of said washes is a
19 non-perennial stream whose flood flows and rising waters are
20 naturally tributary to the Los Angeles River. The Los Angeles
21 River within ULARA and most of said tributary natural washes have
22 been replaced, and in some instances relocated, by concrete-lined
23 flood control channels. There are 85.3 miles of such channels
24 within ULARA, 62% of which have lined concrete bottoms.

25 4.1.2 San Fernando Basin. San Fernando Basin is the major
26 ground water basin in ULARA. It underlies 112,047 acres and is
27 located in the area shown as such on Attachment "A". Boundary
28 conditions of the San Fernando Basin consist on the east and

1 northeast of alluvial contacts with non-waterbearing series along
2 the San Rafael Hills and Verdugo Mountains and the Santa Susana
3 Mountains and Simi Hills on the northwest and west and the Santa
4 Monica Mountains on the south. Water-bearing material in said
5 basin extends to at least 1000 feet below the surface. Rising
6 water outflow from the San Fernando Basin passes its downstream
7 and southerly boundary in the vicinity of Gage F-57, which is
8 located in Los Angeles Narrows about 300 feet upstream from the
9 Figueroa Street (Dayton Street) Bridge. The San Fernando Basin
10 is separated from the Sylmar Basin on the north by the eroded
11 south limb of the Little Tujunga Syncline which causes a break in
12 the ground water surface of about 40 to 50 feet.

13 4.1.3 Sylmar Basin. Sylmar Basin underlies 5,565 acres and
14 is located in the area shown as such on Attachment "A". Water-
15 bearing material in said basin extends to depths in excess of
16 12,000 feet below the surface. Boundary conditions of Sylmar
17 Basin consist of the San Gabriel Mountains on the north, a
18 topographic divide in the valley fill between the Mission Hills
19 and San Gabriel Mountains on the west, the Mission Hills on the
20 southwest, Upper Lopez Canyon Saugus Formation on the east, along
21 the east bank of Pacoima Wash, and the eroded south limb of the
22 Little Tujunga Syncline on the south.

23 4.1.4 Verdugo Basin. Verdugo Basin underlies 4,400 acres
24 and is located in the area shown as such on Attachment "A".
25 Boundary conditions of Verdugo Basin consist of the San Gabriel
26 Mountains on the north, the Verdugo Mountains on the south and
27 southwest, the San Rafael Hills on the southeast and the
28 topographic divide on the east between the drainage area that is

1 tributary to the Tujunga Wash to the west and Verdugo Wash to the
2 east, the ground water divide on the west between Monk Hill-
3 Raymond Basin and the Verdugo Basin on the east and a submerged
4 dam constructed at the mouth of Verdugo Canyon on the south.

5 4.1.5 Eagle Rock Basin. Eagle Rock Basin underlies 807
6 acres and is located in the area shown as such on Attachment "A".
7 Boundary conditions of Eagle Rock Basin consist of the San Rafael
8 Hills on the north and west and the Repetto Hills on the east and
9 south with a small alluvial area to the southwest consisting of a
10 topographic divide.

11 4.2 Hydrology.

12 4.2.1 Water Supply. The water supply of ULARA consists of
13 native waters, derived from precipitation on the valley floor and
14 runoff from the hill and mountain areas, and of imported water
15 from outside the watershed. The major source of imported water
16 has been from the Owens-Mono Aqueduct, but additional supplies
17 have been and are now being imported through MWD from its
18 Colorado Aqueduct and the State Aqueduct.

19 4.2.2 Ground Water Movement. The major water-bearing
20 formation in ULARA is the valley fill material bounded by hills
21 and mountains which surround it. Topographically, the valley-
22 fill area has a generally uniform grade in a southerly and
23 easterly direction with the slope gradually decreasing from the
24 base of the hills and mountains to the surface drainage outlet at
25 Gage F-57. The valley fill material is a heterogeneous mixture
26 of clays, silts, sand and gravel laid down as alluvium. The
27 valley fill is of greatest permeability along and easterly of
28 Pacoima and Tujunga Washes and generally throughout the eastern

1 portion of the valley fill area, except in the vicinity of
2 Glendale where it is of lesser permeability. Ground water occurs
3 mainly within the valley fill, with only negligible amounts
4 occurring in hill and mountain areas. There is no significant
5 ground water movement from the hill and mountain formations into
6 the valley fill. Available geologic data do not indicate that
7 there are any sources of native ground water other than those
8 derived from precipitation. Ground water movement in the valley
9 fill generally follows the surface topography and drainage except
10 where geologic or man-made impediments occur or where the natural
11 flow has been modified by extensive pumping.

12 4.2.3 Separate Ground Water Basins. The physical and
13 geologic characteristics of each of the ground water basins,
14 Eagle rock, Sylmar, Verdugo and San Fernando, cause impediments
15 to inter-basin ground water flow whereby there is created
16 separate underground reservoirs. Each of said basins contains a
17 common source of water supply to parties extracting ground water
18 from each of said basins. The amount of underflow from Sylmar
19 Basin, Verdugo Basin and Eagle Rock Basin to San Fernando Basin
20 is relatively small, and on the average has been approximately
21 540 acre feet per year from the Sylmar Basin; 80 acre feet per
22 year from Verdugo Basin; and 50 acre feet per year from Eagle
23 Rock Basin. Each has physiographic, geologic and hydrologic
24 differences, one from the other, and each meets the hydrologic
25 definition of "basin". The extractions of water in the
26 respective basins affect the other water users within that basin
27 but do not significantly or materially affect the ground water
28 levels in any of the other basins. The underground reservoirs of

1 Eagle Rock, Verdugo and Sylmar Basins are independent of one
2 another and of the San Fernando Basin.

3 4.2.4 Safe Yield and Native Safe Yield. The safe yield and
4 native safe yield, stated in acre feet, of the three largest
5 basins for the year 1964-65 was as follows:

6 <u>Basin</u>	<u>Safe Yield</u>	<u>Native Safe Yield</u>
7 San Fernando	90,680	43,660
8 Sylmar	6,210	3,850
9 Verdugo	7,150	3,590

10 The safe yield of Eagle Rock Basin is derived from imported water
11 delivered by Los Angeles. There is no measurable native safe
12 yield.

13 4.2.5 Separate Basins -- Separate Rights. The rights of
14 the parties to extract ground water within ULARA are separate and
15 distinct as within each of the several ground water basins within
16 said watershed.

17 4.2.6 Hydrologic Condition of Basins. The several basins
18 within ULARA are in varying hydrologic conditions, which result
19 in different legal consequences.

20 4.2.6.1 San Fernando Basin. The first full year of
21 overdraft in San Fernando Basin was 1954-55. It remained in
22 overdraft continuously until 1968, when an injunction herein
23 became effective. Thereafter, the basin was placed on safe
24 yield operation. There is no surplus ground water available
25 for appropriation or overlying use from San Fernando Basin.

26 4.2.6.2 Sylmar Basin. Sylmar Basin is not in
27 overdraft. There remains safe yield over and above the
28 present reasonable beneficial overlying uses, from which

1 safe yield the appropriative rights of Los Angeles and San
2 Fernando may be and have been exercised.

3 4.2.6.3 Verdugo Basin. Verdugo Basin was in
4 overdraft for more than five consecutive years prior to
5 1968. Said basin is not currently in overdraft, due to
6 decreased extractions by Glendale and Crescenta Valley on
7 account of poor water quality. However, the combined
8 appropriative and prescriptive rights of Glendale and
9 Crescenta Valley are equivalent to the safe yield of the
10 Basin. No private overlying or appropriative rights exist
11 in Verdugo Basin.

12 4.2.6.4 Eagle Rock Basin. The only measure water
13 supply to Eagle Rock Basin is import return water by reason
14 of importations by Los Angeles. Extractions by Foremost and
15 Deep Rock under the prior stipulated judgments have utilized
16 the safe yield of Eagle Rock Basin, and have maintained
17 hydrologic equilibrium therein.

18 5. DECLARATION OF RIGHTS

19 5.1 Right to Native Waters.

20 5.1.1 Los Angeles River and San Fernando Basin.

21 5.1.1.1 Los Angeles' Pueblo Right. Los Angeles, as
22 the successor to all rights, claims and powers of the
23 Spanish Pueblo de Los Angeles in regard to water rights, is
24 the owner of a prior and paramount pueblo right to the
25 surface waters of the Los Angeles River and the native
26 ground waters of San Fernando Basin to meet its reasonable
27 beneficial needs and for its inhabitants.
28

1 5.1.1.2 Extent of Pueblo Right. Pursuant to said
2 pueblo right, Los Angeles is entitled to satisfy its needs
3 and those of its inhabitants within its boundaries as from
4 time to time modified. Water which is in fact used for
5 pueblo right purposes is and shall be deemed needed for such
6 purposes.

7 5.1.1.3 Pueblo Right -- Nature and Priority of
8 Exercise. The pueblo right of Los Angeles is a prior and
9 paramount right to all of the surface waters of the Los
10 Angeles River, and native ground water in San Fernando
11 Basin, to the extent of the reasonable needs and uses of Los
12 Angeles and its inhabitants throughout the corporate area of
13 Los Angeles, as its boundaries may exist from time to time.
14 To the extent that the Basin contains native waters and
15 imported waters, it is presumed that the first water
16 extracted by Los Angeles in any water year is pursuant to
17 its pueblo right, up to the amount of the native safe yield.
18 The next extractions by Los Angeles in any year are deemed
19 to be from import return water, followed by stored water, to
20 the full extent of Los Angeles' right to such import return
21 water and stored water. In the event of need to meet water
22 requirements of its inhabitants, Los Angeles has the
23 additional right, pursuant to its pueblo right, withdraw
24 temporarily from storage Underlying Pueblo Waters, subject
25 to an obligation to replace such water as soon as practical.

26 5.1.1.4 Rights of Other Parties. No other party to
27 this action has any right in or to the surface waters of the
28

1 Los Angeles River or the native safe yield of the San
2 Fernando Basin.

3 5.1.2 Sylmar Basin Rights.

4 5.1.2.1 No Pueblo Rights. The pueblo right of Los
5 Angeles does not extend to or include ground waters in
6 Sylmar Basin.

7 5.1.2.2 Overlying Rights. Defendants Moordigian
8 and Hersch & Plumb own lands overlying Sylmar Basin and have
9 a prior correlative right to extract native waters from said
10 Basin for reasonable beneficial uses on their said overlying
11 lands. Said right is appurtenant to said overlying lands
12 and water extracted pursuant thereto may not be exported
13 from said lands nor can said right be transferred or
14 assigned separate and apart from said overlying lands.

15 5.1.2.3 Appropriative Rights of San Fernando and
16 Los Angeles. San Fernando and Los Angeles own appropriative
17 rights, of equal priority, to extract and put to reasonable
18 beneficial use for the needs of said cities and their
19 inhabitants, native waters of the Sylmar Basin in excess of
20 the exercised reasonable beneficial needs of overlying
21 users. Said appropriative rights are:

22 San Fernando	3,580 acre feet
23 Los Angeles	1,560 acre feet.

24 5.1.2.4 No Prescription. The Sylmar Basin is not
25 presently in a state of overdraft and no rights by
26 prescription exist in said Basin against any overlying or
27 appropriative water user.

1 5.1.2.5 Other Parties. No other party to this
2 action owns or possesses any right to extract native ground
3 waters from the Sylmar Basin.

4 5.1.3 Verdugo Basin Rights.

5 5.1.3.1 No Pueblo Rights. The pueblo right of Los
6 Angeles does not extend to or include ground water in
7 Verdugo Basin.

8 5.1.3.2 Prescriptive Rights of Glendale and
9 Crescenta Valley. Glendale and Crescenta Valley own
10 prescriptive rights as against each other and against all
11 private overlying or appropriative parties in the Verdugo
12 Basin to extract, with equal priority, the following
13 quantities of water from the combined safe yield of native
14 and imported waters in Verdugo Basin:

15 Glendale	3,856 acre feet
16 Crescenta Valley	3,294 acre feet.

17 5.1.3.3 Other Parties. No other party to this
18 action owns or possesses any right to extract native ground
19 waters from the Verdugo Basin.

20 5.1.4 Eagle Rock Basin Rights.

21 5.1.4.1 No Pueblo Rights. The pueblo right of Los
22 Angeles does not extend to or include ground water in Eagle
23 Rock Basin.

24 5.1.4.2 No Rights in Native Waters. The Eagle Rock
25 Basin has no significant or measurable native safe yield and
26 no parties have or assert any right or claim to native
27 waters in said Basin.

28 5.2 Rights to Imported Waters.

1 5.2.1 San Fernando Basin Rights.

2 5.2.1.1 Rights to Recapture Import Return Water.

3 Los Angeles, Glendale, Burbank and San Fernando have each
4 caused imported waters to be brought into ULARA and to be
5 delivered to lands overlying the San Fernando Basin, with
6 the result that percolation and return flow of such
7 delivered water has caused imported waters to become a part
8 of the safe yield of San Fernando Basin. Each of said
9 parties has a right to extract from San Fernando Basin that
10 portion of the safe yield of the Basin attributable to such
11 import return waters.

12 5.2.1.2 Rights to Store and Recapture Stored Water.

13 Los Angeles has heretofore spread imported water directly in
14 San Fernando Basin. Los Angeles, Glendale, Burbank and San
15 Fernando each have rights to store water in San Fernando
16 Basin by direct spreading or in lieu practices. To the
17 extent of any future spreading or in lieu storage of import
18 water or reclaimed water by Los Angeles, Glendale, Burbank
19 or San Fernando, the party causing said water to be so
20 stored shall have a right to extract an equivalent amount of
21 ground water from San Fernando Basin. The right to extract
22 waters attributable to such storage practices is an
23 undivided right to a quantity of water in San Fernando Basin
24 equal to the amount of such Stored Water to the credit of
25 any party, as reflected in Watermaster records.

26 5.2.1.3 Calculation of Import Return Water and
27 Stored Water Credits. The extraction rights of Los Angeles,
28 Glendale, Burbank and San Fernando in San Fernando Basin in

1 any year, insofar as such rights are based upon import
2 return water, shall only extend to the amount of any
3 accumulated import return water credit of such party by
4 reason of imported water delivered after September 30, 1977.
5 The annual credit for such import return water shall be
6 calculated by Watermaster based upon the amount of delivered
7 water during the preceding water year, as follows:

8 Los Angeles: 20.8% of all delivered water
9 (including reclaimed water) to
10 valley fill lands of San
11 Fernando Basin.

12 San Fernando: 26.3% of all imported and
13 reclaimed water delivered to
14 valley-fill lands of San
15 Fernando Basin.

16 Burbank: 20.0% of all delivered water
17 (including reclaimed water) to
18 San Fernando Basin and its
19 tributary hill and mountain
20 areas.

21 Glendale: 20.0% of all delivered water
22 (including reclaimed water) to
23 San Fernando Basin and its
24 tributary hill and mountain
25 areas (i.e., total delivered
26 water, [including reclaimed
27 water], less 105% of total
28 sales by Glendale in Verdugo
Basin and its tributary
hills).

In calculating Stored Water credit, by reason of direct
spreading of imported or reclaimed water, Watermaster shall
assume that 100% of such spread water reached the ground
water in the year spread.

5.2.1.4 Cumulative Import Return Water Credits.

Any import return water which is not extracted in a given
water year shall be carried over, separately accounted for,

1 and maintained as a cumulative credit for purposes of future
2 extractions.

3 5.2.1.5 Overextractions. In addition to
4 extractions of stored water, Glendale, Burbank or San
5 Fernando may, in any water year, extract from San Fernando
6 Basin an amount not exceeding 10% of such party's last
7 annual credit for import return water, subject, however, to
8 an obligation to replace such overextraction by reduced
9 extractions during the next succeeding water year. Any such
10 overextraction which is not so replaced shall constitute
11 physical solution water, which shall be deemed to have been
12 extracted in said subsequent water year.

13 5.2.1.6 Private Defendant. No private defendant is
14 entitled to extract water from the San Fernando Basin on
15 account of the importation of water thereto by overlying
16 public entities.

17 5.2.2 Sylmar Basin Rights.

18 5.2.2.1 Rights to Recapture Import Return Waters.
19 Los Angeles and San Fernando have caused imported waters to
20 be brought into ULARA and delivered to lands overlying the
21 Sylmar Basin with the result that percolation and return
22 flow of such delivered water has caused imported waters to
23 become a part of the safe yield of Sylmar Basin. Los
24 Angeles and San Fernando are entitled to recover from Sylmar
25 Basin such imported return waters. In calculating the
26 annual entitlement to recapture such import return water,
27 Los Angeles and San Fernando shall be entitled to 35.7% of
28 the preceding water year's imported water delivered by such

1 party to lands overlying Sylmar Basin. Thus, by way of
2 example, in 1976-77, Los Angeles was entitled to extract
3 2370 acre feet of ground water from Sylmar Basin, based on
4 delivery to lands overlying said Basin of 6640 acre feet
5 during 1975-76. The quantity of San Fernando's imported
6 water to, and the return flow therefrom, in the Sylmar Basin
7 in the past has been of such minimal quantities that it has
8 not been calculated.

9 5.2.2.2 Rights to Store and Recapture Stored Water.

10 Los Angeles and San Fernando each have the right to store
11 water in Sylmar Basin equivalent to their rights in San
12 Fernando Basin under paragraph 5.2.1.2 hereof.

13 5.2.2.3 Carry Over. Said right to recapture stored

14 water, import return water and other safe yield waters to
15 which a party is entitled, if not exercised in a given year,
16 can be carried over for not to exceed five years, if the
17 underflow through Sylmar Notch does not exceed 400 acre feet
18 per year.

19 5.2.2.4 Private Defendants. No private defendant

20 is entitled to extract water from within the Sylmar Basin on
21 account of the importation of water thereto by overlying
22 public entities.

23 5.2.3 Verdugo Basin Rights.

24 5.2.3.1 Glendale and Crescenta Valley. Glendale

25 and Crescenta Valley own appropriative and prescriptive
26 rights in and to the total safe yield of Verdugo Basin,
27 without regard as to the portions thereof derived from
28 native water and from delivered imported waters,

1 notwithstanding that both of said parties have caused waters
2 to be imported and delivered on lands overlying Verdugo
3 Basin. Said aggregate rights are as declared in Paragraph
4 5.1.3.2 of these Conclusions.

5 5.2.3.2 Los Angeles. Los Angeles may have a right
6 to recapture its import return waters by reason of delivered
7 import water in the Basin, based upon imports during and
8 after water year 1977-78, upon application to Watermaster
9 not later than the year following such import and on
10 subsequent order after hearing by the Court.

11 5.2.3.3 Private Defendants. No private defendant,
12 as such, is entitled to extract water from within the
13 Verdugo Basin on account of the importation of water thereto
14 by overlying public entities.

15 5.2.4 Eagle Rock Basin Rights.

16 5.2.4.1 Los Angeles. Los Angeles has caused
17 imported water to be delivered for use on lands overlying
18 Eagle Rock Basin and return flow from said delivered
19 imported water constitutes the entire safe yield of Eagle
20 Rock Basin. Los Angeles has the right to extract or cause
21 to be extracted the entire safe yield of Eagle Rock Basin.

22 5.2.4.2 Private Defendants. No private defendants
23 have a right to extract water from within Eagle Rock Basin,
24 except pursuant to the physical solution herein.

25 26 6. INJUNCTIONS

27 Each of the parties named or referred to in this Part 6, its
28 officers, agents, employees and officials is, and they are, hereby

1 ENJOINED and RESTRAINED from doing or causing to be done any of the
2 acts herein specified:

3 6.1 Each and Every Defendant -- from diverting the surface
4 waters of the Los Angeles River or extracting the native waters of SAN
5 FERNANDO BASIN, or in any manner interfering with the prior and
6 paramount pueblo right of Los Angeles in and to such waters, except
7 pursuant to the physical solution herein decreed.

8 6.2 Each and Every Private Defendant -- from extracting ground
9 water from the SAN FERNANDO, VERDUGO, or EAGLE ROCK BASINS, except
10 pursuant to physical solution provisions hereof.

11 6.3 Defaulting and Disclaiming Parties (listed in Attachments
12 "C" and "D") -- from diverting or extracting water within ULARA,
13 except pursuant to the physical solution herein decreed.

14 6.4 Glendale -- from extracting ground water from SAN FERNANDO
15 BASIN in any water year in quantities exceeding its import return
16 water credit and any stored water credit, except pursuant to the
17 physical solution; and from extracting water from VERDUGO BASIN n
18 excess of its appropriative and prescriptive right declared herein.

19 6.5 Burbank -- from extracting ground water from SAN FERNANDO
20 BASIN in any water year in quantities exceeding its import return
21 water credit and any stored water credit, except pursuant to the
22 physical solution decreed herein.

23 6.6 San Fernando -- from extracting ground water from SAN
24 FERNANDO BASIN in any water year in quantities exceeding its import
25 return water credit and any stored water credit, except pursuant to
26 the physical solution herein decreed.

1 6.7 Crescenta Valley -- from extracting ground water from
2 VERDUGO BASIN in any year in excess of its appropriative and
3 prescriptive right declared herein.

4 6.8 Los Angeles -- from extracting ground water from SAN
5 FERNANDO BASIN in any year in excess of the native safe yield, plus
6 any import return water credit and stored water credit of said city;
7 provided, that where the needs of Los Angeles require the extraction
8 of Underlying Pueblo Waters, Los Angeles may extract such water
9 subject to an obligation to replace such excess as soon as practical;
10 and from extracting ground water from VERDUGO BASIN in excess of any
11 credit for import return water which Los Angeles may acquire by reason
12 of delivery of imported water for use overlying said basin, as
13 hereinafter confirmed on application to Watermaster and by subsequent
14 order of the Court.

15 6.9 Non-consumptive and Minimal Consumptive Use Parties. The
16 parties listed in Attachment "F" are enjoined from extracting water
17 from San Fernando Basin, except in accordance with practices specified
18 in Attachment "F", or pursuant to the physical solution herein
19 decreed.

1 Judgment or hereafter ordered or authorized by the Court in the
2 exercise of the Court's continuing jurisdiction.

3 8.2.2 Requirement for Reports, Information and Records.

4 Watermaster may require any party to furnish such reports,
5 information and records as may be reasonably necessary to
6 determine compliance or lack of compliance by any party with the
7 provisions of this Judgment.

8 8.2.3 Requirement of Measuring Devices. Watermaster shall

9 require all parties owning or operating any facilities for
10 extraction of ground water from ULARA to install and maintain at
11 all times in good working order, at such party's own expense,
12 appropriate meters or other measuring devices satisfactory to the
13 Watermaster.

14 8.2.4 Inspection by Watermaster. Watermaster shall make

15 inspections of (a) ground water extraction facilities and
16 measuring devices of any party, and (b) water use practices by
17 any party under physical solution conditions, at such times and
18 as often as may be reasonable under the circumstances to verify
19 reported data and practices of such party. Watermaster shall
20 also identify and report on any new or proposed new ground water
21 extractions by any party or non-party.

22 8.2.5 Policies and Procedures. Watermaster shall, with the

23 advice and consent of the Administrative Committee, adopt and
24 amend from time to time Policies and Procedures as may be
25 reasonably necessary to guide Watermaster in performance of its
26 duties, powers and responsibilities under the provisions of this
27 judgment.

1 8.2.6 Data Collection. Watermaster shall collect and
2 verify data relative to conditions of ULARA and its ground water
3 basins from the parties and one or more other governmental
4 agencies. Where necessary, and upon approval of the
5 Administrative Committee, Watermaster may develop supplemental
6 data.

7 8.2.7 Cooperation With Other Agencies. Watermaster may act
8 jointly or cooperate with agencies of the United States and the
9 State of California or any political subdivisions, municipalities
10 or districts (including any party) to secure or exchange data to
11 the end that the purpose of this Judgment, including its physical
12 solution, may be fully and economically carried out.

13 8.2.8 Accounting for Non-consumptive Use. Watermaster
14 shall calculate and report annually the non-consumptive and
15 consumptive uses of extracted ground water by each party listed
16 in Attachment "F".

17 8.2.9 Accounting for Accumulated Import Return Water and
18 Stored Water. Watermaster shall record and verify additions,
19 extractions and losses and maintain an annual and cumulative
20 account of all (a) stored water and (b) import return water in
21 San Fernando Basin. Calculation of losses attributable to Stored
22 Water shall be approved by the Administrative Committee or by
23 subsequent order of the Court. For purposes of such accounting,
24 extractions in any water year by Glendale, Burbank or San
25 Fernando shall be assumed to be first from accumulated import
26 return water, second from stored water, and finally pursuant to
27 physical solution; provided, that any such city may, by written
28

1 notice of intent to Watermaster, alter said priority of
2 extractions as between import return water and stored water.

3 8.2.10 Recalculation of Safe Yield. Upon request of the
4 Administrative Committee, or on motion of any party and
5 subsequent Court order, Watermaster shall recalculate safe yield
6 of any basin within ULARA. If there has been a material long-
7 term change in storage over a base period (excluding any effects
8 of stored water) in San Fernando Basin the safe yield shall be
9 adjusted by making a corresponding change in native safe yield of
10 the Basin.

11 8.2.11 Watermaster Report. Watermaster shall prepare
12 annually and (after review and approval by Administrative
13 Committee) cause to be served on all active parties, on or before
14 May 1, a report of hydrologic conditions and Watermaster
15 activities within ULARA during the preceding water year.
16 Watermaster's annual report shall contain such information as may
17 be requested by the Administrative Committee, required by
18 Watermaster Policies and Procedures or specified by subsequent
19 order of this Court.

20 8.2.12 Active Party List. Watermaster shall maintain at
21 all times a current list of active parties and their addresses.

22 8.3 Administrative Committee.

23 8.3.1 Committee to be Formed. An Administrative Committee
24 shall be formed to advise with, request or consent to, and review
25 actions of Watermaster. Said Administrative Committee shall be
26 composed of one representative of each party having a right to
27 extract ground water from ULARA, apart from the physical
28

1 solution. Any such party not desiring to participate in such
2 committee shall so advise Watermaster in writing.

3 8.3.2 Organization and Voting. The Administrative
4 Committee shall organize and adopt appropriate rules and
5 regulations to be included in Watermaster Policies and
6 Procedures. Action of the Administrative Committee shall be by
7 unanimous vote of its members, or of the members affected in the
8 case of an action which affects one or more basins but less than
9 all of ULARA. In the event of inability of the Committee to
10 reach a unanimous position, the matter may, at the request of
11 Watermaster or any party, be referred to the Court for resolution
12 by subsequent order after notice and hearing.

13 8.3.3 Function and Powers. The Administrative Committee
14 shall be consulted by Watermaster and shall request or approve
15 all discretionary Watermaster determinations. In the event of
16 disagreement between Watermaster and the Administrative
17 Committee, the matter shall be submitted to the Court for review
18 and resolution.

19 8.4 Watermaster Budget and Assessments.

20 8.4.1 Watermaster's Proposed Budget. Watermaster shall, on
21 or before May 1, prepare and submit to the Administrative
22 Committee a budget for the ensuing water year. The budget shall
23 be determined for each basin separately and allocated between the
24 separate ground water basins. The total for each basin shall be
25 allocated between the public agencies in proportion to their use
26 of ground water from such basin during the preceding water year.

27 8.4.2 Objections and Review. Any party who objects to the
28 proposed budget, or to such party's allocable share thereof, may

1 apply to the Court within thirty (30) days of receipt of the
2 proposed budget from Watermaster for review and modification.
3 Any such objection shall be duly noticed to all interested
4 parties and heard within thirty (30) days of notice.

5 8.4.3 Notice of Assessment. After thirty (30) days from
6 delivery of Watermaster's proposed budget, or after the order of
7 Court settling any objections thereto, Watermaster shall serve
8 notice on all parties to be assessed of the amount of assessment
9 and the required payment schedule.

10 8.4.4 Payment. All assessments for Watermaster expenses
11 shall be payable on the dates designated in the notice of
12 assessment.

13 8.5 Review of Watermaster Activities.

14 8.5.1 Review Procedures. All actions of Watermaster (other
15 than budget and assessment matters, which are provided for in
16 Paragraph 8.4.2) shall be subject to review by the Court on its
17 own motion or on motion by any party, as follows:

18 8.5.1.1 Noticed Motion. Any party may, by a
19 regularly noticed motion, apply to the court for review of
20 any Watermaster's action. Notice of such motion shall be
21 served personally or mailed to Watermaster and to all active
22 parties.

23 8.5.1.2 De Novo Nature of Proceedings. Upon the
24 filing of any such motion, the Court shall require the
25 moving party to notify the active parties of a date for
26 taking evidence and argument, and on the date so designated
27 shall review de novo the question at issue. Watermaster's
28 findings or decision, if any, may be received in evidence at

1 said hearing, but shall not constitute presumptive or prima
2 facie proof of any fact in issue.

3 8.5.1.3 Decision. The decision of the Court in
4 such proceeding shall be an appealable supplemental order in
5 this case. When the same is final, it shall be binding upon
6 the Watermaster and all parties.

7 8 9. PHYSICAL SOLUTION

9 9.1 Circumstances Indicating Need for Physical Solution. During
10 the period between 1913 and 1955, when there existed temporary surplus
11 waters in the San Fernando Basin, overlying cities and private
12 overlying landowners undertook to install and operate water
13 extraction, storage and transmission facilities to utilize such
14 temporary surplus waters. If the injunction against interference with
15 the prior and paramount rights of Los Angeles to the waters of the San
16 Fernando and Eagle Rock Basins were strictly enforced, the value and
17 utility of those water systems and facilities would be lost or
18 impaired. It is appropriate to allow continued limited extraction
19 from the San Fernando and Eagle Rock Basins by parties other than Los
20 Angeles, subject to assurance that Los Angeles will be compensated for
21 any cost, expense or loss incurred as a result thereof.

22 9.2 Prior Stipulated Judgments. Several defendants heretofore
23 entered into separate stipulated judgments herein, during the period
24 June, 1958 to November, 1965, each of which judgments was subject to
25 the court's continuing jurisdiction. Without modification of the
26 substantive terms of said prior judgments, the same are categorized
27 and merged into this judgment and superseded hereby in the exercise of
28 the Court's continuing jurisdiction, as follows:

1 9.2.1 Eagle Rock Basin Parties. Stipulating defendants
2 Foremost and Deep Rock have extracted water from Eagle Rock
3 Basin, whose entire safe yield consist of import return waters of
4 Los Angeles. Said parties may continue to extract water from
5 Eagle Rock Basin to supply their bottled drinking water
6 requirements upon filing all required reports on said extraction
7 with Watermaster and Los Angeles and paying Los Angeles annually
8 an amount equal to \$21.78 per acre foot for the first 200 acre
9 feet, and \$39.20 per acre foot for any additional water extracted
10 in any water year.

11 9.2.2 Non-consumptive or Minimal-consumptive Operations.
12 Certain stipulating defendants extract water from San Fernando
13 Basin for uses which are either non-consumptive or have a minimal
14 consumptive impact. Each of said defendants who have a minimal
15 consumptive impact has a connection to the City of Los Angeles
16 water system and purchases annually an amount of water at least
17 equivalent to the consumptive loss of extracted ground water.

18 Said defendants are:

19 Non-Consumptive

20 Walt Disney Productions

21 Sears, Roebuck & Co.
22
23
24
25
26
27
28

1 Minimal-Consumptive

2 Conrock Co., for itself and as successor to California
3 Materials Co.; Constance Ray White and Lee L. White;
4 Mary L. Akmadzich and Peter J. Akmadzich
5 Livingston Rock & Gravel, for itself and as successor
6 to Los Angeles Land & Water Co.

7 The nature of each said defendant's water use practices is
8 described in Attachment "F". Subject to required reports to and
9 inspections by Watermaster, each said defendant may continue
10 extractions for said purposes so long as in any year such party
11 continues such non-consumptive or minimal-consumptive use
12 practices.

13 9.2.3 Abandoned Operations. The following stipulating
14 defendants have ceased extracting water from San Fernando Basin
15 and no further need exists for physical solution in their behalf:

16 Knickerbocker Plastic Company, Inc.
17 Carnation Company
18 Hidden Hills Mutual Water Company
19 Southern Pacific Railroad Co.
20 Pacific Fruit Express Co.

21 9.3 Private Defendants. There are private defendants who
22 installed during the years of temporary surplus relatively substantial
23 facilities to extract and utilize ground waters of San Fernando Basin.
24 Said defendants may continue their extractions for consumptive use up
25 to the indicated annual quantities upon payment of compensation to the
26 appropriate city wherein their use of water is principally located, on
27 the basis of the following physical solution:
28

1 9.3.1 Private Defendants and Appropriate Cities. Said
2 private defendants and the cities to which their said extractions
3 shall be charged and to which physical solution payment shall be
4 made are:

		Annual Quantities <u>(acre feet)</u>	
Los Angeles	-	Toluca Lake	100
		Sportsman's Lodge	25
		Van de Kamp	120
Glendale	-	Forest Lawn	400
		Southern Service Co.	75
Burbank	-	Valhalla	300
		Lockheed	25

12 Provided that said private defendants shall not develop, install
13 or operate new wells or other facilities which will increase
14 existing extraction capacities.

15 9.3.2 Reports and Accounting. All extractions pursuant to
16 this physical solution shall be subject to such reasonable
17 reports and inspection as may be required by Watermaster.

18 9.3.3 Payment. Water extracted pursuant hereto shall be
19 compensated for by annual payment to Los Angeles, and as agreed
20 upon pursuant to paragraph 9.3.3.2 to Glendale and Burbank,
21 thirty days from day of notice by Watermaster, on the following
22 basis:

23 9.3.3.1 Los Angeles. An amount equal to what such
24 party would have paid had water been delivered from the
25 distribution system of Los Angeles, less the average energy
26 cost of extraction of ground water by Los Angeles from San
27 Fernando.

1 9.3.3.2 Glendale or Burbank. An amount equal to
2 the sum of the amount payable to Los Angeles under paragraph
3 9.4 hereof and any additional charges or conditions agreed
4 upon by either such city and any private defendant.

5 9.4 Glendale and Burbank. Glendale and Burbank have each
6 installed, during said years of temporary surplus, substantial
7 facilities to extract and utilize waters of the San Fernando Basin.
8 In addition to the use of such facilities to recover import return
9 water, the distribution facilities of such cities can be most
10 efficiently utilized by relying upon the San Fernando Basin for
11 peaking supplies in order to reduce the need for extensive new surface
12 storage. Glendale and Burbank may extract annual quantities of ground
13 water from the San Fernando Basin, in addition to their rights to
14 import return water or stored water, as heretofore declared, in
15 quantities up to:

16 Glendale	5,500 acre feet
17 Burbank	4,200 acre feet;

18 provided, that said cities shall compensate Los Angeles annually for
19 any such excess extractions over and above their declared rights at a
20 rate per acre foot equal to the average MWD price for municipal and
21 industrial water delivered to Los Angeles during the fiscal year, less
22 the average energy cost of extraction of ground water by Los Angeles
23 from San Fernando Basin during the preceding fiscal year. Provided,
24 further, that ground water extracted by Forest Lawn and Southern
25 Service Co. shall be included in the amount taken by Glendale, and the
26 amount extracted by Valhalla and Lockheed shall be included in the
27 amount taken by Burbank. All water taken by Glendale or Burbank
28 pursuant hereto shall be charged against Los Angeles' rights in the

1 year of such extractions.

2 In the event of emergency, and upon stipulation or motion
3 and subsequent order of the Court, said quantities may be enlarged in
4 any year.

5 9.5 San Fernando. San Fernando delivers imported water on lands
6 overlying the San Fernando Basin, by reason of which said city has a
7 right to recover import return water. San Fernando does not have
8 water extraction facilities in the San Fernando Basin, nor would it be
9 economically or hydrologically useful for such facilities to be
10 installed. Both San Fernando and Los Angeles have decreed
11 appropriative rights and extraction facilities in the Sylmar Basin.
12 San Fernando may extract ground water from the Sylmar Basin in a
13 quantity sufficient to utilize its San Fernando Basin import return
14 water credit, and Los Angeles shall reduce its Sylmar Basin
15 extractions by an equivalent amount and receive an offsetting
16 entitlement for additional San Fernando Basin extractions.

17 9.6 Effective Date. This physical solution shall be effective
18 on October 1, 1978, based upon extractions during water year 1978-79.

20 10. MISCELLANEOUS PROVISIONS

21 10.1 Designation of Address for Notice and Service. Each party
22 shall designate the name and address to be used for purposes of all
23 subsequent notices and service herein by a separate designation to be
24 filed with Watermaster within thirty (30) days after Notice of Entry
25 of Judgment has been served. Said designation may be changed from
26 time to time by filing a written notice of such change with the
27 Watermaster. Any party desiring to be relieved of receiving notices
28 of Watermaster activity may file a waiver of notice on a form to be

1 provided by Watermaster. Thereafter such party shall be removed from
2 the Active Party list. For purposes of service on any party or active
3 party by the Watermaster, by any other party, or by the Court, of any
4 item required to be served upon or delivered to such party or active
5 party under or pursuant to the Judgment, such service shall be made
6 personally or by deposit in the United States mail, first class,
7 postage prepaid, addressed to the designee and at the address in the
8 latest designation filed by such party or active party.

9 10.2 Notice of Change in Hydrologic Condition -- Sylmar Basin.

10 If Sylmar Basin shall hereafter be in a condition of overdraft due to
11 increased or concurrent appropriations by Los Angeles and San
12 Fernando, Watermaster shall so notify the Court and parties concerned,
13 and notice of such overdraft and the adverse effect thereof on private
14 overlying rights shall be given by said cities as prescribed by
15 subsequent order of the Court, after notice and hearing.

16 10.3 Judgment Binding on Successors. This Judgment and all

17 provisions thereof are applicable to and binding upon not only the
18 parties to this action, but also upon their respective heirs,
19 executors, administrators, successors, assigns, lessees and licensees
20 and upon the agents, employees and attorneys in fact of all such
21 persons.

22 10.4 Costs. Ordinary court costs shall be borne by each party,
23 and reference costs shall be borne as heretofore allocated and paid.

24 DATED: _____, 1979.

25
26 _____
27 Judge of the Superior Court
28

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Appendix C

Water Conservation Program, Water Survey Report

Water Conservation Program

APPENDIX G

CRESCENTA VALLEY WATER DISTRICT

WATER CONSERVATION PROGRAM

CRESCENTA VALLEY WATER DISTRICT

APPENDIX G

WATER CONSERVATION PROGRAM

GENERAL STATEMENT

1. Due to the water supply conditions prevailing in the Crescenta Valley Water District (CVWD) and/or in the area from which CVWD obtains a portion of its water supply, the general welfare requires that:
 - The water resources available to the CVWD be put to the maximum beneficial use;
 - The waste or unreasonable use, or unreasonable method of use of water be prevented;
 - The conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the customers of CVWD and for the public health and safety.
2. The purpose of this program is to provide water conservation regulations, in a phased approach, to minimize the effect of a shortage of water supplies on the customers of CVWD during various critical stages of a water shortage.

PHASE I –NORMAL WATER CONSERVATION

Phase I standard water conservation practices will be in effect at all times. The CVWD Board of Directors has adopted the following measures to reduce consumption and prohibit water waste for all water users within CVWD in order to sustain water supply reliability.

Prohibited Use Applicable to ALL Customers

1. **Water hose usage:** Hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas shall not be permitted. Exception: Flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety. Businesses or schools required to hose down public eating areas will be provided with access to a water broom.
2. **Overspray and runoff:** Use of water for any purpose which results in overspray, excessive runoff onto hardscapes, driveways, streets, adjacent lands or into gutters shall not be permitted.
3. **Fountains, similar structures and swimming pools:** Water used to clean, fill or maintain levels in decorative fountains or similar structures must be part of a recirculation system.
4. **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. Failure to affect the repair of any leak shall subject said customer to all penalties provided herein for waste of water.
5. **Irrigating times:** No watering, sprinkling or irrigating shall take place between the hours of nine a.m. (9:00AM) and five p.m. (5:00PM) in any landscaped or vegetated areas, including, but not limited to, golf courses, parks, cemeteries and school areas landscaped with, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, trees, and

California-friendly plantings. With the exception of drip irrigation systems or weather based irrigation controllers, residential timers shall not run for more than a total of 10 minutes per station.

- 6. Hand Watering:** Hand watering of non-turf areas is allowed using a hose with a positive shut-off nozzle or watering can within the allowable times as specified above.
- 7. 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.
- 8. Vehicle washing:** The washing of commercial and non-commercial privately owned automobiles, trucks, trailers, motor-homes, boats, buses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.
- 9. Construction water restrictions:** 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.
- 10. 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 city.
- 11. Drinking water upon request:** No restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested by a customer.
- 12. Hotels/Motels:** Hotels, motels, and other commercial lodging establishments are requested to post notices informing their guests about the city's water conservation policy and urging guests to conserve water. Water conservation notices will be provided by CVWD.
- 13. Hotels/Motels:** Hotels, motels and other commercial lodgings are requested to post notices giving their guests the option of not laundering towels and linens daily.
- 14. Reporting waste of water:** The District shall maintain a program for residents to report waste of water throughout the District boundaries. This will include an online submittal form, a dedicated phone number, and follow-up by District staff on all waste of water reports. Residents are requested to report any observed waste of water from surrounding properties or in the community and report to the District for follow-up.
- 15. Pre-rinse spray valve:** Where applicable, restaurants must utilize water conserving nozzles.

BE IT FURTHER RESOLVED, Crescenta Valley Water District urges the following water usage to all of its customers:

1. To reduce the amount of turf and install new drought tolerant landscaping, low-water using trees and plants, and efficient irrigation systems including but not limited to ET controllers, drip irrigation, and “high efficiency sprinkler heads”.
2. To wash only full loads of dishes or clothes in automatic washers, and do not allow indoor faucets to run continuously.
3. To turn water system off when leaving property unoccupied for an extended period of time.
4. To use covers to minimize the evaporation of water from outdoor swimming pools, wading pools or spas when they are not in use.

WATER CONSERVATION ALERT SYSTEM

When a water conservation alert system is implemented by direction of the General Manager, the following measures to reduce water consumption will be requested for all water users within CVWD.

- a. Color Code “Blue” is defined as the Normal Water Conservation Alert, Foothill Municipal Water District can meet all Member Agency demands. Standard water conservation applies as defined in Appendix G of the Rules and Regulations.
- b. Color Code “Green” is defined as an Increased Voluntary Conservation Alert, some supplies have been impacted and customers should increase efforts to conserve by following strict water conservation practices indoors and limiting outdoor water use to odd or even days, based on ending number of customer address.
- c. Color Code “Yellow” is defined as an Extraordinary Conservation Alert, when Metropolitan Water District of Southern California is pulling water from most of its storage programs to meet demands. Extraordinary conservation is called for from customers. Customers are requested to minimize indoor water use and water outdoors only on assigned odd or even days.
- d. Color Code “Orange” is defined as a Rationing Conservation Alert, when Metropolitan Water District of Southern California has implemented its allocation plan to its member agencies. Customers are requested to minimize indoor water use and severely limit outdoor water use as follows:
 1. Residential and commercial landscape irrigation is limited to no more than three (3) days per week on Tuesday, Thursday and Saturday. Watering limits are seven (7) minutes per watering station.

Exemption: Public use areas owned and/or operated by School Districts are exempt from watering days. Public use areas greater than 4,000 square feet are exempt from watering days so long as best management practices are applied.
 2. The filling, refilling or adding of water to indoor and outdoor pools, wading pools, or spas is prohibited. Exemptions: Commercial Repairs mandated by the Federal Virginia Graeme Baker Act, or adding water for the prevention of equipment failure is

permissible, however, the District strongly urges that a cover be used to prevent evaporation and thereby reducing the frequency of refilling.

3. The use of water to clean, maintain, fill, or refill decorative fountains or similar structures is prohibited. Exemptions: Adding water for the prevention of equipment failure is permissible.
 4. Vehicle washing is restricted to the use of a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.
 5. Fix leaks within 48 hours.
- e. Color Code “Red” is defined as a Critical Water Conservation Alert, when water supplies are only available for health and safety needs. Customers are requested to minimize indoor water use and curtail all outdoor water use. Fix any leaks within 24 hours.

Notification of the Water Conservation Alert System status on any given day shall be visibly posted at the exterior of the District’s Administration Office (2700 Foothill Blvd., La Crescenta) and other accessible locations throughout the District service area where allowed. At least one direct mailing shall be made to all water customer accounts, with notification and explanation of the alert system. Newspaper coverage will also be used to disseminate alert system status and water conservation updates.

Water Survey Report

Residential Water Use Survey

Provided by Crescenta Valley Water District

April 14, 2011

Marcos Quezada
1147 S. Grand Avenue
Glendora, CA 91740
Telephone Number: 626-335-7888
Water Account No.: 0123456

Survey Conducted On: 4-11-11
Year Home Built: 1985
No. of Residents: 3
Water Meter Reading: 1234
Meter Leak Detected: Yes No
Leak Flow (gal/month): 200

Dear Customer:

Crescenta Valley Water District recently conducted a Residential Water Use Survey of your home as part of the District's ongoing efforts to improve water use efficiency. WaterWise Consulting, Inc., an independent consulting firm, conducted this survey and hereby submits this report. This report includes recommendations for improving water use efficiency, which could lead to a potential reduction of your water bill. According to our findings, implementation of the enclosed recommendations can provide the following potential water savings:

Areas Surveyed in Residence	Potential Annual Water Savings	
	Billing Units	Gallons
1. Leak in Residence	0.20	200
2. Bathroom Water Use		
3. Kitchen Water Use		
4. Laundry Water use		
5. Swimming Pool Water Use		
6. Landscape Irrigation Water Use	20	20,000
Total Potential Annual Water Savings	20.2	20,200

One billing unit is equal to 1,000 gallons

Implementing the recommended changes and improvements are estimated to save you approximately \$ **91.51** annually. The following pages provide a summary of the areas surveyed in your residence. Thank you for participating in this water use survey.

If you have any questions about this survey or the recommendations provided, please contact Natalie Bellissimo at (818) 248-3925 Ext 4107 or via e-mail at nbellissimo@cvwd.com.

Thank you,

Water Survey Team
WaterWise Consulting, Inc.



Indoor Water Use

Typically, indoor water use accounts for approximately 40% of the total water used in a residence. Of the total water used indoors, more than half is used in the bathroom. This includes water used for toilets, showers, and faucets. There is a potential for significant water savings for indoor water use, especially if your home has fixtures that were manufactured or installed prior to 1994. Newer fixtures are more water efficient, and will help you conserve water with every use.

Bathroom Water Use

Toilets — Toilets typically account for one-third of total indoor water use. Older toilet models flush at a volume of 3.5 gallons per flush (gpf) or greater. High Efficiency Toilets (HETs) flush at a volume of 1.28 gpf or less.

Number of toilets at this residence:

Number of **Non Conserving** toilets:

Average volume of **Non Conserving** toilets:

Toilet leak detected: Yes No

Number of toilet leaks detected:



High Efficiency Toilet (HET)

Water Savings with Water Conserving Toilets:

Showerheads — Water use from showers and baths account for about 20% of the water used indoors. Non-efficient showerheads have flow rates as high as 5 gallons per minute (gpm). New low-flow showerhead models offer a low-flow rate of 1.5 gpm or less.

Number of showerheads at this residence:

Number of **Non Conserving** showerheads:

Average flow of **Non Conserving** showerheads (gpm):

Current average length of shower (minutes):

Suggested length of shower (minutes):

Number of showers per week per person:



Low-Flow Showerhead

Water Savings with Low-Flow Showerheads:

Bathroom Faucets—Faucets without aerators typically use greater than 4 gallons of water per minute. Installing low-flow faucet aerators can reduce water use to about 1.0 gallon per minute (gpm) or less.

Number of bathroom faucets at this residence:

Number of **Non Conserving** bathroom faucets:

Average flow of **Non Conserving** faucets (gal/min):



Low-Flow Faucet Aerator

Water Savings with Low-Flow Faucet Aerators:

Kitchen Water Use

Kitchen Faucet — Faucets without aerators typically use more than 4 gallons of water per minute. Installing low-flow kitchen faucet aerators can reduce water use to 1.5 gallons per minute (gpm) or less.

Number of kitchen faucets in this residence:
 Number of **Non Conserving** kitchen faucets:
 Average flow rate of **Non Conserving** faucets (gpm):



Kitchen Faucet Aerator

Water Savings with Kitchen Faucet Aerator:

Dishwasher — Older, non-efficient dishwashers use between 12 and 15 gallons of water for every load. High efficiency, Energy Star models use approximately 7 gallons of water per load and also provide significant energy savings.

Dishwasher make/model:
 Efficient Dishwasher: Yes No
 Pre-rinse dishes: Yes No
 Existing dishwasher capacity in gallons:
 Dishwasher loads per week:



High Efficiency Dishwasher

Water Savings with High Efficiency Dishwasher:

Laundry Water Use

Clothes Washer—Older clothes washer models can use up to 40 gallons of water for every load. High efficiency clothes washers use approximately 15 gallons or less per load. High efficiency models also help save energy, by reducing the volume of hot water used, and reducing drying times.

Clothes Washer make/model:
 Existing clothes washer capacity in gallons:
 Clothes washer loads per week:
 Qualifies for washer rebate? Yes No



High Efficiency Clothes Washer

Water Savings with High Efficiency Clothes Washer:

Swimming Pool Water Use

Swimming Pool—Evaporation of water from a swimming pool is significant in the summer months. A pool cover is recommended to reduce the amount of water lost to evaporation. Pool covers may also help save energy by reducing heat loss, and reducing costs required for chemicals used in refill water. Please note, it is usually recommended to drain and refill a pool only once every three years, or less frequently.

Does this residence have a pool: Yes No Pool Depth (ft):
 Does pool have cover: Yes No Pool Surface Area ft²:
 How often is pool drained and refilled (years): Pool Volume (gallons):

Water Savings with Pool Cover & 3 yr. Refill Rate:

Landscape Irrigation Water Use

General Landscape Information

Total Landscape Area (ft²): _____

Overall Plant Type:

- All Lawn
- Mostly Lawn
- Equal Lawn / Planter
- Mostly Planter
- All Planter

Type of Soil:

- Clay
- Clay Loam
- Loam
- Sandy Loam
- Sandy

Type of Irrigation:

- Automatic System
- Manual System
- Hand Watering
- No Irrigated Landscape
- Weather Based Controller:

Estimated Annual Landscape Water Need: _____ Gallons or _____ HCF Billing Units

Estimated water need calculated based on landscape area, general plant type, and local weather conditions.

Irrigation System Inspection

Controller Model: _____ No. Stations: _____

Current Watering Schedule:

Irrigation Stations Checked

Plant Type:													
Cool Season Lawn													
Warm Season Lawn													
Medium Water Use													
Low Water Use													
Very Low Water Use													
System Type:													
Spray Heads													
Rotor or Impact													
Bubblers													
Drip/Micro-Spray													
Stream Sprays													
System Problems:													
Broken Sprinklers													
Overspray													
Interference													
Tilted Sprinklers													
Mixed Equipment													
Pressure Too High													
Pressure Too Low													
Low or Sunken Heads													
Clogged Heads													

Refer to page 6 of the report for a description of each system problem listed.

Watering Schedule

1. Re-program your timer each month using your Watering Schedule as a guide.
2. Please note that Water Conservation Blue Alert is currently in effect. Watering is permitted any day of the week, before 9:00 a.m. and after 5:00 pm. For more information, please review the alert flyer attached to this report.
3. **The watering schedule below is for representative stations of your landscape.** You may use the numbers provided as a guide for other stations watering similar plant types with the same type of irrigation system.

Watering Schedule for Representative Stations:

Station No:	Plant Type:						System:					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minutes of Irrigation per Cycle												
Cyles per Day												
Days per Week												

Station No:	Plant Type:						System:					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minutes of Irrigation per Cycle												
Cyles per Day												
Days per Week												

Station No:	Plant Type:						System:					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minutes of Irrigation per Cycle												
Cyles per Day												
Days per Week												

Station No:	Plant Type:						System:					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minutes of Irrigation per Cycle												
Cyles per Day												
Days per Week												

Landscape & Irrigation Recommendations

Landscape Recommendations:

- Convert unused lawn areas to low water use plants
- Reduce the overall size of your landscape
- Separate lawn from shrub and tree irrigation zones
- Sunny and shady areas must be on separate zones
- Install 2-4 inches of mulch on shrub & tree planters

Irrigation System Recommendations:

- Implement suggested watering guidelines below
- Fix irrigation system problems listed on page 4
- Install a Weather Based Irrigation Controller
- Convert spray zones in planters to drip irrigation
- Retrofit spray zones in lawn to rotating nozzles

Potential for Water Savings in Landscape Irrigation is:

None (0%) Minor (1% -10%) = ___ % Significant (11% -20%) = ___ % Major (21% - 30%) = ___ %

Smart Controller Recommended: Yes No

Estimated Water Savings with Implementation of Recommendations: _____ **Gallons per Year**

Additional Notes:

Glossary of Terms

Broken Sprinkler Heads or Lateral Pipes: a broken sprinkler head or lateral pipe wastes a significant amount of water. Fix or replace all broken sprinklers and lateral pipes.

Overspray: irrigation water that lands on sidewalks and driveways is wasted and creates other problems, such as runoff and deterioration of pavement. All sprinkler types can be adjusted to fit the area being watered.

Spray Interference from Plants and Objects: when the spray or stream of water from the sprinklers is blocked, this may create brown spots in lawn and may deteriorate plant health. Spray interference also creates runoff and erosion problems near the sprinkler head. Make sure there is no plant or object interfering with the sprinkler spray or stream.

Tilted Sprinkler Heads: a tilted sprinkler head will not deliver the water evenly. Some areas will get too much water, while other areas may not get enough. Make sure the sprinkler heads are vertical when watering non-sloping areas.

Mixed Equipment Under the Same Valve: mixing spray head sprinklers and rotor sprinklers is not acceptable. Rotors and sprays have different application rates. A spray head delivers more water over an area compared to the rotor head system.

Pressure Too High: misting is a result of high pressure which leads to water waste due to wind drift. Install a pressure regulator for each valve or install one main pressure regulator for all valves with this problem.

Pressure Too Low: Low pressure is a problem common in rotor type systems. If you have this problem, you may have to change sprinkler nozzles to a smaller size or have fewer sprinklers running at the same time.

Low or Sunken Sprinkler Heads: low or sunken sprinkler heads lower the performance of the system. The problem may be occurring because of a short sprinkler pop-up height. Minimum pop-up height for sprinklers watering lawn is 4 inches, especially when watering higher-growing grasses like tall fescue.

Clogged Sprinkler Nozzles: clogging is common in spray heads. Clogging may occur at the orifice where water comes out or at the filter below the nozzle. Clogged heads create brown spots in lawns. In extreme cases, clogged heads become plugged completely. Clean or replace clogged sprinkler nozzles.

Smart Controller: a self adjusting controller that changes minutes and days of irrigation to correspond with changing weather patterns. It's important to have a well functioning irrigation system in order for a Smart Controller to be effective.

WATER CONSERVATION BLUE ALERT

BLUE ALERT is defined as a Normal (Voluntary) Water Conservation Alert. Standard water conservation applies as defined in Appendix G of the Rules and Regulations.

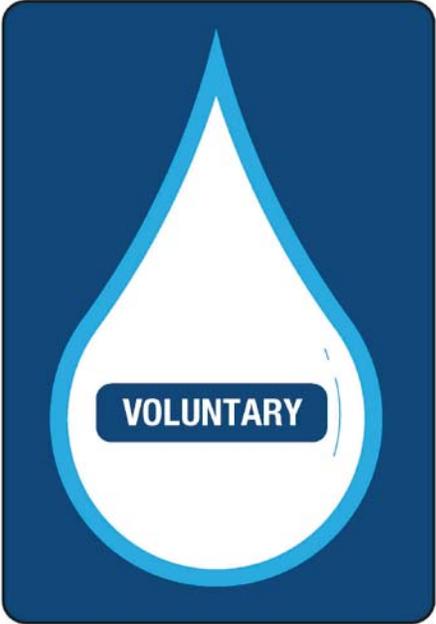
*Watering is permitted any day of the week,
BEFORE 9:00 a.m. and AFTER 5:00 p.m.*



VOLUNTARY

**WATER CONSERVATION
ALERT STATUS**

**T
O
D
A
Y**



**FOR MORE INFORMATION CALL:
(818) 248-3925 OR VISIT WWW.CVWD.COM**

 **Water hose usage:** Use a broom! Only hose down hardscape for health and safety reasons.

 **Overspray and runoff:** Fix broken sprinklers and adjust sprinklers so there is no overspray.

 **Fountains and similar structures:** Use a recirculation system for fountains and water features.

 **Leaks:** Fix leaks as soon as they are detected. One little drip quickly collects into a whole lot of water waste.

 **Irrigating times:** Water before 9:00AM and after 5:00PM. Turn your water off on rain or windy days.

 **Vehicle washing:** Always use a hand-held bucket and quick rinses using a hose with a positive shut-off nozzle.

OUTDOOR TIPS:



- Install a smart sprinkler controller and save up to 40 gallons a day
- Mulch, mulch, mulch around plants – saves hundreds of gallons per year as it aids in reducing evaporation
- Check your sprinkler system for leaks, broken sprinkler heads, and overspray and save 500 gallons per month
- Let your grass grow longer, 1 ½ to 2 inches longer than usual. The longer grass helps keep the soil cooler and helps to retain water
- Better yet, replace your existing lawn, ask us how. Plant drought tolerant or native plants, in addition to designing with permeable paving and get a rebate!

Crescenta Valley Water District urges the following water usage to all of its customers:

- Try the Runoff Test first. Run your irrigation system until water starts to run off. This will be the longest amount of time you should run your system. It may be 90 seconds or up to 7 minutes depending on the type of soil you have, the type of irrigation system, and the slope.
- Wash only full loads of dishes or clothes in automatic washers, and do not allow indoor faucets to run continuously.
- Turn off water system when leaving property unoccupied for an extended period of time.
- Use covers to minimize the evaporation of water from outdoor swimming pools, wading pools or spas when they are not in use.

The District maintains a program for residents to report waste of water within the District. Use the anonymous online form on the District website, www.cvwd.com, or call the dedicated phone line, [818-248-3897](tel:818-248-3897). All reported wastes of water are followed up by District personnel.



CRESCENTA VALLEY WATER DISTRICT
2700 Foothill Blvd. La Crescenta, CA 91214
818-248-3925

Appendix D

60 Day Notification Letters



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

March 3, 2011

Directors

Judy L. Tejada
Kathleen M. Ross
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam

Officers

Dennis A. Erdman, P.E.
General Manager
Ron L. Mitchell
Secretary-Treasurer

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

Dear Ms. Russett:

Notice of Intent 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 time frame for comments. Comments may be submitted in writing before that time, to:

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

Attention: Christy Scott

Please refer to our website, www.cvwd.com for updates on schedule and a draft of the Plan when it is available. The draft will be available thirty (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 "Christy J. Scott", is written over a faint, circular watermark or stamp.

Christy J Scott
Program Specialist



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

March 3, 2011

Directors

Judy L. Tejada
Kathleen M. Ross
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam

Officers

Dennis A. Erdman, P.E.
General Manager
Ron L. Mitchell
Secretary-Treasurer

Robert Stanley
Planning Dept.
City of La Canada-Flintridge
La Canada, CA 91011

Dear Mr. Stanley:

Notice of Intent 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 time frame for comments. Comments may be submitted in writing before that time, to:

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

Attention: Christy Scott

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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 blue ink, appearing to read "Christy J. Scott", is written over a light blue circular stamp.

Christy J Scott
Program Specialist



Crescenta Valley Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

March 3, 2011

Directors
Judy L. Tejada
Kathleen M. Ross
James D. Bodnar
Kerry D. Erickson
Kenneth R. Putnam

Officers
Dennis A. Erdman, P.E.
General Manager
Ron L. Mitchell
Secretary-Treasurer

Peter Kavounas
City of Glendale
141 N Glendale Avenue
Glendale, CA 91206

Dear Mr. Kavounas:

Notice of Intent 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 time frame for comments. Comments may be submitted in writing before that time, to:

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

Attention: Christy Scott

Please refer to our website, www.cvwd.com for updates on schedule and a draft of the Plan when it is available. The draft will be available thirty (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 blue ink, appearing to read "Christy J Scott". The signature is fluid and cursive, with a large initial "C" and "S".

Christy J Scott
Program Specialist

Appendix E

Public Hearing Notice

CRESCENTA VALLEY
WEEKLY

THE FOOTHILLS COMMUNITY NEWSPAPER

A locally owned newspaper serving the foothill community.

3800 La Crescenta Avenue #101
La Crescenta, CA 91214
818.248-2740
www.cvweekly.com

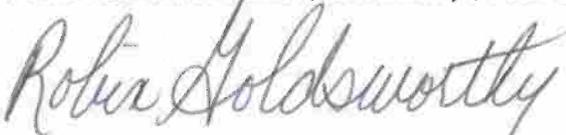
**PROOF OF PUBLICATION
Notice of Public Hearing**

**Crescenta Valley Water District Urban Water
Management Plan Update**

I, Robin Goldsworthy, of lawful age and a citizen of the United States and not a party to/or interested in the above entitled matter, depose and say that I am the publisher of Crescenta Valley Weekly, a weekly publication for the County of Los Angeles in the State of California, and that the attachment hereto contains a true and correct copy of what was actually published in said newspaper in consecutive issues on the following dates:

May 19, 2011 and May 26, 2011.

PUBLICATION FEE: \$550/each; \$1100 total



SIGNED: Robin Goldsworthy Publisher
State of California, County of Los Angeles

Mailing address: P.O. Box 543; Verdugo City, CA 91046

Appendix F

Copy of Plan Adoption

RESOLUTION NO. 700

**A RESOLUTION OF THE CRESCENTA VALLEY WATER DISTRICT
TO ADOPT THE URBAN WATER MANAGEMENT PLAN**

The Board of Directors of the Crescenta Valley Water District does hereby resolve as follows:

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended, subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the District is an urban supplier of water providing water to over 30,000 customers; and

WHEREAS, the Plan shall be periodically reviewed at least once every five years, and that the District shall make any amendments or changes to its plan which are indicated by the review; and

WHEREAS, the Plan must be adopted by July 1, 2011, after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the District has therefore, prepared and circulated a public notice or revised draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the Board of Directors on June 21, 2011 and

WHEREAS, the Crescenta Valley Water District did prepare and shall file said Plan with the California Department of Water Resources by July 21, 2011.

RESOLVED, the District hereby adopts said Urban Water Management Plan dated June 2011.

PASSED AND ADOPTED at an Adjourned Regular Meeting of the Board of Directors of Crescenta Valley Water District held on June 21, 2011. Resolution No. 700 was adopted by the following vote:

AYES:	Directors	Director Bodnar Director Erickson Director Putnam Director Ross Director Tejada
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NOES:	Directors	None
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ABSTAIN:	Directors	None
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ATTEST:



President, Board of Directors
Crescenta Valley Water District



Secretary of the Board of Directors

STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

I, RON MITCHELL, Secretary of the Crescenta Valley Water District, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 700 of the Board of Directors of Crescenta Valley Water District adopted at an Adjourned Regular Meeting held on June 21, 2011, and that the same has not been amended or repealed.



Secretary of the Board of Directors of
Crescenta Valley Water District

DATED: June 21, 2011





8001 Irvine Center Drive, Suite 1100
Irvine, CA 92618
949.450.9901 Fax 949.450..9902

**MALCOLM
PIRNIE**

 **ARCADIS**

The Water Division of ARCADIS