

Urban
WATER
Management Plan

November 7, 2005



City of Santa Ana

2005

PSOMAS

URBAN WATER MANAGEMENT PLAN 2005



CITY OF SANTA ANA

November 7, 2005

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Acronyms and Abbreviations

AB	Assembly Bill
AF	Acre Feet
AFY	Acre Feet per Year
AWPF	Advanced Water Purification Facilities
BMP	Best Management Practices
BPP	Basin Pumping Percentage
CALSIM	California Water Allocation and Reservoir Operations Model
CCF	Hundred Cubic Feet
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DBP	Disinfection Byproducts
DHS	Department of Health Services
DMM	Demand Management Measure
DWCV	Desert Water Agency/Coachella Valley Water District
DWR	Department of Water Resources
EOC	Emergency Operations Center
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ETo	Evapotranspiration
GPCD	Gallons Per Capita Per Day
GPM	Gallons Per Minute
GWRS	Groundwater Replenishment System
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
In	Inches
IRP	Integrated Resources Plan
IRWM	Integrated Regional Water Management
LRP	Local Resources Program
LTFP	Long Term Facilities Plan
M&I	Municipal and Industrial
MAF	Million Acre Feet
MCL	Maximum Contaminant Level
MEOC	Metropolitan Emergency Operations Center
MG	Million Gallons
MGD	Million Gallons per Day
mg/L	Milligrams Per Liter
MOU	Memorandum of Understanding
MPR	Master Plan Report
MTBE	Methyl Tertiary Butyl Ether
MWDOC	Municipal Water District of Orange County
NDMA	N-nitrosodimethylamine
NPDES	National Pollutant Discharge Elimination System
OC	Orange County

OCSD	Orange County Sanitation District
OCWA	Orange County Water Association
OCWD	Orange County Water District
pCi/L	Picocuries Per Liter
PEIR	Program Environmental Impact Report
PVID	Palo Verde Irrigation District
QSA	Quantification Settlement Agreement
RA	Replenishment Assessment
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBVMWD	San Bernardino Valley Municipal Water District
SCAB	South Coast Air Basin
SCADA	Supervisory Control Data Acquisition System
SCCWRRS	Southern California Comprehensive Water Reclamation and Reuse Study
SDWA	Safe Drinking Water Act
SOCWRS	South Orange County Water Reliability Study
SWRCB	State Water Resources Control Board
SWP	State Water Project
TDS	Total Dissolved Solids
THM	Trihalomethanes
TIN	Total Inorganic Nitrogen
Ug/L	Micrograms Per Liter
ULFT	Ultra Low Flush Toilet
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WEROC	Water Emergency Response Organization of Orange County
WMP	Water Master Plan
WOC	Water Operations Center
WSDM	Water Surplus and Drought Management

SECTION 1 INTRODUCTION

1.1 PURPOSE AND UWMP SUMMARY

An Urban Water Management Plan (UWMP or Plan) prepared by a water purveyor is to ensure the appropriate level of reliability of water service sufficient to meet the needs of its various categories of customers during normal, single dry or multiple dry years. The California Water Management Planning Act of 1983 (Act), as amended, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five.

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

The City of Santa Ana's 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005¹ (Appendix A), and includes the following:

- Water Utility Service Area
- Water Utility Facilities
- Water Sources and Supplies
- Water Quality Information
- Water Reliability Planning
- Water Use Provisions
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling

1.2 URBAN WATER MANAGEMENT PLAN UPDATE PREPARATION

The City's 2005 UWMP revises the 2000 UWMP prepared by the City of Santa Ana and incorporates changes enacted by legislation, including SB 610 (2001), AB 901 (2001), SB 672 (2001), SB 1348 (2002), SB 1384 (2002), SB 1518 (2002), AB 105 (2004), and SB 318 (2004). The UWMP also incorporates water use efficiency efforts the City has implemented or is considering implementing pursuant to the *Memorandum of*

¹California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

Understanding Regarding Urban Water Conservation in California (MOU).² The City became signatory and adopted the MOU on December 19, 2000.

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

Plan Adoption

The 2005 UWMP was adopted by an action of the Santa Ana City Council on November 7, 2005, following a public hearing. The Plan was submitted to the California Department of Water Resources within 30 days of Council approval. Copies of the Notice of Public Hearing, Request for Council Action, and Minutes Excerpt for Plan Adoption are included in Appendix C. Copies of the Plan were made available to the public within 30 days following City Council approval.

Agency Coordination

Development of this Plan was performed by the Santa Ana Public Works Agency (PWA), in coordination with other departments of the City including the Planning Department, the City Manager's Office, and City Clerk's Office.

The City is fully dependent on the Metropolitan Water District of Southern California (Metropolitan) and the Orange County Water District (OCWD) for its long-term water supply. All of the City's water supply planning relates to the policies, rules, and regulations of these two agencies. Development of the City's UWMP was also coordinated with OCWD, which manages the Santa Ana River (Orange County) groundwater basin and provides recycled water in partnership with the Orange County Sanitation District (OCSD), which manages wastewater.

This UWMP details the specifics as they relate to the City of Santa Ana PWA and its service area and will refer to Metropolitan, OCWD and OCSD throughout. Appendix D lists the numerous references used benefiting the development of this Plan.

The UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the Orange County water supply trends, and conservation and water use efficiency policies. This Plan, along with the City's Water Master Plan and other City planning documents, will be used by City staff to guide

²The *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups. It created the *California Urban Water Conservation Council* and established 16 Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs. The City of Santa Ana became signatory to the MOU in December 2000.

the City’s water use and management efforts through the year 2010, when the UWMP is required to be updated.

1.3 WATER SERVICE AREA

Location

The City of Santa Ana is in the heart of Orange County and rated ninth largest in California. The City’s Water Utility provides water service within a 27-square mile service area. The service area and City boundary are contiguous. A map of the City’s service area is shown in Figure 1-1.

Climate Characteristics

The City is located in an area known as the South Coast Air Basin (SCAB). The SCAB climate is characterized by what is known as Southern California’s “Mediterranean” climate: a semi-arid environment with mild winters, warm summers and moderate rainfall. The climate is consistent with coastal Southern California. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The City’s average temperature ranges from 68 degrees Fahrenheit in January to 84 degrees Fahrenheit in July with an average annual temperature of 75 degrees. Annual precipitation is typically approximately 13 inches, occurring mostly between November and April. Evapotranspiration (ETo)³ in the region averages 49.7 inches annually. Details of average annual ETo, temperatures and rainfall are shown in Table 1.3-1

**Table 1.3-1
City of Santa Ana ETo, Temperatures and Rainfall⁴**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total or Average	
Average ETo (inches)	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7	
Temp	Max	68.1	69.4	70.2	72.7	74.5	77.8	82.7	84.1	83.6	79.3	73.7	68.8	75.4
	Min	45.0	46.3	48.0	51.2	55.1	58.6	62.0	63.0	61.2	56.4	49.5	45.0	53.4
Rainfall (inches)	3.04	2.74	2.22	0.93	0.21	0.07	0.01	0.08	0.25	0.25	1.36	1.75	12.92	

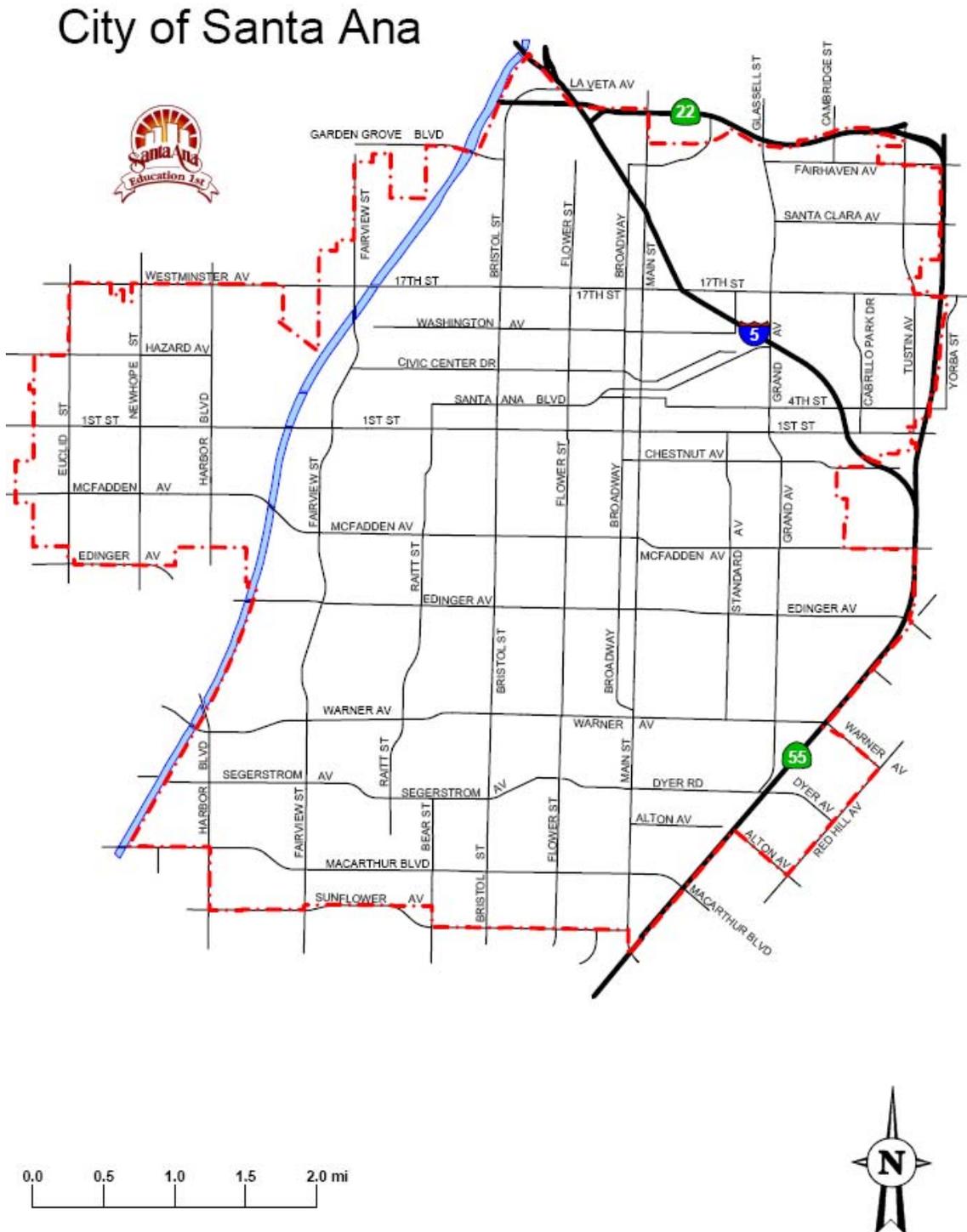
³ Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity. ET from a standardized grass is commonly denoted at ETo.

⁴ [on-line] OC Almanac, <http://www.ocalmanac.com/Weather/we02.htm>, Western Regional Climate Center, Santa Ana Fire Station. Data from 7/1/1948 through 7/31/2003.

Demographics

The 2005 population of the City (as estimated by the Center for Demographic Research (CDR) at California State University at Fullerton (CSUF) is 350,625. According to the CDR, this population is expected to increase by about 5.6 percent over the next 25 years. Table 1.3-2 highlights projected population growth in Santa Ana during this period.

Figure 1.1
City of Santa Ana Water Service Area



**Table 1.3-2
City of Santa Ana Population Projections⁵**

	2000	2005	2010	2015	2020	2025	2030
Service Area	337,997	350,625	359,823	364,049	368,026	370,196	370,130

1.4 WATER UTILITY DIVISION AND FACILITIES

Water Utility Division

The City was, for many years, a ranching community with some farming. To serve this growing agricultural and domestic community, a municipal water system was formed in 1886. The original source of water supply for the City was from shallow irrigation wells. As the city continued to grow and change from agriculture to an urban community, the need for additional sources of water was recognized if economic development were to continue.

To tap into water sources from outside the area, the city joined with 12 other southern California cities to form and be an original member agency of the Metropolitan Water District of Southern California (Metropolitan) on February 27, 1931. Metropolitan, as a regional wholesaler, supplies imported water to southern California from the Colorado River and from the State Water Project from northern California. Metropolitan's primary purpose is to develop, store and distribute water at wholesale rates to its member public agencies for domestic and municipal uses.

In 1933, the Orange County Water District (OCWD) was formed by a special act of the State Legislature to manage Orange County's groundwater supply and protection of the County's rights to water in the Santa Ana River. In 1953, the City became a member of OCWD.

The City is governed by a non partisan seven-member City Council elected to serve staggered four-year terms. The City Council appoints the City Manager and various members of commissions, committees, and citizen advisory groups, all of which may weigh in on water management issues and decisions for the City.

Water System Facilities

The City maintains 444 miles of transmission and distribution mains, 8 reservoirs with a storage capacity of 49.3 million gallons, seven pumping stations, 19 wells, and 7 import connections.

⁵ City of Santa Ana Planning Department and the Center for Demographic Research, California State University Fullerton.

Thirteen of the City wells pump into small surface reservoirs with booster stations pumping the water into the distribution system. The remaining wells pump directly into the City's distribution system. Water pumped from these wells has been naturally filtered as it passes through underlying aquifers of sand, gravel, and soil. This well water only requires disinfectant treatment for system distribution.

The City maintains seven import water connections to receive water through Metropolitan's Orange County and East Orange County Feeder pipelines. Seven metered connections with a total capacity of 56,250 gallons per minute (gpm) transfer water into the City's distribution system.

Water Distribution Management

System Pressures

Reducing distribution system pressures will, to a certain degree, conserve water and pumping energy by reducing leaking in water and plumbing systems, as well as reducing waste or water when turning water fixtures on and off. The City continually reviews the pressure zones to determine the feasibility of reducing system pressures by either lowering settings on distribution system pressure regulators or changing pressure zone boundaries. The reviews have indicated that potential fire protection requirement deficiencies occur when pressures are reduced. Therefore, the City maintains safe yet efficient system pressures.

Peak Demand

Water system demand patterns are a result of climatological, land use, sociological, and institutional factors, all of which affect the amount of water consumed. Reduction in peak demands can reduce the need for construction of new water storage and conveyance facilities and, in certain instances, the development of new water sources. The City's computerized telemetry system allows water system operators to operate the system more efficiently through the ability to alter water production facilities to meet these ever-changing demand patterns/ The City's addition wells throughout the past 10 years have and will continue to help reduce Metropolitan's summer peak demands.

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SECTION 2 WATER SOURCES AND SUPPLIES

2.1 WATER SOURCES

The City works together with two primary agencies to insure a safe and high quality water supply, which will continue to serve the community in periods of drought and shortage. The agencies who work in concert to provide these services are the Metropolitan Water District of Southern California (Metropolitan) and the Orange County Water District (OCWD).

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan was formed in the late 1920's. At that time, Orange County was mostly an agriculturally based economy with the cities of Santa Ana, Anaheim, and Fullerton as the primary centers of urban development. Although other cities and residential communities existed at that time, it was these three cities that joined ten others located in Southern California, to form Metropolitan in 1928. Collectively, these charter members recognized the limited water supplies available within the region, and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of southern California and Orange County possible. Metropolitan acquires water from northern California via the State Water Project and from the Colorado River to supply water to most of southern California. As a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies, including the City.

Orange County Water District (OCWD)

In 1933, OCWD was formed by legislative act to protect and manage the County's vast, natural, underground water supply with the best available technology and to defend its water rights to the Santa Ana River Basin. As part of its original formation, OCWD was established by a special act (Act), of the State of California Legislature. This legislation is found in the State of California Statutes, Water – Uncodified Acts, Act 5683, as amended.⁶ The basin is managed by OCWD under the Act, which functions as a statutorily-imposed physical solution. Section 77 of the Act states that, *'nothing in this act contained shall be so construed as to affect or impair the vested right of any person, association or corporation to the use of water.'*⁷ According to the Act, the City has the right to construct and operate groundwater-producing facilities in the basin. The Act also empowers OCWD to impose replenishment assessments and basin equity assessments on production and to require registration of water-producing facilities and the filing of certain reports; however, OCWD is expressly prohibited from limiting extraction unless a producer agrees.⁸

⁶ Orange County Water District Act.

⁷ Orange County Water District Act, Section 77.

⁸ Orange County Water District Act, Sections 23 and 31.5.

The basin is managed by OCWD for the benefit of municipal, agricultural and private groundwater producers. OCWD has 23 major producers extracting water from the Orange County groundwater basin (basin) serving a population of approximately 2.8 million.⁹ Carefully managed by OCWD in collaboration with the other water and wastewater agencies, the growing population can be assured of a secure water supply from the groundwater source. Processes such as groundwater recharge of the Santa Ana River, recycling of wastewater, conservation and water use efficiency, and creative water purchases have aided in replenishing the groundwater basin to desired levels to meet required demands.

Orange County Sanitation District (OCSD)

Wastewater from the City's service area is collected and treated by OCSD. OCSD manages wastewater collection and treatment for approximately 471 square miles in central and northwest Orange County, which includes 21 cities, 3 special districts, and 2.4 million residents.¹⁰ OCSD utilizes the following two facilities: Reclamation Plant No. 1 in Fountain Valley and Treatment Plant No. 2 in Huntington Beach to treat a combined daily average of 264 million gallons of wastewater.¹¹ Effluent from Reclamation Plant No. 1 is either routed to the ocean disposal system or is sent to the OCWD facility, Green Acres Project, for advanced treatment and recycling. The Green Acres Project supplies recycled water to various municipal users in Orange County and offsets the demand for potable water supplies.

2.2 WATER SUPPLY

The City currently receives approximately 64 percent of its water supply from groundwater wells accessing the Santa Ana River groundwater basin and 36 percent is imported from Metropolitan.¹² These percentages are established through OCWD's allowable Basin Pumping Percentage (BPP). The BPP is typically set by OCWD on an annual basis. However, OCWD does have the option of revising the BPP as needed. Actual percentages vary somewhat on an annual basis depending on the extent in-lieu delivery programs are implemented. The City has the ability to pump above the BPP since their production capability is significantly greater than the demands typically met with groundwater. Current and projected water supplies from imported water and groundwater are shown in Table 2.2-1 and described in subsequent sections.

⁹ Orange County Facts and Figures. Center for Demographic Research. Available: <http://www.fullerton.edu/cdr/countyfacts.pdf>.

¹⁰ Orange County Water District Facts and Key Statistics. www.ocsd.com. January 2005

¹¹ MWDOC 2005 Regional Urban Water Management Plan.

¹² Urban Water Management Plan for the City of Santa Ana. 2000

**Table 2.2-1
City of Santa Ana
Current and Projected Water Supplies
(AFY)**

Water Supply Sources	2005	2010	2015	2020	2025	2030
MWD – Import ¹	14,572	19,630	20,140	22,340	22,260	21,030
Groundwater Production ²	34,000	35,030	37,120	39,070	41,390	41,570
Recycled Water	150	150	150	150	150	150
Total Water Supply³	48,722	56,820	59,425	63,580	65,825	64,780

- Notes: 1) Imported water supply data is extracted from Table 4.2-4
 2) Groundwater production supply is based on a BPP of 70 percent and is extracted from Table 4.2-4.
 3) 2005 Total Water Supply is equal to the average demand for the years 2001/2004; Year 2005 data is not used due to an 8.5% decline in demand caused by record rainfalls this year.

Imported Water

Currently, approximately 36 percent of the City’s water supply comes from imported water wholesaled by Metropolitan. Imported water is delivered from northern California via the State Water Project and from the Colorado River, and is treated at the Robert B. Diemer Filtration Plant and Weymouth Filtration Plant before the water is delivered to the City.

The City maintains seven imported water connections to the Metropolitan system. The characteristics of these connections are shown in Table 2.2-2.

The City participates, in coordination with MWDOC and OCWD, in Metropolitan’s in-lieu program. OCWD, MWDOC, and Metropolitan have developed a successful and efficient in-lieu program to increase storage in the groundwater basin and anticipate working together on future programs. One such future program is the proposed Surplus Water Program.

**Table 2.2-2
Imported Water Connections**

Designation	Location	Capacity (cfs)
SA-1	2401 N. Bristol Street	10
SA-2	2315 N. Bristol Street	10
SA-3	1300 W. McFadden	10
SA-4	1299 W. Warner Ave	15
SA-5	Bristol/Alton Ave	10
SA-6	2301 N. Tustin Ave	20
SA-7	1701 E. Warner Ave	50
Total		125

The Surplus Water Program will allow Metropolitan to make direct deliveries to the City's distribution system in lieu of producing water from the Orange County groundwater basin. This in-lieu program indirectly replenishes the basin by avoiding pumping. In the in-lieu program, OCWD requests the City to halt pumping from specified wells. The City then takes replacement water through its import connections, which is purchased by OCWD from Metropolitan (through MWDOC). OCWD purchases the water at a reduced rate, and then bills the City the amount it would have had to pay for energy and the Replenishment Assessment (RA) if it had produced the water from its wells. The deferred local production results in water being left in local storage for future use.

Reservoirs

The City maintains eight reservoirs with a storage capacity of 49.3 million gallons. Pumps draw water from the reservoirs and pressurize it into the water system during high demand periods.

Groundwater

Orange County Groundwater Basin

The Orange County groundwater basin underlies the north half of Orange County beneath broad lowlands. The basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, the Pacific Ocean to the southwest, and terminates at the Orange County line to the northwest, where its aquifer systems continue into the Central Basin of Los Angeles County. The aquifers comprising the Orange County groundwater basin extend over 2,000 feet deep and form a complex series of interconnected sand and gravel deposits.

Groundwater supply currently meets approximately 64 percent of the water supply demand for all of Orange County. This amount can be adjusted as needed based on groundwater basin hydrologic conditions, but is typically set on an annual basis.

During the water year July 2003 to June 2004, total basin production for all agencies was approximately 284,621 acre-feet.¹³ The groundwater basin generally operates as a reservoir in which the net amount of water stored is increased in wet years to allow for managed overdrafts in dry years. The basin is recharged primarily from local rainfall (greater in wet years), base flow from the Santa Ana River (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties), imported water percolated into the basin, and recycled wastewater directly recharged into the basin. The production capability of the basin is being increased as a result of a variety of specific management initiatives including increased wastewater reclamation and the blending of lower quality water with potable water for public distribution.

The Orange County groundwater basin is not adjudicated and based on the Department of Water Resources' official departmental bulletins, California's Groundwater Bulletin 118 Updated 2003 and Bulletin 160, The California Water Plan Update 2005, the Orange County groundwater basin is not specifically identified as a basin in an overdraft condition. The California Water Plan Update, however, does state that groundwater overdraft is a challenge for the South Coast Hydrologic Region, which includes the Orange County groundwater basin. The Orange County groundwater basin is considered in an overdraft condition by OCWD; however, the groundwater levels and amount of overdraft fluctuate overtime. OCWD continually monitors groundwater level trends and has collected data since 1962. OCWD's Groundwater Management Plan summarizes the accumulated overdraft and water level elevations within the basin. OCWD estimates that the accumulated overdraft in June 2004 was approximately 400,000 acre-feet.¹⁴

Based on OCWD's 2004 Groundwater Management Plan, the target accumulated overdraft is 200,000 AF. An accumulated overdraft condition minimizes the localized high groundwater levels and increases the ability to recharge storm events from the Santa Ana River. OCWD estimates that the groundwater basin can safely be operated on a short-term emergency basis with a maximum accumulated overdraft of approximately 500,000 AF; however, 400,000 AF is preferred. With an accumulated overdraft of 200,000 AF, the basin is considered 99.5 percent full with 40 MAF of groundwater in storage.

In an effort to eliminate long-term overdraft conditions, OCWD developed a comprehensive computer-based groundwater flow model to study and better understand the basin's reaction to pumping and recharge. OCWD has also implemented a monitoring program to track dynamic conditions including groundwater production, storage, elevations, and quality. Components of this monitoring program include the request for the City to provide its groundwater production to OCWD on a monthly basis, yearly measurement of groundwater levels, water quality monitoring, and prevention of sea water intrusion.

¹³Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005

¹⁴Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005

Basin Pumping Percentage (BPP)

One of the methods OCWD uses to manage the amount of production from the Orange County groundwater basin is the establishment of a BPP. OCWD recommends a BPP each water year which is calculated by dividing a producer's groundwater production by their total water demands. The BPP is based on groundwater conditions, availability of imported water supplies, and basin management objectives. The BPP is also a major factor in determining the cost of groundwater production from the basin for that year.

While the BPP has been as high as 75 percent in recent years, the BPP was set at 66 percent for 2004-2005, and 64 percent for the water year 2005-2006. While the BPP may be decreased next water year, it is anticipated to increase to 70 percent over the next five years. Producers may pump above the BPP to 100 percent of their needs by paying the Basin Equity Assessment (BEA). The BEA is the additional fee paid on any water pumped above the BPP, making the cost of that water equal or greater to the cost of imported water. Such flexibility in producing over the BPP guarantees the City and other water utilities in Orange County the ability to provide water to their customers during periods of varying water availability.

When Metropolitan has an abundance of water, they may choose to activate their In-Lieu Program, where imported water is purchased in-lieu of pumping groundwater. This is a special program supported by OCWD, MWDOC and Metropolitan, which allows some agencies to pump above the BPP without penalty of the BEA.

Recharge Facilities

Another method for controlling overdraft is through recharge management programs. The basin is recharged by multiple sources including natural and artificial sources. Natural recharge occurs when groundwater producers use surface water in-lieu of groundwater. The reduction in pumping naturally recharges the basin. Another source of natural recharge is the result of precipitation and OCWD estimates that approximately 60,000 AFY is recharged to the basin.

Artificial recharge occurs through developed percolation ponds (approximately 1,000 acres) and also via injection through the Talbert and Alamitos Barriers. The four groundwater spreading systems throughout OCWD's service area and their respectable percolations rates are summarized in Table 2.2-3.

These percolation systems can recharge Santa Ana River baseflow and storm flows. OCWD estimates that approximately 155,000 AF of baseflow and 60,000 AF of storm flows are recharged each year on average. OCWD also imports between 35,000 and 60,000 AF of replenishment water to be used for recharging the basin.

**Table 2.2-3
Orange County Groundwater Basin
Groundwater Spreading Systems**

System	Area (acres)	Storage Capacity (AF)	Percolation Rate (cfs)
Main River System	245	480	87-115
Off-River System	126	394	15-40
Deep Basin System	280	8,484	89-300
Burris Pit/Santiago System	373	17,500	106-210

Source: OCWD, Groundwater Management Plan, 2004

OCWD also recharges the basin by injecting water to prevent seawater intrusion. The seawater intrusion barriers include the Talbert and Alamitos Barriers. The Talbert Barrier has 26 injection wells and injects 12 mgd into the groundwater basin. Over 95 percent of the water injected flows inland and is therefore considered replenishment water. The Alamitos Barrier injects approximately 5,000 AFY of which 50 percent stays within the basin for replenishment.

The estimated average annual recharge of the basin based on the information provided above is 328,400 AF to 353,400 AF. The range is due to the amount of imported water purchased from Metropolitan each year. The amount of water available for recharge will vary from year to year.

City Wells

Within the City, groundwater is produced from 19 operating wells that vary in depth from 650 feet to 1,500 feet, with production varying from 1,100 gallons per minute (gpm) to 3,600 gpm, with a total system capacity of approximately 45,860 gpm (not including proposed Wells 40 and 41) as shown in Table 2.2-4.

**Table 2.2-4
City of Santa Ana Active and Planned Wells**

Well No.	Year Drilled	Depth (feet)	Average Capacity (gpm)
16	1932	978	1,500
18	1956	654	2,285
20	1962	981	3,023
21	1962	986	2,892
24	1965	688	1,286
26	1967	1,186	2,082
27	1977	1,152	2,757
29	1980	1,090	2,534
30	1962	989	3,024
33	1986	1,080	2,849
34	1990	830	1,514
36	1988	1,310	3,600
28	1977	990	2,516
31	1984	1,260	2,762
32	1985	1,030	2,239
35	1992	1,500	2,200
37	1992	1,506	2,300
38	1992	1,300	1,500
39	2002	1,310	3,000
40	2005	1,320	2,500
41	2005	1,000	3,000
Total System Capacity			51,363

Notes: Well 40 and Well 41 are not in production and the average capacities may change after final design is complete.

Table 2.2-5 summarizes the amount of groundwater pumped by the City for the last five years from the Santa Ana River (Orange County) Basin. In 2001, the BPP was 75 percent; however, the City used groundwater to meet 86 percent of its water demands. The City participated in a summer demonstration program with OCWD to reduce the coastal pumping and transfer groundwater production inland. By participating in the program, the City received a reduction in their BEA from OCWD which provided financial assistance to pump over the BPP. Since 2001, the City has participated in in-lieu programs with Metropolitan and OCWD and therefore the percentage of water demands met with groundwater has consistently been less than the BPP.

**Table 2.2-5
Historic Amount of Groundwater Pumped
(AFY)**

Basin Name	2000	2001	2002	2003	2004	2005
Santa Ana River Basin	38,419.6	43,268.5	27,717.3	29,714.6	28,043.0	25,742.9
Percent of Total Water Supply	75%	86%	56%	63%	58%	57%

Notes:

- 1) Totals are based on a fiscal year of June 30 to July 1. For example, production shown for 2001 is for groundwater pumped from 7/1/00 to 6/30/01.
- 2) The City's groundwater use fluctuates each year due to in-lieu deliveries from Metropolitan and participate in other programs such as the summer demonstration program in 2001 to reduce seawater intrusion.

Table 2.2-6 shows the amount of water that is projected to be pumped from each well in the future. As discussed earlier and in more detail in Section 4.2 Demand and Supplies Reliability Comparison, demand is expected to remain stable over the 25-year planning horizon due to the declining trend in water consumption coupled with the increasing trend in population.

**Table 2.2-6
Amount of Groundwater Projected to be Pumped
(AFY)**

Basin Name	2010	2015	2020	2025	2030
Santa Ana River Basin	34,920	37,020	38,970	41,290	41,470
Percent of Total Water Supply	70%	70%	70%	70%	70%

Notes: Future projections are from Section 4.2 of this report.

Recycled Water

The City supports efforts of the regional water management agencies to utilize recycled water as a primary resource for groundwater recharge in Orange County. Recycled water in the County is also used to irrigate crops, golf courses, parks, schools, business landscapes, residential lawns, and some industrial operations.

The City participates in a reclaimed/recycled water program and uses the water supplies available to water greenbelts, parkways, golf courses, and other landscape areas that may otherwise use valuable potable water for irrigation. This reclaimed/recycled water is wholesaled by OCWD through its Green Acres Project (GAP). In 2003-2004, usage of recycled water within the City was about 121 acre feet.¹⁵ The City's recycled water program is more fully described in Section 8.

¹⁵ Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005

SECTION 3 WATER QUALITY

3.1 WATER QUALITY OF EXISTING SOURCES

As required by the Safe Drinking Water Act, which was reauthorized in 1996, the City provides annual Water Quality Reports to its customers; also known as Consumer Confidence Reports. This mandate is governed by the Environmental Protection Agency (EPA) and the California Department of Health Services (DHS) to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, the City monitors regulated and unregulated compounds in its water supply and in years past, the water delivered to the City meets the standards required by the state and federal regulatory agencies.¹⁶ As mentioned earlier, the City's source of water is from imported water supplies and groundwater.

IMPORTED WATER

The City receives imported water from Metropolitan, which receives raw water from Northern California through the SWP and Colorado River Aqueduct. Metropolitan water is treated at either the Robert B. Diemer Filtration Plant located in Yorba Linda, California or the Weymouth Filtration Plant in La Verne, California before being delivered to the City.

Metropolitan tests and treats its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides and herbicides. Protection of Metropolitan's water system continues to be a top priority. In coordination with its 26 member public agencies, Metropolitan added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included an increase in the number of water quality tests conducted each year (more than 300,000) as well as contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.¹⁷ Metropolitan also has one of the most advanced laboratories in the country where water quality staff performs tests, collects data, reviews results, prepares reports, and researches other treatment technologies. Although not required, Metropolitan monitors and samples elements that are not regulated but have captured scientific and/or public interest. Metropolitan has tested for chemicals such as perchlorate, methyl tertiary butyl ether (MTBE), and chromium VI among others.

In Metropolitan's Integrated Resources Plan (IRP) Update, water quality was identified as a possible risk to Metropolitan's future water supply reliability. Existing supplies could be threatened in the future because of contamination, more stringent water quality regulations, or the discovery of an unknown contaminant. Water quality of imported water could directly impact the amount of water supplies available to the City. Metropolitan's 2005 UWMP Update includes the following examples:

¹⁶ City of Santa Ana 2005 Water Quality Report

¹⁷ Metropolitan's website, www.mwdh2o.com/mwdh2o/pages/yourwater/2005_report/protect_02.html

- If a groundwater basin becomes contaminated and cannot be used, more water will be required from other sources.
- Imported water from the Colorado River must be blended (mixed) with lower salinity water from the SWP. Higher salinity levels in the Colorado River would increase the proportion of SWP supplies required.
- High total dissolved solids (TDS) in water supplies leads to high TDS in wastewater, which increases the cost of recycled water.
- If diminished water quality causes a need for membrane treatment, the process typically results in losses of up to 15 percent of the water processed.
- Degradation of imported water supply quality could limit the use of local groundwater basins for storage.
- Changes in drinking water quality standards such as arsenic, radon, or perchlorate could increase demand on imported water supplies.

Because of the concerns identified above, Metropolitan has identified those water quality issues that are most concerning and have identified necessary water management strategies to minimize the impact on water supplies. Water quality concerns with Metropolitan's water supplies and the approaches taken to ensure acceptable water quality are discussed in the following sections.

Salinity

Water from the Colorado River Aqueduct has the highest level of salinity of all Metropolitan's sources of supply, averaging 650 mg/L during normal water years.¹⁸ Several actions have been taken on the state and federal level to control the salinity with the river such as the Colorado River Basin Salinity Control Act in 1974 and formation of the Colorado River Basin Salinity Control Forum. In 1975, water quality standards and a plan for controlling salinity were approved by the Environmental Protection Agency.

In contrast, water from the SWP is significantly lower in total dissolved solids, averaging 250 mg/L. Because of the lower salinity, Metropolitan blends SWP water with Colorado River water to reduce the salinity in the water delivered to its customers. The Metropolitan's board has adopted a salinity objective of 500 mg/L for blended imported water as defined in Metropolitan's Salinity Management Action Plan. Metropolitan estimates that the objective can be met in seven out of ten years. In the other three years, hydrologic conditions would result in increased salinity and reduced volume of SWP supplies.

In an effort to address the concerns over salinity, Metropolitan secured Proposition 13 funding for two water quality programs:

- 1) Water Quality Exchange Partnership – the funding is being used to develop new infrastructure to optimize water management capabilities between the agricultural users of the eastern San Joaquin Valley and urban users of

¹⁸ The Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005

southern California. Installing infrastructure will provide opportunities for Metropolitan to exchange SWP water for higher quality water. Because of tidal influences from the San Francisco Bay, bromide is a water quality issue for the SWP. Also, agricultural drainage presents a potential problem in the Delta which is manifested in the form of total organic carbon. These issues are discussed in detail below.

- 2) The Desalination Research and Innovation Partnership – the funding is being used to develop cost-effective advanced water treatment technologies for the desalination of Colorado River water, brackish groundwater, municipal wastewater, and agricultural drainage water.

Perchlorate in Colorado River

Perchlorate is a contaminant of concern and is known to have adverse effects on the thyroid. Perchlorate has been detected at low levels in the Colorado River water supply. Perchlorate is difficult to remove from water supplies with conventional water treatment. Successful treatment technologies include nanofiltration, reverse osmosis, biological treatment, and fluidized bed bioreactor treatment. Metropolitan continues to monitor perchlorate contamination of the Colorado River as well as research various treatment options. In 2002 Metropolitan adopted a Perchlorate Action Plan which defined the following nine objectives:

- 1) expand monitoring and reporting programs
- 2) assess the impact of perchlorate on local groundwater supplies
- 3) continue tracking health effects studies
- 4) continue tracking remediation efforts in the Las Vegas Wash
- 5) initiate modeling of perchlorate levels in the Colorado River
- 6) investigate the need for additional resource management strategies
- 7) pursue legislative and regulatory options for cleanup activities and regulatory standards
- 8) include information on perchlorate into outreach activities
- 9) provide periodic updates to Metropolitan's board and member agencies

Disinfection by-products formed by disinfectants reacting with bromide and total organic carbon in SWP water

SWP water supplies contain levels of total organic carbon and bromide that are a concern to Metropolitan to maintain safe drinking water supplies. When water is disinfected at treatment plants certain chemical reactions can occur with these impurities that can form Disinfection Byproducts (DBP). DBPs in turn can result in the formation of Trihalomethanes (THMs), Haloacetic Acids (HAAs), and other DPBs. THMs and HAAs have been found to cause cancer in laboratory animals. Inherent in any through-Delta water movement is the high organic and bromide loading imposed on the water from agricultural runoff and salt water intrusion. This poses significant treatment challenges to the receiving end users, like Metropolitan, to avoid problems with DBPs and the formation of THMs. It is imperative that the quality of SWP water delivered to Metropolitan be maintained at the highest levels possible.

In order to control the total organic carbon and bromide concentrations in Metropolitan's water supply, SWP water is blended with Colorado River water. The blending of the two water sources benefits in two ways: reduction in disinfection byproducts and reduction in salinity (as discussed earlier). Because of the recent drought conditions on the Colorado River, water supplies have been reduced which impacts the blending operations at the various filtration plants. As a result, Metropolitan's board authorized the use of ozone as the primary disinfectant at all five Metropolitan treatment plants in July 2003. Previously, only the Henry J Mills and Jensen Filtration Plants had been approved for this treatment. These two plants were chosen for the use of ozone in order to meet new disinfection byproducts regulations. Metropolitan's board plans to install ozonation at the remaining three plants by 2009, including the Diemer and Weymouth filtration plants.

Methyl Tertiary Butyl Ether (MTBE) in local surface reservoirs

The California Department of Health Services has adopted a primary maximum contaminant level (MCL) of 13 ug/L for MTBE. MTBE is an oxygenate found in gasoline. Metropolitan monitors MTBE levels at Diamond Valley Lake and Lake Skinner. The reservoirs also have boat requirements such as MTBE-free fuel to aid in the protection of imported water supplies. MTBE concentrations have been below the MCL.

Uranium

Uranium is a contaminant of concern in the water from the Colorado River. There are uranium mine tailings located approximately 600 feet from the river at Moab, Utah. Rainfall seeps through the tailings and contaminates the local groundwater which flows to the river. In 2003, an interim action system was implemented that intercepts some of the contaminated groundwater prior to reaching the river. The Department of Energy is preparing an Environmental Impact Statement that will evaluate the possibility of moving the pile, capping it in place, and other alternatives. Uranium levels at Metropolitan's intake range from 1 to 5 pCi/L whereas the California drinking water standard is 20 pCi/L.¹⁹

N-nitrosodimethylamine (NDMA)

NDMA is an emerging contaminant that may have an impact on the water supply. Although Metropolitan's water supplies are non-detect for NDMA, there is a concern that chlorine and monochloramine can react with organic nitrogen precursors to form NDMA.

Hexavalent Chromium (Chromium VI)

Currently the MCL for total chromium is 0.05 mg/L, which includes Chromium VI. California DHS is to set a MCL for Chromium VI, however, the Office of Health Hazard Assessment must first establish a public health goal. Metropolitan samples for Chromium VI and monitors levels within the Colorado River because of Chromium VI detection in groundwater near the river. The plume of Chromium VI has been detected in recently installed wells that are located less than 60 feet west of the Colorado River near

¹⁹ The Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005

Topock, Arizona. In February 2005, Chromium VI was detected at a concentration of 354 parts per billion (ug/L).²⁰ Metropolitan is involved in a Technical Work Group that reviews monitoring results and remediation plans for contaminated groundwater.

Water Quality Programs

Metropolitan supports and is involved in many programs that address water quality concerns related to both the SWP and Colorado River supplies. Some of the programs and activities include:

- CALFED Program – This program coordinates several SWP water feasibility studies and projects. These include:
 1. A feasibility study on water quality improvement in the California Aqueduct.
 2. The conclusion of feasibility studies and demonstration projects under the Southern California-San Joaquin Regional Water Quality Exchange Project.²¹ This exchange project was discussed earlier as a mean to convey higher quality water to Metropolitan.
 3. DWR's Municipal Water Quality Investigations Program and the Sacramento River Watershed Program. Both programs address water quality problems in the Bay-Delta and Sacramento River watershed.
- Delta Improvement Package – Metropolitan in conjunction with DWR and US Geologic Survey have completed modeling efforts of the Delta to determine if levee modifications at Franks Tract would reduce ocean salinity concentrations in water exported from the Delta. Currently, tidal flows trap high saline water in the track. By constructing levee breach openings and flow control structures, it is believed saline intrusion can be reduced. This would significantly reduce total dissolved solids and bromide concentrations in water from the Delta.
- Source Water Protection – In 2001, Metropolitan completed a Watershed Sanitary Survey as required by DHS to examine possible sources of drinking water contamination and identify mitigation measures that can be taken to protect the water at the source. DHS requires the survey to be completed every five years. Metropolitan also completed a Source Water Assessment (December 2002) to evaluate the vulnerability of water sources to contamination. Water from the Colorado River is considered to be most vulnerable to contamination by recreation, urban/storm water runoff, increasing urbanization in the watershed, wastewater and past industrial practices. Water supplies from SWP are most vulnerable to urban/storm-water runoff, wildlife, agriculture, recreation, and wastewater.²²

²⁰ Arizona Department of Health Services, Topock Groundwater Study Evaluation of Chromium in Groundwater Wells, September 7, 2005.

²¹ The Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005

²² The Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005

GROUNDWATER

OCWD manages the Orange County groundwater basin and conducts a comprehensive water quality monitoring program. OCWD collects over 13,500 groundwater samples each year from over 800 wells. The water quality data collected from these wells is used to assess ambient conditions of the basin, monitor the effects of extraction, monitor the effectiveness of the seawater intrusion barriers, evaluate impacts from historic and current land use, address poor water quality areas, and also provide early warning of emerging contaminants of concern.²³

OCWD's water quality monitoring programs are broadly classified into three categories; (1) regulatory or compliance with permits, environmental and groundwater drinking water regulations, (2) committed OCWD and research projects, and (3) basin management, i.e., or evaluating and protecting basin water quality. OCWD is compliant with groundwater drinking water regulations and operates under a Department of Health Services' approved monitoring program that includes monitoring all drinking water wells within the OCWD, including each of the City's wells. Wells are sampled for regulated and unregulated chemicals at a required monitoring frequency.

The OCWD operates an extensive groundwater quality management program that allows OCWD to address current issues and develop strategies to anticipate and resolve future issues. OCWD's 2004 Groundwater Management Plan has a section devoted solely to groundwater quality management. The groundwater quality issues facing OCWD and the City and the programs implemented to address those issues are summarized in the following sections.

Nitrates

The Orange County groundwater basin has a number of constituents that are water quality concerns. The early agricultural practices in Orange County contributed to the high concentrations of nitrates in the shallow groundwater. Although nitrates are present throughout the basin, only a small number of areas exceed the MCL. Nitrate management goals include remediating groundwater contaminated by nitrate, attaining the Regional Water Quality Control Board's groundwater subbasin nitrate-nitrogen water quality objective of 3 mg/L (the MCL is 10 mg/L), and increasing the frequency of monitoring to quarterly for those wells having concentrations of nitrate above 50% of the MCL. The nitrate removal projects include the Garden Grove Nitrate Removal Project and the Tustin Main Street Treatment Plant.

The City also maintains two nitrate blending projects. The first is at the Walnut Reservoir site where high-nitrate water from Well 16 is blended with low nitrate concentration water from Well 29 and Well 33. The second site is at the Garthe Reservoir and the four wells used include Well 18 and Well 24 which are high in nitrate concentration and Well

²³ Orange County Water District, *Groundwater Management Plan*, March 2004.

36 and Well 39 which are low in nitrate concentration. By implementing the nitrate blending projects the City is able to use water that would otherwise not be available due to high concentration of nitrates.

Total Dissolved Solids (TDS)

Another water quality concern is total dissolved solids (TDS). OCWD has been proactive to combat the increase in salinity within the basin, however, many wells within OCWD exceed the RWQCB's water quality objective of 500 mg/L. TDS concentration in the groundwater pumped in OCWD ranges from 223 to over 600 mg/l and averages 461 mg/l.²⁴ The average TDS concentration of untreated groundwater pumped from the City is 399 mg/l.

The TDS levels within the recharge waters are higher than the average TDS concentrations within the groundwaters, as a result the TDS concentration within the groundwater continues to rise. In response to the rising TDS concentrations, OCWD has implemented groundwater desalter projects (the Irvine Desalter and the Tustin Seventeenth Street Desalter), has expanded barrier injection facilities, cooperates with upper Santa Ana watershed stakeholders to control TDS at the source, supports Metropolitan's efforts to import high quality water, maintains an aggressive monitoring program, and proposes the Groundwater Replenishment System.²⁵

One of the major challenges for OCWD is the contamination of fresh groundwater by saltwater intrusion and therefore OCWD has implemented two seawater intrusion barriers: the Talbert Barrier and the Alamitos Barrier. The coastal seawater monitoring program focuses on the effectiveness of the barriers and the following parameters are monitored: water level elevations, chloride, TDS, electrical conductivity, and bromide. Each of these parameters aid OCWD to track the extent and movement of saline waters throughout the basin.

Volatile Organic Compounds (VOC)

OCWD has an aggressive VOC monitoring program. Because of the monitoring program, VOC's have been detected in a number of wells within OCWD. Several drinking water wells have been taken out of service. OCWD implemented the Irvine Desalter Project to address the VOC's and high TDS concentrations in the groundwater basin near Irvine. OCWD is also proposing the Forebay VOC Cleanup project to prevent further spread of groundwater contaminated with VOC's.

Methyl Tertiary-Butyl Ether (MTBE)

²⁴ Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater Conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005

²⁵ Orange County Water District, *Groundwater Management Plan*, March 2004

Drinking water wells within OCWD are tested for methyl tertiary-butyl ether, more commonly known as MTBE, at least annually and in some cases quarterly. OCWD aggressively monitors for MTBE to detect a problem before it reaches a drinking water well.²⁶ The health effects of MTBE are uncertain. The U.S. Environmental Protection Agency currently classifies MTBE as a possible human carcinogen.

Unfortunately there are hundreds of identified sites with leaky underground storage tanks throughout Orange County. The majority of these sites do not have a groundwater cleanup program to remove the MTBE from the shallow groundwater. In response to the MTBE contamination, OCWD filed a lawsuit in 2003 against numerous oil and petroleum-related companies. The suit seeks funding from the responsible parties to pay for the investigation, monitoring, and removal of oxygenates from the basin.²⁷ Two wells within OCWD have been taken out of service because of MTBE contamination. Fortunately, a thick underground clay layer helps protect most of the groundwater basin from surface contamination of MTBE.

N-nitrosodimethylamine (NDMA)

In the year 2000, OCWD discovered NDMA, a known carcinogen, in the injection water used to prevent seawater intrusion at the Talbert Barrier. OCWD adjusted the operation of Water Factory 21, where recycled water is treated for injection, for NDMA treatment. Ultraviolet light treatment was added to the process to reduce the occurrence of NDMA in injection waters.

There is currently one NDMA removal project within OCWD. Mesa Consolidated Water District provides wellhead treatment for the removal of NDMA. The treatment process meets the current NDMA notification Level of 10 nanograms per liter and minimizes further down gradient migration of NDMA. The City's wells have been tested for NDMA and have not exceeded the notification level.

Emerging Contaminants

Pharmaceuticals, personal care products, and endocrine disruptors are considered emerging environmental contaminants. There are water quality concerns associated with these emerging contaminants because of their wide spread use among the population and their impact on human health because of exposure to low doses over long periods of time. OCWD is aware of these contaminants and is working with DHS to track and report their concentrations in the groundwater.

Colored Groundwater

²⁶ Orange County Water District, 2001-2002 Annual Report

* Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater Conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005

²⁷ Orange County Water District, *Groundwater Management Plan*, March 2004

Colored groundwater is encountered over a broad region of Orange County and is estimated to total over 1 million acre-feet. The area identified as the “colored water” area includes the southern part the basin near the coastal area. The colored water is located at depths deeper than the clear zone and if a deep well can be constructed, a new source of water may be available. The OCWD 2004 Groundwater Management Plan reports nine wells have been drilled in the colored zone. These wells aid in reducing the groundwater level of the colored aquifer and thus minimize the potential for upward vertical migration of colored water into the clear zones.

Water Quality Programs

OCWD supports and is involved in many programs that address water quality concerns of the groundwater basin. Some of the programs and activities include:

- Source Water Protection –Similar to Metropolitan, OCWD has completed a drinking water source assessment for the existing drinking supply wells. The source water assessment develops management strategies to prevent or reduce the risks to groundwater from pollution such as:
 - 1) delineates the time-of-travel aquifer capture zone of the source and identifies land area to be protected
 - 2) identifies and locates potential sources of contamination to the well
 - 3) manage land use and planning for future development
 - 4) requires development to comply with the County’s Municipal Stormwater Water Quality Management Plan to protect groundwater replenishment water
- Surface Water Monitoring - OCWD also conducts routine monitoring of the Santa Ana River and other surface waterways in the upper watershed. OCWD is conducting the Santa Ana River Water Quality and Health Study to verify the sustainability of continued use of river water for recharge and its impact on groundwater quality.
- Constructed Wetlands – OCWD operates the Prado Basin Wetland in cooperation with the US Army Corps of Engineers and the US Fish and Wildlife Service to reduce the nitrogen concentration of river water. The constructed wetlands comprise of 465 acres.
- Public Outreach – OCWD has implemented a public education outreach program called the Groundwater Guardian Team to inform the public about the benefits of protecting the groundwater basin.
- Regulation – In May of 1987, OCWD adopted a Groundwater Quality Protection Policy. The policy established the following objectives:
 - 1) Maintain a suitable groundwater supply for all existing and potential beneficial uses
 - 2) Prevent degradation of the quality of the groundwater supply

- 3) Assist responsible regulatory agencies in identifying sources of pollution to assure cleanup by the responsible party(s)
- 4) Maintain or increase the basin's usable storage capacity
- 5) Inform the general public of water quality problems as they are encountered as well as the overall condition of the groundwater supply, through appropriate regulatory agencies and producers

3.2 WATER QUALITY EFFECT ON WATER MANAGEMENT STRATEGIES AND SUPPLY RELIABILITY

The previous section summarized the general water quality issues of Metropolitan's imported water and OCWD's groundwater supplies. The same water quality concerns apply to the City's water. Similar to Metropolitan and OCWD, the City prepared an assessment of the City's drinking water wells that was completed in December 2003. The wells are considered most vulnerable to possible contamination from chemical/petroleum pipelines, chemical/petroleum processing/storage, dry cleaners, gas stations, junk/scrap/salvage yards, metal plating/finishing/fabricating, plastics/synthetics producers, and sewer collection systems.²⁸ The City continues to monitor its groundwater wells for the first indication of problems as part of their water management strategy.

The City has not experienced any significant water quality problems in the past and does not anticipate any significant changes in the future. In the near future, EPA's Stage 2 regulation of the disinfection byproducts rule will be in effect. Stage 1 was implemented in 2002 and lowered the total THM maximum annual average concentration level in water supplies; stage 2 will further lower the THM concentration level. The City's water supplies meet the requirements of Stage 1 and will be required to meet Stage 2 levels when they become finalized.

The City does not anticipate any changes in its available water supplies due to water quality issues in part because of the mitigation actions undertaken by Metropolitan and OCWD as described earlier.

²⁸ City of Santa Ana, 2004 Water Quality Report.

SECTION 4 WATER RELIABILITY PLANNING

4.1 RELIABILITY OF WATER SUPPLIES

The City of Santa Ana and all of Orange County communities and water agencies in Orange County are facing increasing challenges in their role as stewards of water resources in the region. The region faces a growing gap between its water requirements and its firm water supplies. Increased environmental regulations and the collaborative competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth in Orange County result in increased water demand within the region, putting an even larger burden on local supplies.

During the 2005 Fiscal Year, the City received approximately 57 percent of its water supply from local groundwater, managed by the OCWD, even though the BPP was set at 66 percent for this year, and 43 percent from import water from Metropolitan. This was due to participation in the In-Lieu Program. However, during the three prior fiscal years, groundwater production averaged about 70 percent with imported water making up the 30 percent balance.

Although Santa Ana is not a member agency of the Municipal Water District of Orange County (MWDOC), a regional water wholesaler in Orange County, the City does benefit from some of MWDOC's programs as well as those of OCWD. With that in mind, both of these agency's programs will be discussed in this section of the Plan.

Both MWDOC and OCWD are implementing water supply alternative strategies for the region aimed at ensuring a reliable future water supply for the Orange County region. Strategies are identified in the MWDOC 2005 Regional UWMP, the OCWD Long Term Facilities Plan (Draft October 2005), and the OCWD 2004 Groundwater Management Plan. The optimum water supply strategy should attempt to meet the following objectives:

- Ensure that the groundwater basin is protected
- Ensure available water for Orange County residents and businesses in the future
- Minimize the consumers water supply cost
- Use a variety of sources
- Reverse the adverse salt balance in the groundwater basin
- Provide flexibility to allow both MWDOC and OCWD to quickly take advantage of changing and new markets if and when they develop

The reliability of the City's water supply is currently dependent on the reliability of both groundwater and imported water supplies, which are managed and delivered by OCWD and Metropolitan, respectively. The following sections will discuss these agencies, and others throughout the region, their roles in water supply reliability, and the near and long-term efforts they are involved with to ensure future reliability of water supplies to the City and the region as a whole.

4.1.1 Regional Agencies and Water Reliability

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan's primary goal is to provide reliable water supplies to meet the water needs of its service area at the lowest possible cost. The reliability of Metropolitan's water supply has been threatened as existing imported water supplies from the Colorado River and SWP face increasing challenges. Despite these challenges, Metropolitan continues to develop and encourage projects and programs to ensure reliability now and into the future. One such project is Metropolitan's recently completed Diamond Valley Lake in Hemet, California, an 800,000 AF capacity reservoir for regional seasonal and emergency storage for SWP and Colorado River water. The reservoir began storing water in November 1999 and reached the sustained water level by early 2002.²⁹

Colorado River Aqueduct (CRA)

Pursuant to the 1964 U.S. Supreme Court decree, Metropolitan's dependable supply of Colorado River water was limited to 550,000 AFY per year assuming no surplus or unused Arizona and Nevada entitlement was available and California agricultural agencies use all of their contractual entitlement. Historically, Metropolitan has also possessed a priority for an additional 662,000 AFY depending upon availability of surplus water. In addition, Metropolitan maintains agreements for storage, exchanges and transfers within the service area of Imperial Irrigation District (IID) that provide water to Metropolitan.³⁰

Water supplies from the Colorado River have been and continue to be a topic of negotiation and intense debate. The 1964 Court Decree required the state of California to limit its annual use to 4.4 million acre-feet (MAF) basic annual apportionment of Colorado River water plus any available surplus. To keep California at 4.4 MAF, Metropolitan reduced its level of diversions in years when no surplus is available.

In 1999, the Colorado River Board developed "California's Colorado River Water Use Plan," also known as the "California Plan" and the 4.4 Plan", which was endorsed by all seven Colorado River Basin states and the U.S. Department of the Interior. This plan developed the framework that specifies how California will transition and live within its basic apportionment of 4.4 MAF of Colorado River water.

The U.S. Bureau of Reclamation implemented Interim Surplus Guidelines to assist California's transition to the Plan. Seven priorities for use of the waters of the Colorado River within the State of California were established. Metropolitan would only be able to exercise its fourth priority right to 550,000 AF annually, instead of the maximum aqueduct capacity of 1.3 MAF. Priorities 1 through 3 cannot exceed 3.85 MAF annually. Together, Priorities 1 through 4 total California's 4.4 MAF apportionment.

²⁹ The Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005

³⁰ Metropolitan Water District of Southern California. Integrated Water Resources Plan. 2003 Update. May 2004.

In October 2003, the Quantification Settlement Agreement (QSA), a critical component of the California's Colorado River Water Use Plan and for purposes of Section 5(B) of the Interim Surplus Guidelines, was authorized defining Colorado River water deliveries, delivery of Priority 3(a) and 6(a) Colorado River water, and transfer and other water delivery commitments, thus facilitating the transfer of water from agricultural agencies to urban uses. The QSA is a landmark agreement, signed by the four California Colorado River water use agencies and the U.S. Secretary of the Interior, which will guide reasonable and fair use of the Colorado River by California through the year 2037.

Metropolitan's Integrated Water Resources Plan 2003 Update, recognizes that the QSA supports Metropolitan's development plans for CRA deliveries, and demonstrates the reliability benefits as a result of the QSA and existing supply enhancement programs.

State Water Project (SWP)

The reliability of the SWP impacts Metropolitan's member agencies' ability to plan for future growth and supply. DWR's Bulletin 132-03, December 2004, provides certain SWP reliability information, and in 2002, the DWR Bay-Delta Office prepared a report specifically addressing the reliability of the SWP.³¹ This report, *The State Water Project Delivery Reliability Report*, provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns. The following SWP reliability information is included in these reports.

On an annual basis, each of the 29 SWP contractors including Metropolitan request an amount of SWP water based on their anticipated yearly demand. In most cases, Metropolitan's requested supply is equivalent to its full Table A Amount; currently at 1,911,500 AFY. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, the SWP annual delivery of water to contractors has ranged from 552,600 AFY in 1991 to 3.5 MAF in 2000. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead a percentage of that amount based on the available supply.

Typically, around December of each year, DWR provides the contractors with their first estimate of allocation for the following year. Due to the variability in water supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors. As hydrologic and water conditions develop throughout the year, DWR revises the allocations.

On January 14, 2005, SWP supplies are projected to meet 60 percent of most SWP contractor's Table A Amounts. This allocation was increased to 70 percent on April 1, 2005 and to 80 percent on April 21, 2005. The final allocation increase occurred on May

³¹ Department of Water Resources, State Water Project Delivery Reliability Report. 2002.

27, 2005 and the notice projected SWRP would meet 90 percent of most contractor's Table A Amounts.

DWR is preparing an update to the SWP Reliability Report issued in 2003, which is expected to be complete by the end of 2005. In order to assist agencies to prepare their 2005 UWMP Updates, DWR provided relevant sections from the working draft of the 2005 Reliability Report and recommended the results of studies 4 and 5 since they contain the most current information for assumed demands. The results of studies 4 and 5 show average deliveries of 69 percent of full Table A under current conditions and 77 percent under future conditions. The more recent studies also show a minimum delivery of 4 and 5 percent, current and future years respectively, compared to 20 percent for the 2003 report. These amounts are shown in Table 4.1.1-1 on the following page compared to the earlier CALSIM modeling as discussed below.

DWR analyzed the SWP's reliability using the California Water Allocation and Reservoir Operations Model (CALSIM II model) in their Reliability Report. The CALSIM II model was developed by DWR and the U.S. Bureau of Reclamation (USBR) to simulate operations of the SWP and the Central Valley Project (CVP). The CALSIM II model is used to estimate water deliveries to both SWP and CVP users under various assumptions such as hydrologic conditions, land use, regulations, and facility configurations. Documentation for CALSIM II, including assumptions, can be found on the DWR Web site at <http://modeling.water.ca.gov>.

One of the key assumptions of the CALSIM II model is that past weather patterns will repeat themselves in the future. The model uses a monthly time step to calculate available water supply based on historical rainfall data from 73 years of records (1922 – 1994). The model scenarios used in the preparation of the Reliability Report also assumed that regulatory requirements and facilities would not change in the future. DWR considered this assumption conservative since additional facilities such as reservoirs may be implemented in the future to specifically increase the SWP's reliability.

The CALSIM II model was used to complete three benchmark studies dated May 17, 2002 for the Reliability Report. The benchmark studies evaluated the water supply and demand at the 2001 condition and at the 2021 condition. In 2001, SWP water demand was estimated to vary from 3.0 to 4.1 MAF per year depending on the weather conditions (wet or dry years). SWP water demands in 2021 were estimated to range from 3.3 to 4.1 MAF per year. DWR prepared two benchmark studies for the 2021 condition. The first study assumed that SWP water demands would depend on weather conditions, whereas the second study assumed the contractor's water demand would be their maximum Table A Amount; 4.1 MAF per year regardless of weather. Table 4.1-1 shows the results, which demonstrate that SWP deliveries, on average, can meet 75 percent of the maximum Table A Amount.

**Table 4.1-1
SWP Table A Deliveries from the Delta
Percent of Total Table A Amount of 4.133 MAF
(MAF)**

Study	Average	Maximum	Minimum
2001 Study	2.962 (72%)	3.845 (93%)	0.804 (19%)
2021 Study A ^[1]	3.083 (75%)	4.133 (100%)	0.830 (20%)
2021 Study B ^[2]	3.130 (76%)	4.133 (100%)	0.830 (20%)
Revised-Demand Today ^[3]	2.818 (69%)	3.848 (94%)	0.159 (4%)
Revised-Demand Future ^[4]	3.178 (77%)	4.133 (100%)	0.187 (5%)

Source: Department of Water Resources, Excerpts from Working Draft of 2005 SWP Delivery Reliability Report – Attachment 1, May 25, 2005

^[1] Assumes demands depend on weather conditions.

^[2] Assumes demands at maximum Table A amount.

^[3] Revises demands to current conditions.

^[4] Revises demands at levels of use projected to occur by 2025.

The Monterey Agreement states that contractors will be allocated part of the total available project supply in proportion to their Table A Amount. The Monterey Agreement changed SWP water allocation rules by specifying that, during drought years, project supplies be allocated proportionately based on the maximum contractual Table A Amount. Water is allocated to urban and agricultural purposes on a proportional basis, deleting a previous initial supply reduction to agricultural contractors. The agreement further defines and permits permanent sales of SWP Table A Amounts and provides for transfer of up to 130,000 AF of annual Table A Amounts from agricultural use to municipal use. The Agreement also allows SWP contractors to store water in another agency's reservoir or groundwater basin, facilitates the implementation of water transfers and provides a mechanism for using SWP facilities to transport non-project water for SWP water contractors. The Agreement provides greater flexibility for SWP contractors to use their share of storage in SWP reservoirs.

Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability

Metropolitan released a *Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability* on March 25, 2003, to provide updated information on Metropolitan's projected supply and demand for incorporation into Water Verification and Water Supply Assessments for compliance with SB 221 and SB 610, respectively. These bills implement requirements to connect land use to a sufficient water supply before a development can be approved. The Metropolitan report addresses water supply reliability issues and states Metropolitan's roles and responsibilities, which include the following:

(1) implementing water management programs that support the development of cost-effective local resources; (2) securing additional imported supplies as necessary through programs that increase the availability of water delivered through the Colorado River Aqueduct and the SWP; (3) providing the infrastructure needed to integrate imported and local sources; (4) establishing a comprehensive management plan dealing with periodic surplus and shortage conditions; and (5) developing a rate structure that strengthens Metropolitan's financial capabilities to implement water supply programs and make infrastructure improvements.

The report details that Metropolitan's regional water demand projections are 6 percent to 16 percent *higher*, depending on what 5-year projection period and 11 percent for Year 2025, than the aggregated projections of Metropolitan's member agencies. As stated in the Report, "this difference indicated that Metropolitan supplies would provide a level of 'margin of safety' or flexibility to accommodate delays in local resources development or adjustments in development plans."³² Additionally, the report concludes that "current practices allow Metropolitan to bring water supplies on-line at least ten years in advance of demand with a very high degree of reliability." More particularly, Metropolitan documented sufficient currently available supplies to meet 100 percent of member agencies' supplemental water demands for 20 years under Average and Wet Year conditions, for 15 years under Multiple Dry Year conditions (with 8 to 26 percent reserve capacity), and for 15 years under Single Dry Year conditions (with 8-25 percent reserve capacity). Originally, the report found that with the addition of supplies under development, Metropolitan will be able to meet 100 percent of its agencies' supplemental water needs under all supply and demand conditions through 2030 with 20-25 percent reserve capacity.³³

The Report also identifies the ways Metropolitan is managing changes in Southern California's water supplies, including reduced Colorado River deliveries and water quality constraints. In addition, opportunities for additional supplies are currently being implemented in the following ways:

- 1) Full Diamond Valley Lake: The Lake is now fully operational with an increased conveyance capacity for refill system storage.
- 2) Re-Operation of Storage and Transfer Programs: In 2003, Metropolitan developed additional storage and transfer capabilities and completed filling local resources to achieve full storage accounts in operational reservoirs and banking/transfer programs.
- 3) Enhanced Conservation Programs: A new campaign is designed to encourage more efficient outdoor water use and promote innovative conservation measures.

³² Metropolitan Water District of Southern California. Report on Metropolitan Water Supplies, A Blueprint for Water Reliability, p. 9. March 25, 2003.

³³ Metropolitan Water District of Southern California. Report on Metropolitan Water Supplies, A Blueprint for Water Reliability, p. 24-25. March 25, 2003.

- 4) Development of Additional Local Resources: There are promising opportunities identified to develop seawater desalination and expand the Local Resources Program.

In addition to the *Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability*, MWD's September 2005 Draft Regional Urban Water Management Plan (RUWMP) demand and supply analysis also projects surpluses (of regional supplies compared with regional demands) ranging from 5 percent to 35 percent in all years and all drought scenarios through 2030.³⁴

As demand forecasts are refined, supply goals are also refined. Metropolitan has consistently supplied over 50 percent of water supplies to the Southern California region. To continue to accomplish this, Metropolitan continues to approve new and innovative projects and programs to ensure reliability. For example, in August 2001, Metropolitan took action to move forward initiatives to bolster future supplies by supporting seawater desalination projects, increased commercial conservation efforts, improve water quality by decreasing salinity in supplies from the State Water Project and the Colorado River, increased underground storage and retrieval facilities, adopted principles for establishing cooperative programs, and endorsed legislation that would further water reliability. Some of these projects are further described in Section 4.4.

Integrated Water Resources Plan (IRP)

To address Metropolitan's reliability challenges, Metropolitan and its member agencies developed an Integrated Water Resources Plan (IRP) in 1996. The overall objective of the IRP process is the selection and implementation of a Preferred Resource Mix (or strategy) consisting of complementary investments in local water resources, imported supplies and demand-side management that meet the region's desired reliability goal in a cost-effective and environmentally sound manner. The 1996 IRP was reviewed as part of Metropolitan's strategic plan and rate refinement to guide the development and implementation of revised Metropolitan water management programs through the year 2005.

The IRP 2003 Update was approved and released July 13, 2004, and includes various projects and programs that contribute to the reliability of Metropolitan's imported water supplies. The IRP Update concluded that the resource targets from the 1996 IRP, factored in with changed conditions, will continue to provide for 100 percent reliability through 2025.

While the IRP 2003 Update includes goals for a variety of resource targets, it identified the most significant programs as conservation and local supply development among the Preferred Resource Mix. The IRP details the Local Resources Program (LRP) and the Seawater Desalination Program as a means to increase reliability of local supplies. Metropolitan initiated the LRP to promote the development of water recycling projects that reduced demand for imported water and improved regional water supply reliability in

³⁴ Tables II-7, 8 and 9 of MWD's September 2005 Draft Regional Urban Water Management Plan

1982. In 1991, the Groundwater Recovery Program was implemented to similarly promote the recovery of local degraded groundwater supplies. In 1995, both programs were combined into the LRP. Currently, the LRP, including both recycling and groundwater recovery, has invested over \$121 million and partnered with member agencies on 53 recycled water projects and 22 groundwater recovery projects generating 251,000 acre feet of local supply in 2002.³⁵

The IRP 2003 Update states that Metropolitan's regional production target is 500,000 AF by 2020 for its LRP. Metropolitan's current projection of regional implementation of recycling, groundwater recovery, and seawater desalination resource targets exceeds the 1996 IRP goals. Although in FY 2002, recycling and groundwater recovery programs narrowly missed their target, the region is expected to meet its 2010 and 2020 targets. Meeting the targets will require the region to produce 159,000 AF of additional local project and/or seawater desalination supply by 2010 and 249,000 AF by 2020. Overall, the region has developed about 50 percent of the 1996 IRP local resources target for 2020.

Metropolitan continues to encourage development of local water resource process through offering financial incentives through the LRP to its member agencies. These anticipated water supply benefits are incorporated into the forecasts of demand on Metropolitan.

In addition to the LRP, Metropolitan also provides financial and technical assistance for implementing water conservation Best Management Practices, as well as a significant investment in regional and local water conservation programs. Metropolitan was also responsible for distributing \$45 million in funds from Proposition 13 funding for development of conjunctive management programs in Southern California.

Municipal Water District of Orange County (MWDOC)

In 1951, MWDOC was formed to provide supplemental water to many purveyors within Orange County who were not Metropolitan member agencies. MWDOC was formed for the purpose of contracting with Metropolitan to acquire supplemental import water supplies from northern California and the Colorado River for use within the Orange County area. MWDOC is Metropolitan's second largest wholesale member agency. MWDOC represents 30 member agencies, including 14 special districts, 14 city water departments, one private water company and one mutual water company. The actions of MWDOC have a regional benefit to the City although the City is not a member agency.

MWDOC represents its members at a regional, state and federal level, and advocates for the development and protection of imported water supplies and planning along with coordinating the water needs for its service area.³⁶ MWDOC's water management goals and objectives include working together with Orange County water agencies, including

³⁵ Metropolitan Water District of Southern California. Integrated Water Resources Plan, 2003 Update. May 2004.

³⁶ [On-Line]. Municipal Water District of Orange County. Available: <http://www.mwdoc.com>. 2002.

the City when applicable, to focus on solutions and priorities for improving Orange County's future water supply reliability.

Efforts of MWDOC to maintain a reliable water supply include a commitment to the intensive and cost-effective development of Orange County's water resources. Development of local water supplies will lessen Orange County's dependence on imported water. Therefore, in order to maintain a more reliable water supply, a number of projects including storage, recycling, conjunctive use with groundwater basins, ocean desalination and new groundwater development will contribute to enhanced water reliability.

Programs and projects directly managed by MWDOC include exchanges and transfers, participation with the Best Management Practices (BMPs) as well as extensive conservation and educational programs available to its member agencies. These programs and projects support further water reliability for its member agencies and throughout Orange County.³⁷

Integrated Regional Water Management Plan

MWDOC has been working with the County of Orange, as the lead agency, and 24 other cities and special districts to develop and integrate regional strategies for water management within the region. In an effort to manage local and imported water supplies, projects have been identified that protect communities from drought, enhance water supply reliability, ensure continued water security, optimize watershed and coastal resources, improve water quality, and protect habitat. To date, nearly 100 projects have been identified and the responsibility of implementing the projects has been granted to the South Orange County Integrated Regional Water management (IRWM) Group.

South Orange County Water Reliability Study

To ensure continued water reliability for south Orange County, 11 Orange County agencies, Metropolitan, and the USBR joined together to fund the South Orange County Water Reliability Study (SOCWRS). MWDOC served as the lead agency in this effort.

The SOCWRS provides an objective plan that addresses the pressing need to ensure water supply in the event of future water supply outages and/or emergencies. Although the study is focused on south Orange County, implementing measures recommended in the study will provide regional benefits for all of Orange County's water supply, and thus benefit the City.

³⁷ MWDOC. Regional Urban Water Management Plan. 2005.

Orange County Water District (OCWD)

OCWD is responsible for the protection of water rights to the Santa Ana River in Orange County as well as the management and replenishment of the basin.³⁸ OCWD replenishes and maintains the basin at safe levels while more than doubling the basin's annual yield with the best available technology. OCWD primarily recharges the basin with water from the Santa Ana River and to a lesser extent with imported water purchased from Metropolitan. Other processes such as recycling of wastewater, conservation and water use efficiency programs, and creative water purchases have aided in replenishing the basin to desired levels to meet required demands.

Furthermore, OCWD has invested in seawater intrusion control (injection barriers), recharge facilities, laboratories, and basin monitoring to effectively manage the Basin. Consequently, although the basin is defined to be in an "overdraft" condition, it is actually managed to allow utilization of up to 500,000 AF of storage capacity of the basin during dry periods, acting as an underground reservoir and buffer against drought.³⁹ OCWD also operates the basin to keep the target dewatered basin storage at 200,000 AF as an appropriate accumulated overdraft.⁴⁰ If the basin is too full, artesian conditions can occur along the coastal area, causing rising water and water logging, an adverse condition.

Since the formation of OCWD in 1933, OCWD has made substantial investment in facilities, basin management and water rights protection, resulting in the elimination and prevention of adverse long-term "mining" overdraft conditions. OCWD continues to develop new replenishment supplies, recharge capacity and basin protection measures to meet projected production from the basin during average/normal rainfall and drought periods.⁴¹

OCWD Long Term Facilities Plan

OCWD is preparing the Long Term Facilities Plan (LTFP) and will evaluate potential projects that may be implemented in the 20-year planning period. The LTFP's goal is to enhance basin management and water quality management activities. The LTFP is proposed to do the following:

- Evaluate projects to cost effectively increase the amount of sustainable basin production and protect water quality;
- Develop an implementation program for the recommended projects;

³⁸ OCWD Groundwater Management Plan, 2004.

³⁹ OCWD Groundwater Management Plan, 2004.

⁴⁰ Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005.

⁴¹ Orange County Water District, *Draft 2003-2004 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2005.

- Establish the basin's future maximum (target) annual production amount and correspondingly how much new recharge capacity would be required; and
- Estimate impacts to potential future Replenishment Assessment and Basin Production Percentage rates.

A program environmental impact report (PEIR), pursuant to California Environmental Quality Act (CEQA), is being prepared to evaluate environmental impacts of projects in the LTFP and increased levels of basin production to serve lands currently within OCWD plus proposed annexations of lands, including by the City of Anaheim and Irvine Ranch Water District. In the PEIR, OCWD's groundwater model would be used to evaluate groundwater conditions, such as groundwater elevations and protection of basin water supplies from seawater intrusion, for specified amounts of basin production with and without annexation.

The LTFP utilizes information recently developed in OCWD's Groundwater Management Plan and Recharge Development Study. The LTFP includes a master list of developed and proposed projects. The various projects are grouped into five categories: 1) recharge facilities, 2) water source facilities, 3) basin management facilities, 4) water quality management facilities, 5) operational improvements facilities. Each project is evaluated using criteria such as technical feasibility, cost, institutional support, functional feasibility, and environmental compliance. The LTFP develops an implementation plan for the 28 recommended projects over the 20 year planning period.

At the time of this Plan, the LTFP was scheduled to be complete in 2005, and would be updated periodically to reflect changes in pumping and basin response forecasts to future production increases.

OCWD 2020 Water Master Plan Report (MPR)

OCWD's 2020 Water Master Plan Report (MPR) describes local water supplies and estimates their availability extending to the year 2020. Specifically, OCWD states in their 2020 Water MPR that significant water supply sources will be available in the future for potable, non-potable, and recharge purposes. The 2020 Water MPR discusses source waters such as imported water from Metropolitan, base flows from the Santa Ana River, treated wastewater through the OCWD/OCSD Groundwater Replenishment System (GWRS) program, and possibly desalinated ocean water. The local supplies' availability and projections from the 2020 Water MPR are not being pursued, but instead will be revised and replaced with the LTFP.

Orange County Sanitation District (OCSD)

Wastewater from the City is collected and treated by OCSD. OCSD manages wastewater collection and treatment for central and northwest Orange County. A project that will benefit OCSD by reducing disposal of treated wastewater to the ocean and increase the reliability of water supplies in the region is the Groundwater Replenishment System (GWRS).

OCWD/OCSD Groundwater Replenishment System (GWRS)

The GWRS is a jointly funded project of OCWD and OCSD. The GWRS is a water supply project designed to ultimately reuse approximately 110,000 AFY of advanced treated wastewater.⁴² The objective of the project is to develop a new source of reliable, high quality, low salinity water that will be used to replenish the Basin and expand the existing seawater intrusion barrier. Additional information regarding the GWRS is presented in Section 8. The benefits of the proposed GWRS include:

- Supply a significant amount of highly treated recycled water required by OCWD to maintain a higher basin production percentage through and beyond the year 2020.
- Provide a reliable replenishment water supply in times of drought.
- Expand the seawater intrusion barrier to provide additional groundwater production in the coastal zone.

Santa Ana Watershed Project Authority

The Santa Ana Watershed Project Authority (SAWPA) is a Joint Powers Authority and carries out functions useful to its member agencies. SAWPA is located in the geographic center of the Santa Ana Watershed in Riverside, California. SAWPA was formed in 1968 as a planning agency and reformed in 1972 with a mission to plan and build facilities to protect the water quality of the Santa Ana River Watershed. OCWD is a member agency of SAWPA, whose activities and projects significantly contribute to the health of the watershed and the Orange County Groundwater Basin, and therefore provides significant benefits to the City and continued reliability of its groundwater source.

Watersheds and the state as a whole are facing many challenges in ensuring there is sufficient, high-quality water for the ever-growing population of the region. SAWPA works with planners, water experts, design and construction engineers, other government agencies to identify issues and solutions, and then use innovation to resolve many water-related problems. SAWPA also works with legislators on ensuring there are useful laws on water resources, with funding sources to ensure that necessary projects can be completed, with planners to ensure that there is enough water in the future, with regulators to ensure that the water is safe and clean, and with all other stakeholders (including the concerned public) to build collaborative, regional solutions to the area's water needs.

SAWPA owns and operates the [Santa Ana Regional Interceptor](#) (SARI) line, a buried pipeline that captures Desalter Brine and other industrial/private waste waters and sends them to wastewater treatment facilities in Orange County before they can degrade the water quality in the watershed. The SARI line is designed to convey 30 million gallons per day (MGD) of non-reclaimable wastewater from the upper Santa Ana River basin to the ocean for disposal, after treatment. The non-reclaimable wastewater consists of

⁴² Orange County Water District, Draft Long-Term Facilities Plan Review Draft, August 2005.

Desalter concentrate and industrial wastewater. Domestic wastewater is also received on a temporary basis.

The SARI System Enhancements Program Feasibility Study is the preliminary evaluation of the feasibility for segregating brine flows from domestic wastewater, for discharge to an ocean outfall. The concept considers installation of a new “brine-only” pipeline through Orange County. Treatment of waters prior to discharge into the brine line or rerouting certain non-brine discharges to traditional domestic wastewater treatment plants in the Upper Santa Ana River area would also be required. The Study is intended to evaluate the benefits of a brine-only pipeline in all three counties such as, reuse of a portion of the flow in the GWRS being constructed by OCWD and OCSD, making available additional Orange County pipeline and treatment plant capacities and reducing disposal costs for brine-only discharges which meet ocean discharge water quality requirements.

Finally, the Arlington Desalter removes salt from water extracted from the Arlington Groundwater Basin and delivers the treated water to OCWD for percolation into Orange County’s groundwater basin. In order to reduce reliance on imported State Project and Colorado River water, to remove salts from the groundwater basins, and to provide additional water for the Orange County Groundwater Basin recharge, a number of additional desalters are under construction, or planned for the near future.

Regional Water Quality Control Board – Region 8

Background

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (Regional Boards) are responsible for the protection and, where possible, the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with Regional Boards, implements state and federal laws and regulations. Each of the nine Regional Boards adopts a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems.⁴³

In 1975, the Santa Ana Regional Water Quality Control Board (RWQCB) adopted the original Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin. In 1995, the RWQCB updated the Basin Plan to address issues that had evolved over time due to increasing populations and changing water demands in the region. The scope of the document covers the Santa Ana River Basin, which includes the upper and lower Santa Ana River watersheds including northwestern Orange County. In 2002, a triennial review

⁴³ Santa Ana Regional Water Quality Control Board. Region 8 Water Quality Control Plan (Santa Ana River Basin). January 1995.

of the Basin Plan was performed. In July 2002, at a public hearing, the RWQCB adopted Resolution No. R8-2002-0070, approving the Triennial Review Priority List and Work Plan.

The Basin Plan is more than just a collection of water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for the RWQCB's regulatory programs. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The RWQCB also regulates water discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities.

Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. Legal basis and authority for the RWQCB reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code (Porter-Cologne Water Quality Control Act) and the Clean Water Act.⁴⁴

Key Regional Issues

Water quality degradation due to high concentrations of nitrogen and total dissolved solids (TDS) is the most significant regional water quality problem in the Santa Ana River Watershed (Watershed). Historically, the Santa Ana River likely flowed during most of the year, recharging deep alluvial groundwater basins in the inland valley and the coastal plain. However, irrigation projects eventually led to the diversion of all surface flow in the river, and the quantity of groundwater recharge diminished greatly. Water quality concerns in the Watershed focus on elevated concentrations of TDS and total inorganic nitrogen (TIN).

A Task Force was formed in 1995 to provide oversight, supervision, and approval of a study to evaluate the impact of TIN and TDS on water resources in the Watershed. The study is coordinated by the Santa Ana Watershed Project Authority (SAWPA), a joint powers agency of which OCWD and OCSD are member agencies, and is investigating questions related to TIN and TDS management in the Watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and recharge.⁴⁵

Water Resources and Water Quality Management

Numerous water resource management studies and projects, focused on water quality and/or water supply, are in progress in the Region under the auspices of a variety of parties. As stated above, the RWQCB has been working with SAWPA concerning water

⁴⁴ Santa Ana Regional Water Quality Control Board. Region 8 Water Quality Control Plan (Santa Ana River Basin). January 1995.

⁴⁵ Santa Ana Regional Water Quality Control Board. Watershed Management Initiative. Revised May 2004.

Table 4.2-2 summarizes Metropolitan's current imported supply availability projections over the 20-year period beginning in 2010 and ending in 2030 for average and multiple dry year scenarios. When reviewing Table 4.2-2, it is important to note that Metropolitan is projecting a surplus of supply for all multiple dry year scenarios through 2030.

The findings in this plan were derived based upon Metropolitan's September 2005 Draft Regional UWMP. These figures can be interpolated to project Metropolitan's ability to meet a specified demand expressed in terms of a percentage of average demand and supply availability. When viewed on a regional basis, some member agency demands will exceed these averages, while others will fall below the stated averages. However, when viewed from the regional perspective, it is reasonable to assume that these averages will apply to all local water purveyors.

Although a less conservative assumption might suggest surplus water supplies not used by agencies experiencing low or no growth may be freed up for use by those water purveyors experiencing more growth, this is not borne out by the overall Metropolitan supply and demand picture. In fact, Metropolitan is projecting a 19.4 percent increase in total demand (including local supplies) over its entire service area between 2005 and 2030 (4,115,700 AFY to 4,914,000 AFY)⁴⁷ compared with a 20.9 percent increase in population over the same period of (18,233,700 to 22,053,200).⁴⁸ In other words, Metropolitan's projected increase in demand roughly parallels its projected increase in population.

⁴⁷ Table A.1-5 from Metropolitan Water District of Southern California Regional UWMP, September 2005 Draft

⁴⁸ Table A.1-2 from Metropolitan Water District of Southern California Regional UWMP, September 2005 Draft

supply and reliability issues. SAWPA has been studying TIN and TDS issues and is a valuable partner in water resource and water quality management. SAWPA, and its member agencies, conduct water related investigations and planning studies, and build physical facilities where needed for water supply, wastewater treatment or water quality remediation. Other studies and projects ongoing and planned that will affect reliability and quality of water supplies to the Region, including areas affecting water supplies in the Orange County Basin, are discussed further in following sections of this Assessment.

Some of these activities bear directly on the implementation of the Basin Plan, while others may lead to future Basin Plan amendments to incorporate appropriate changes, such as revised regulatory strategies for various dischargers. These investigations and the implementation of appropriate physical solutions are an essential and integral part of the effort to restore and maintain water quality in the Region.

4.2 DEMAND AND SUPPLIES RELIABILITY COMPARISON

Metropolitan Water District Supplies and Demands

As previously discussed, the City is a direct member agency of Metropolitan and imports about 36 percent of its total water supply, which can be higher when participating in the in-lieu program. Therefore, the reliability of Metropolitan's system does impact the City and will be discussed in this Section.

In its September 2005 Draft Regional UWMP, Metropolitan chose the year 1977 as the single driest year since 1922 and the years 1990-1992 as the multiple driest years over that same period. These years have been chosen because they represent the timing of the least amount of available water resources from the SWP, a major source of Metropolitan's supply.

Over the 20 year period beginning in 2010 and ending in 2030, Metropolitan projects a 0.5 percent decrease in available supply during an average year, a 4.5 percent increase during a single dry year, and a 3.8 percent increase during the third year of the multiple dry year period. The increased available supplies during drought year scenarios are primarily due to increased contract allotments of in-basin storage as well as a number of supplies under development.

In its draft report, Metropolitan also projects an increase in member agency demands. Specifically, they project a 10.2 percent increase over the same 20-year period in the average demand, an 8.5 percent increase during the single dry year scenario, and an 8.9 percent increase during the multiple dry year scenario. However, in all cases, the projected regional increase in demands by member agencies are offset by available surpluses in the Metropolitan supply.

Table 4.2-1 summarizes Metropolitan's current imported supply availability projections for average and single dry years over the 20-year period beginning in 2010 and ending in 2030. Based on these projections, Metropolitan will be able to meet all of its projected single dry year service area demands through the year 2030.

**Table 4.2-1
Metropolitan Regional Imported Water Supply Reliability Projections
for Average and Single Dry Years⁴⁶
(AFY)**

Row	Region Wide Projections	2010	2015	2020	2025	2030
Supply Information						
A	Projected Supply During an Average Year ^[1]	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
B	Projected Supply During a Single Dry Year ^[1]	2,842,000	3,033,000	3,002,000	2,970,000	2,970,000
C = B/A	Projected Supply During a Single Dry Year as a % of Average Supply	106.5	116.7	113.1	111.9	111.9
Demand Information						
D	Projected Demand During an Average Year	2,040,000	2,053,000	1,989,000	2,115,000	2,249,000
E	Projected Demand During a Single Dry Year	2,293,000	2,301,000	2,234,000	2,363,000	2,489,000
F = E/D	Projected Demand During a Single Dry Year as a % of Average Demand	112.4	112.0	112.3	111.7	110.7
Surplus Information						
G = A-D	Projected Surplus During an Average Year	628,000	547,000	665,000	539,000	405,000
H = B-E	Projected Surplus During a Single Dry Year	549,000	732,000	768,000	607,000	481,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	130.8	126.6	133.4	125.5	118.0
J = A/E	Projected Supply During an Average Year as a % of Demand During a Single Dry Year	116.3	113.0	118.8	112.3	106.6
K = B/E	Projected Supply During a Single Dry Year as a % of Single Dry Year Demand (including surplus)	123.9	131.8	134.3	125.6	119.3

^[1] Projected supplies include current supplies and supplies under development, but are limited by MWD's 1.25 MAF allotment to Colorado River Water; data obtained from MWD September 2005 Draft RUWMP supply/demand projections

⁴⁶ Metropolitan Draft Regional UWMP September 2005

Table 4.2-2
Metropolitan Regional Imported Water Supply Reliability Projections
for Average and Multiple Dry Years⁴⁹
(in AFY)

Row	Region Wide Projections	2010	2015	2020	2025	2030
Supply Information						
A	Projected Supply During an Average Year ^[1]	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
B	Projected Supply During Year 3 of a Multiple Dry Year Period ^[1]	2,619,000	2,776,600	2,741,000	2,719,000	2,719,000
C = B/A	Projected Supply During Year 3 of a Multiple Dry Year as a % of Average Supply	98.2	106.8	103.3	102.4	102.4
Demand Information						
D	Projected Demand During an Average Year	2,040,000	2,053,000	1,989,000	2,115,000	2,249,000
E	Projected Demand During Year 3 of a Multiple Dry Year Period ^[2]	2,376,000	2,389,000	2,317,000	2,454,000	2,587,000
F = E/D	Projected Demand During Year 3 of a Multiple Dry Year Period as a % of Average Demand	116.5	116.4	116.5	116.0	115.0
Surplus Information						
G = A-D	Projected Surplus During an Average Year	549,000	732,000	768,000	607,000	481,000
H = B-E	Projected Surplus During Year 3 of a Multiple Dry Year Period	243,000	377,000	424,000	265,000	132,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	130.8	126.6	133.4	125.5	118.0
J = A/E	Projected Supply During an Average Year as a % of Demand During Year 3 of a Multiple Dry Year	112.3	108.8	114.5	108.1	102.6
K = B/E	Projected Supply During a Multiple Dry Year as a % of Multiple Dry Year Demand (including surplus)	110.2	116.2	118.3	110.7	105.1

^[1] Projected supplies include current supplies and supplies under development, but are limited by MWD's 1.25 MAF allotment to Colorado River Water; data obtained from Metropolitan's Regional UWMP, September 2005 Final Draft.

^[2] Metropolitan only projects demands for year 3 of a multiple dry year period

⁴⁹ Metropolitan Water District of Southern California, Regional UWMP, Draft September 2005

In addition to Metropolitan’s Regional UWMP, MWDOC has also prepared a draft 2005 UWMP for the Orange County region and has also held a series of workshops for its member agencies including direct Metropolitan member agencies in Orange County. MWDOC is also looking at the 1922 through 2004 period and has adopted the same average year scenario as Metropolitan; however, they differ in the selection of a single dry year and the multiple dry year scenario. MWDOC has chosen to determine these years based on hydrologic records for Orange County rather than on the State Water Project availability. That methodology has resulted in the selection of 1961 as the single driest year on record and the years 1959 through 1961 as the multiple dry years.

In viewing its entire service area, MWDOC projects single dry year demands that are 105.5 percent of normal and three multiple dry years demands that are 106.7, 103.7 and 105.5 percent of normal. These same factors are representative of all of Orange County and will be applied to project the City’s demands in single and multiple dry years.

Prior to proceeding, it is necessary to establish a base year from which to project future demands. With that in mind, Table 4.2-3 summarizes water usage in the City over the past five years. It should be noted that the average water usage over the four year period between 2001 and 2004 was 48,722 AFY, while the actual usage in 2005 was 44,920 AFY. This 8.5 percent decline in 2005 is directly attributable to the historic rainfall levels recorded in Southern California this year. That being the case, it is best to disregard the 2005 data and use the 2001/2004 average as a basis for future projections.

**Table 4.2-3
 City of Santa Ana
 Water Usage (in AFY) During the Period 2001-2005**

Item	2001	2002	2003	2004	2001/2004 Average	2005
Water Usage	50,403	49,450	47,018	48,018	48,722	44,920

Tables 4.2-4 through 4.2-10 compare current and projected water supplies and demands in normal, single dry year and multiple dry year scenarios. The results displayed in these tables indicate that Metropolitan can meet all of the City’s demands in average, single dry, and multiple dry years through 2030.

Table 4.2-4
City of Santa Ana
Projected Water Supply and Demand
Normal Water Year
(AFY – All projections rounded to nearest ten AF)

Water Sources	2010	2015	2020	2025	2030
Supply	Normal Water Years				
Projected Supply During an Average Year as a % of Demand During an Average Year ^[1]	130.8	126.6	133.4	125.5	118.0
Imported ^[2]	19,630	20,140	22,340	22,260	21,030
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	35,030	37,120	39,070	41,390	41,570
Total Supply	54,810	57,410	61,560	63,800	62,750
% of normal year ^[5]	100	100	100	100	100
Demand					
Imported ^[2]	15,010	15,910	16,750	17,740	17,820
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	35,030	37,120	39,070	41,390	41,570
Total Demand	50,190	53,180	55,970	59,280	59,540
% of Year 2005 Demand (48,722 AF) ^[6]	106.4	110.8	113.8	114.6	114.6
Supply/ Demand Difference	4,620	4,230	5,590	4,520	3,210
Difference as % of Supply	8.4	7.4	9.1	7.1	5.1
Difference as % of Demand	9.2	8.0	10.0	7.6	5.4

[1] From Table 4.2-1, Row I.

[2] Imported water supply = (imported water demand) x (MWD Projected Supply Available During an Average Year as a % of Demand During an Average Year (from Table 4.2-1, Row I); Imported demand = 30% of total demand based on a BPP of 70%.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal demand; groundwater demands were obtained from MWDOC June 2005 Draft supply/demand projections for the City of Santa Ana

[5] Normal Year supply is assumed to reflect the total supply available in the row labeled "Total Supply."

[6] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

**Table 4.2-5
City of Santa Ana
Projected Water Supply and Demand
Single Dry Water Year**

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2010	2015	2020	2025	2030
Supply	Single Dry Years				
MWD Projected Supply Available During an Average Year as a % of Demand During a Single Dry Year ^[1]	116.3	113	118.8	112.3	106.6
MWD Projected Supply Available During a Single Dry Year as a % of Single Dry Year Demand (including surplus) ^[2]	123.9	131.8	134.3	125.6	119.3
Imported ^[3]	18,600	20,970	22,500	22,280	21,260
Recycled ^[4]	150	150	150	150	150
Local (Groundwater) ^[5]	36,960	39,170	41,230	43,670	43,860
Total Supply	55,710	60,290	63,880	66,100	65,270
Normal Year Supply ^[6]	54,810	57,410	61,560	63,800	62,750
% of Normal Year	101.6	105.0	103.8	103.6	104.0
Demand					
Imported ^[3]	15,840	16,780	17,670	18,720	18,800
Recycled ^[4]	150	150	150	150	150
Local (Groundwater) ^[5]	36,960	39,170	41,230	43,670	43,860
Total Demand^[7]	52,950	56,100	59,050	62,540	62,810
Normal Year Demand ^[6]	50,190	53,180	55,970	59,280	59,540
% of normal year demand	105.5	105.5	105.5	105.5	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	108.7	115.1	121.2	128.4	128.9
Supply/ Demand Difference	2,760	4,190	4,830	3,560	2,460
Difference as % of Supply	5.0	6.9	7.6	5.4	3.8
Difference as % of Demand	5.2	7.5	8.2	5.7	3.9

[1] From Table 4.2-1, Row J

[2] From Table 4.2-1, Row K (includes MWD surplus supplies)

[3] Available Imported supply is estimated to equal MWD's September 2005 Final Draft RUWMP projected available supplies including surplus supplies = (normal year import) x (MWD projected supply as a % of the single dry year demand); Imported demand = (normal year demand) x (105.5% single dry year demand developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%)

[4] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[5] Groundwater demand is estimated to comprise 70% of the total demand during a single dry year based on a BPP of 70%; groundwater supply is estimated to equal demand.

[6] Normal year supplies and demands are taken from Table 4.2-4

[7] Total Demand = (normal year demand) x (105.5% single dry year demand developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region)

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

**Table 4.2-6
City of Santa Ana
Projected Water Supply and Demand
Multiple Dry Water Years 2006-2010**

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2006	2007	2008	2009	2010
Supply	Normal Years		Dry Years		
MWD Projected Supply During a Multiple Dry Year as a % of Average Supply ^[1]			98.2	98.2	98.2
Imported ^[2]	21,320	21,680	20,580	19,930	19,280
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	31,260	31,420	36,880	36,030	36,850
Total Supply	52,730	53,250	57,610	56,110	56,280
Normal Year Supply ^[5]	52,730	53,250	53,770	54,290	54,810
% of Normal Year	100.0	100.0	107.1	103.4	102.7
Demand					
MWD Projected Multiple Dry Year Demand as % of Normal Year ^[6]			116.5	116.5	116.5
Imported ^[2]	17,580	17,680	15,800	15,440	15,790
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	31,260	31,420	36,880	36,030	36,850
Total Demand	48,990	49,250	52,830	51,620	52,790
Normal Year Demand ^[7]	48,990	49,250	49,510	49,780	50,040
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	100.6	101.1	108.4	105.9	108.3
Supply/ Demand Difference	3,740	4,000	4,780	4,490	3,490
Difference as % of Supply	7.1	7.5	8.3	8.0	6.2
Difference as % of Demand	7.6	8.1	9.0	8.7	6.6

[1] From Table 4.2-2, Row C

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (106.7%, 103.7% or 105.5% Year 1, 2 and 3 multiple dry year demand factors developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%); imported demand for normal years is 100% of normal demand interpolated from Table 4.2-4. BPP used for 2006 and 2007 was 64%.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand during a multiple dry year based with a BPP of 70%; groundwater supply is estimated to equal demand (except for 2006 and 2007 when the BPP is assumed to be 64%; all other years the BPP is assumed to be 70%)

[5] Interpolated from Table 4.2-5

[6] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, MWD only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 105.5% as opposed to 116.5%

[7] Interpolated from Table 4.2-4

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

Table 4.2-7
City of Santa Ana
Projected Water Supply and Demand
Multiple Dry Water Years 2011-2015

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2011	2012	2013	2014	2015
Supply	Normal Years		Dry Years		
MWD Projected Supply During a Multiple Dry Year as a % of Average Supply ^[1]			106.8	106.8	106.8
Imported ^[2]	19,730	19,830	21,290	21,400	21,510
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	35,450	35,870	38,720	38,070	39,170
Total Supply	55,330	55,850	60,160	59,620	60,830
Normal Year Supply ^[5]	55,330	55,850	56,370	56,890	57,410
% of Normal Year	100.0	100.0	106.7	104.8	106.0
Demand					
MWD Projected Multiple Dry Year Demand as % of Normal Year ^[6]			116.4	116.4	116.4
Imported ^[2]	15,190	15,370	16,590	16,310	16,780
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	35,450	35,870	38,720	38,070	39,170
Total Demand	50,790	51,390	55,460	54,530	56,100
Normal Year Demand ^[7]	50,790	51,390	51,980	52,580	53,180
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	104.2	105.5	113.8	111.9	115.1
Supply/ Demand Difference	4,540	4,460	4,700	5,090	4,730
Difference as % of Supply	8.2	8.0	7.8	8.5	7.8
Difference as % of Demand	8.9	8.7	8.5	9.3	8.4

[1] From Table 4.2-2, Row C

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (106.7%, 103.7% or 105.5% Year 1, 2 and 3 multiple dry year demand factors developed by MWD OC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%); imported demand for normal years is 100% of normal demand interpolated from Table 4.2-4.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand during a multiple dry year based with a BPP of 70%; groundwater supply is estimated to equal demand (except for 2006 and 2007 when the BPP is assumed to be 64%; all other years the BPP is assumed to be 70%)

[5] Interpolated from Table 4.2-5

[6] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, MWD only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 105.5% as opposed to 116.5%

[7] Interpolated from Table 4.2-4

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

**Table 4.2-8
City of Santa Ana
Projected Water Supply and Demand
Multiple Dry Water Years 2016-2020**

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2016	2017	2018	2019	2020
Supply	Normal Years		Dry Years		
MWD Projected Supply During a Multiple Dry Year as a % of Average Supply ^[1]			103.3	103.3	103.3
Imported ^[2]	20,580	21,020	22,170	22,620	23,080
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	37,510	37,910	40,860	40,120	41,230
Total Supply	58,240	59,080	63,180	62,890	64,460
Normal Year Supply ^[5]	58,240	59,070	59,900	60,730	61,560
% of Normal Year	100.0	100.0	105.5	103.6	104.7
Demand					
MWD Projected Multiple Dry Year Demand as % of Normal Year ^[6]			116.5	116.5	116.5
Imported ^[2]	16,080	16,240	17,510	17,190	17,670
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	37,510	37,910	40,860	40,120	41,230
Total Demand	53,740	54,300	58,520	57,460	59,050
Normal Year Demand ^[7]	53,740	54,300	54,850	55,410	55,970
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	110.3	111.4	120.1	117.9	121.2
Supply/ Demand Difference	4,500	4,780	4,660	5,430	5,410
Difference as % of Supply	7.7	8.1	7.4	8.6	8.4
Difference as % of Demand	8.4	8.8	8.0	9.5	9.2

[1] From Table 4.2-2, Row C

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (106.7%, 103.7% or 105.5% Year 1, 2 and 3 multiple dry year demand factors developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%); imported demand for normal years is 100% of normal demand interpolated from Table 4.2-4.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand during a multiple dry year based with a BPP of 70%; groundwater supply is estimated to equal demand (except for 2006 and 2007 when the BPP is assumed to be 64%; all other years the BPP is assumed to be 70%)

[5] Interpolated from Table 4.2-5

[6] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, MWD only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 105.5% as opposed to 116.5%

[7] Interpolated from Table 4.2-4

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

**Table 4.2-9
City of Santa Ana
Projected Water Supply and Demand
Multiple Dry Water Years 2021-2025**

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2021	2022	2023	2024	2025
Supply	Normal Years		Dry Years		
MWD Projected Supply During a Multiple Dry Year as a % of Average Supply ^[1]			102.4	102.4	102.4
Imported ^[2]	22,320	22,310	22,830	22,810	22,790
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	39,540	40,000	43,180	42,450	43,670
Total Supply	62,010	62,460	66,160	65,410	66,610
Normal Year Supply ^[5]	62,010	62,460	62,900	63,350	63,800
% of Normal Year	100.0	100.0	105.2	103.3	104.4
Demand					
MWD Projected Multiple Dry Year Demand as % of Normal Year ^[6]			116.0	116.0	116.0
Imported ^[2]	16,940	17,140	18,510	18,190	18,720
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	39,540	40,000	43,180	42,450	43,670
Total Demand	56,630	57,290	61,840	60,790	62,540
Normal Year Demand ^[7]	56,630	57,290	57,960	58,620	59,280
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	116.2	117.6	126.9	124.8	128.4
Supply/ Demand Difference	5,380	5,170	4,320	4,620	4,070
Difference as % of Supply	8.7	8.3	6.5	7.1	6.1
Difference as % of Demand	9.5	9.0	7.0	7.6	6.5

[1] From Table 4.2-2, Row C

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (106.7%, 103.7% or 105.5% Year 1, 2 and 3 multiple dry year demand factors developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%); imported demand for normal years is 100% of normal demand interpolated from Table 4.2-4.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand during a multiple dry year based with a BPP of 70%; groundwater supply is estimated to equal demand (except for 2006 and 2007 when the BPP is assumed to be 64%; all other years the BPP is assumed to be 70%)

[5] Interpolated from Table 4.2-5

[6] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, MWD only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 105.5% as opposed to 116.5%

[7] Interpolated from Table 4.2-4

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

**Table 4.2-10
City of Santa Ana
Projected Water Supply and Demand
Multiple Dry Water Years 2026-2030**

(AFY – All projections rounded to nearest 10 AF)

Water Sources	2026	2027	2028	2029	2030
Supply	Normal Years		Dry Years		
MWD Projected Supply During a Multiple Dry Year as a % of Average Supply ^[1]			102.4	102.4	102.4
Imported ^[2]	22,010	21,770	22,040	21,790	21,530
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	41,430	41,460	44,290	43,080	43,860
Total Supply	63,590	63,380	66,480	65,020	65,540
Normal Year Supply ^[5]	63,590	63,380	63,170	62,960	62,750
% of Normal Year	100.0	100.0	105.2	103.3	104.4
Demand					
MWD Projected Multiple Dry Year Demand as % of Normal Year ^[6]			115.0	115.0	115.0
Imported ^[2]	17,750	17,770	18,980	18,460	18,800
Recycled ^[3]	150	150	150	150	150
Local (Groundwater) ^[4]	41,430	41,460	44,290	43,080	43,860
Total Demand	59,330	59,380	63,420	61,690	62,810
Normal Year Demand ^[7]	59,330	59,380	59,440	59,490	59,540
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Year 2005 Demand (48,722 AF) ^[8]	121.8	121.9	130.2	126.6	128.9
Supply/ Demand Difference	4,260	4,000	3,060	3,330	2,730
Difference as % of Supply	6.7	6.3	4.6	5.1	4.2
Difference as % of Demand	7.2	6.7	4.8	5.4	4.3

[1] From Table 4.2-2, Row C

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (106.7%, 103.7% or 105.5% Year 1, 2 and 3 multiple dry year demand factors developed by MWDOC based on hydrologic analysis of 1922-2004 period and applicable to entire Orange County region) x (0.3 based on BPP=70%); imported demand for normal years is 100% of normal demand interpolated from Table 4.2-4.

[3] Projections for recycled water demand provided by city staff. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand is estimated to comprise 70% of the total demand during a multiple dry year based with a BPP of 70%; groundwater supply is estimated to equal demand (except for 2006 and 2007 when the BPP is assumed to be 64%; all other years the BPP is assumed to be 70%)

[5] Interpolated from Table 4.2-5

[6] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, MWD only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 105.5% as opposed to 116.5%

[7] Interpolated from Table 4.2-4

[8] 48,722 AF = the average demand for the period 2001-2004; the 2005 demand is not used because it was approximately 8.5% lower than the 2001/2004 average demand due to heavy rainfall in 2005

4.3 VULNERABILITY OF SUPPLY TO SEASONAL OR CLIMATIC SHORTAGE

The City's climate is a semi-arid environment with mild winters, warm summers and moderate rainfall, consistent with coastal Southern California. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The average annual temperature is 68 degrees Fahrenheit in January to 84 degrees Fahrenheit in July. Precipitation is typically 13 inches, occurring mostly between November and April.

Climatological data in California has been recorded since the year 1858. During the twentieth century, California has experienced three periods of severe drought: 1928-34, 1976-77 and 1987-91. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by the Department of Water Resources (DWR). These rivers flow into the San Francisco Bay Delta and are the source of water for the State Water Project.

Southern California and, in particular, Orange County sustained few adverse impacts from the 1976-77 drought, due in large part to the availability of Colorado River water and groundwater stored in the Basin. But the 1987-91 drought created considerably more concern for Southern California and Orange County.

As a result, the City is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. While the data shown in Tables 4.2-4 through 4.2-10 identifies water availability during single and multiple dry year scenarios, response to a future drought would follow the water use efficiency mandates of Metropolitan's Water Surplus and Drought Management (WSDM) Plan, along with implementation of the appropriate stage of the City's Water Conservation Program. These programs are more specifically discussed in Section 7.

4.4 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS TO MEET PROJECTED WATER USE

4.4.1 City of Santa Ana Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continues to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner. The City consistently coordinates its long-term water shortage planning with Metropolitan and OCWD, which is further described in the Metropolitan 2005 Regional Urban Water Management Plan and OCWD LTFP.

The City projects water demand in the City could remain relatively constant over the next 20 years due to minimal growth combined with water use efficiency measures and the increased use in recycled water. Water use efficiency measures described in Section 6 and possible use of recycled water use described in Section 8 of this Plan have the potential to reduce overall demand. Any new water supply sources will be developed primarily to better manage the Basin and to replace or upgrade inefficient wells, rather than to support population growth and new development. The projects that have been identified by the City to improve the City's water supply reliability and enhance the operations of the City's facilities include replacement of sewers, water mains, pump stations, chlorinators and improvement projects on SCADA systems.

Orange County Groundwater Conjunctive Use Program

As mentioned earlier, Metropolitan provided funding under Proposition 13 for groundwater conjunctive use projects that would store within their service area imported water in wet years for use in dry years. One of the selected projects was the Orange County Groundwater Conjunctive Use Program. In June 2003, MWDOC, OCWD, and Metropolitan signed a 25-year agreement to store imported water in the Orange County groundwater basin for use during dry years and emergencies. The proposed project will store up to 60,000 AF of imported water during wet periods and will be able to extract up to 20,000 AF of water during dry periods from 7 to 10 strategically sited wells. The wells will be used to pump in excess of the existing pumping demand when needed. The City is participating in this program with the recent construction of Wells 40 and 41. The program's additional wells would reduce the region's dependence on imported water during dry periods and would provide greater reliability. Although Wells 40 and 41 will provide additional capacity to the City, the City is still regulated by the BPP and, therefore, pumping above the BPP is not expected.

4.4.2 Regional Agency Projects

Since the City purchases imported water from the State Water Project and the Colorado River, the projects implemented by Metropolitan to secure their water supplies have an indirect effect on the reliability of City water supplies. In addition, OCWD's planned projects and programs for groundwater and recycled water will also impact the City.

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan is implementing water supply alternative strategies for the region and on behalf of their member agencies to ensure available water in the future. Some of the strategies identified in Metropolitan's 2005 UWMP include:

- Conservation
- Water recycling and groundwater recovery
- Storage and groundwater management programs within Southern California
- Storage programs related to the State Water Project and the Colorado River
- Other water supply management programs outside of the region

Metropolitan has made investments in conservation, water recycling, storage, and supply that are all part of Metropolitan’s long-term water management strategy. Metropolitan’s approach to a long-term water management strategy was to develop an Integrated Resource Plan that depended on many sources of supply. Metropolitan’s implementation approach for achieving the goals of the Integrated Resource Plan Update is summarized in Table 4.4.2-1. A comprehensive description of Metropolitan's implementation approach is contained in their 2003 report on Metropolitan water supplies "A Blueprint for Water Reliability" as well as their 2005 Regional Urban Water Management Plan. A brief description of the various programs implemented by Metropolitan is also included following Table 4.4.2-1.

**Table 4.4.2-1
Metropolitan Integrated Resource Plan Update Resources Status**

Target	Programs and Status
<ul style="list-style-type: none"> • Conservation 	<p>Current</p> <ul style="list-style-type: none"> - Conservation Credits Program - Residential; Non-residential Landscape Water Use Efficiency;, Commercial, Industrial, and Institutional Programs - Grant Programs <p>In Development or Identified</p> <ul style="list-style-type: none"> - Innovative Conservation Program
<ul style="list-style-type: none"> • Recycling • GW Recovery • Desalination 	<p>Current</p> <ul style="list-style-type: none"> - LRP Program <p>In Development or Identified</p> <ul style="list-style-type: none"> - Additional LRP Requests for Proposals - Seawater Desalination Program - Innovative Supply Program
<ul style="list-style-type: none"> • In Region Dry-Year Surface Water Storage 	<p>Current</p> <ul style="list-style-type: none"> - Diamond Valley Reservoir, Lake Mathews, Lake Skinner - SWP Terminal Reservoirs (Monterey Agreement)
<ul style="list-style-type: none"> • In Region Groundwater Conjunctive Use 	<p>Current</p> <ul style="list-style-type: none"> - North Las Posas (Eastern Ventura County) - Cyclic Storage - Replenishment Deliveries - Proposition 13 Programs (short listed) <p>In Development or Identified</p> <ul style="list-style-type: none"> - Raymond Basin GSP - Proposition 13 Programs (wait listed) - Expanding existing programs - New groundwater storage programs

Target	Programs and Status
<ul style="list-style-type: none"> • SWP 	<p>Current</p> <ul style="list-style-type: none"> - SWP Deliveries - San Luis Carryover Storage (Monterey Agreement) - SWP Call Back with DVCV Table A transfer <p>In Development or Identified</p> <ul style="list-style-type: none"> - Sacramento Valley Water Management Agreement - CALFED Delta Improvement Program (Phase 8 Agreement)
<ul style="list-style-type: none"> • Colorado River Aqueduct 	<p>Current</p> <ul style="list-style-type: none"> - Base Apportionment - IID/Metropolitan Conservation Program - Coachella and All American Canal Lining Programs - PVID Land Management Program <p>In Development or Identified</p> <ul style="list-style-type: none"> - Lower Coachella Storage Program - Hayfield Storage Program - Chuckwalla Storage Program - Storage in Lake Mead
<ul style="list-style-type: none"> • CVP/SWP Storage and Transfers • Spot Transfers and Options 	<p>Current</p> <ul style="list-style-type: none"> - Arvin Edison Program - Semitropic Program - San Bernardino Valley MWD Program - Kern Delta Program <p>In Development or Identified</p> <ul style="list-style-type: none"> - Mojave Storage Program - Other Central Valley Transfer Programs

Conservation Target

Metropolitan’s conservation policies and practices are shaped by Metropolitan’s Integrated Resource Plan and the California Urban Water Conservation Council *Memorandum of Understanding Regarding Water Conservation in California*.

Recycled Water, Groundwater Recovery, and Desalination Target

Metropolitan supports the use of alternative water supplies such as recycled water and degraded groundwater when there is a regional benefit to offset imported water supplies. Currently, 355,000 AF of recycled water is permitted for use within Metropolitan service area.⁵⁰ Metropolitan estimates that an additional 480,000 AF per year of new recycled water could be developed and used by 2025 with an additional 130,000 AF per year by 2050. Approximately 30 percent of the recycled water use within Metropolitan’s service area is for groundwater replenishment and seawater barriers. In the future it is anticipated that up to 90 percent of all water used for seawater barriers will be recycled water.

⁵⁰ Metropolitan Water District of Southern California, Regional UWMP, Draft September 2005

Metropolitan recognizes the importance of member agencies developing local supplies and has implemented several programs to provide financial assistance. Metropolitan's incentive programs include:

- Competitive Local Resources Program: Supports the development of cost-effective water recycling and groundwater recovery projects that reduce demands for imported supplies
- Seawater Desalination Program: Supports the development of seawater desalination within Metropolitan's service area
- Innovative Supply Program: Encourages investigations into alternative approaches to increasing the region's water supply.

According to Metropolitan's 2005 UWMP, 13 projects were selected in 2004 for implementation under the Competitive Local Resources Program. None of the projects are within the City's service area, however two projects are proposed under MWDOC. The projects include the Groundwater Replenishment System and a recycled water upgrade within Irvine Ranch Water District's service area. The Groundwater Replenishment System is discussed as a planned project under OCWD. Under the Innovative Supply Program, Metropolitan selected 10 projects for grant funding. Proposals included harvesting storm runoff, onsite recycling, and desalination. The project findings will be presented to member agencies in 2006.

Regional Groundwater Conjunctive Use Target

Other programs within Metropolitan to maximize water supplies include storage and groundwater management programs. The IRP Update identified the need for dry-year storage within surface water reservoirs and the need for groundwater storage. In 2002, Diamond Valley Lake reached its full storage capacity of 800,000 AF. Approximately 400,000 AF are dedicated for dry-year storage. Metropolitan has developed a number of local programs to increase storage in the groundwater basins. The programs include:

- North Las Posas – In 1995, Metropolitan and Calleguas Municipal Water District developed facilities for groundwater storage and extraction from the North Las Posas Basin. Metropolitan has the right to store up to 210,000 AF of water. The well fields are expected to be fully operational in 2007 with Phases I and II already complete. It is expected the North Las Posas program will yield 47,000 AF of groundwater from the basin each year.
- Proposition 13 Projects – In 2000, DWR selected Metropolitan to receive financial funding to help fund the Southern California Water Supply Reliability Projects Program. The program coordinates eight conjunctive use projects with a total storage capacity of 195,000 AF and a dry-year yield of 65,000 AF per year. One of the projects selected through the request for proposals for Proposition 13 funding includes the Orange County Groundwater Conjunctive Use Program. This program was submitted by OCWD and MWDOC and is discussed in Section 4.

- Raymond Basin – In January 2000, Metropolitan entered into agreements with the City of Pasadena and Foothill Municipal Water District to implement a groundwater storage program that is anticipated to yield 22,000 AF per year by 2010.
- Other Programs – Metropolitan intends to expand the conjunctive use programs to add another 80,000 AF to groundwater storage. Other basins in the area are being evaluated for possible conjunctive use projects.

State Water Project Target

The major actions Metropolitan is completing to improve SWP reliability include the following:

- Delta Improvements Package – The actions outlined in this package are related to water project operations in the Delta. The actions are designed to allow the SWP to operate the Banks Pumping Plant in the Delta at 8,500 cubic feet per second (CFS). Currently Banks Pumping Plant operates at 6,680 CFS. Metropolitan anticipates that increase diversion from the Delta will result in an increase of 130,000 AF per year will be available for groundwater and surface water storage.
- Phase 8 Settlement – This agreement includes various recommended water supply projects that meet demand and water quality objectives within the Sacramento Valley. The various conjunctive use projects will yield approximately 185,000 AF per year in the Sacramento Valley of which approximately 55,000 AF would be available to Metropolitan through its SWP allocation.
- Monterey Amendment – The Monterey Amendment enables Metropolitan to use a portion of the San Luis Reservoir's capacity for carryover storage. This will increase SWP delivery to Metropolitan by 93,000 to 285,000 AF depending on supply conditions.
- SWP Terminal Storage – Metropolitan has water rights for storage at Lake Perris and Castaic Lake. The storage provides Metropolitan with options for managing SWP deliveries and store up to 73,000 to 219,000 AF of carryover water.
- Desert Water Agency/Coachella Valley Water District (DWCV) SWP Table A Transfer – This transfer to DWCV includes 100,000 AF of Metropolitan SWP Table A amount in exchange for other rights such as its full carryover amounts in San Luis and full use of flexible storage in Castaic and Perris Reservoirs. It is anticipated that the call-back provision of the entitlement transfer can provide between 5,000 and 26,000 AF of water depending on the water year.
- Desert Water Agency/Coachella Valley Water District (DWCV) Advance Delivery Program – Under this program Metropolitan delivers Colorado River water to the DWCV in exchange for their SWP Contract Table A allocations. Metropolitan can expect increases in SWP Table A deliveries of 6,000 to 18,000 AF depending on the water year.

Central Valley Project Target

Metropolitan also receives imported water from the Colorado River Aqueduct. Metropolitan, Imperial Irrigation District (IID) and Coachella Valley Water District executed the Quantification Settlement Agreement (QSA) in October 2003. The QSA established the baseline water use for each agency and facilitated the transfer agricultural water to urban uses. A number of programs have been identified to assist Metropolitan meet their target goal of 1.2 MAF per year from the Colorado River Aqueduct. These programs include the following:

- Coachella and All-American Canal Lining Project – The Coachella Canal Lining Project is scheduled to be completed in January 2007 and is expected to conserve 26,000 AFY. The All-American Canal Lining Project is scheduled to be completed in 2008 and is expected to conserve 67,700 AFY. The conserved water will be made available in Lake Havasu for diversion from Metropolitan. In exchange, Metropolitan will supply a like amount to the San Luis Rey Settlement Parties and San Diego County Water Authority.
- IID/San Diego County Water Authority Transfer – IID has agreed to implement a conservation program and transfer water to San Diego County Water Authority. The transfer began in 2003 with 10,000 AF and will increase yearly until 2023 where the transfer will be 200,000 AF annually. Water will be conserved through land fallowing and irrigation efficiency measures. Metropolitan will supply the water conserved to San Diego County Water Authority in exchange for a like amount out of Lake Havasu.
- Imperial Irrigation District/Metropolitan Conservation Program – The program originally provided funding from Metropolitan to implement water efficiency improvements within IID. Metropolitan in turn would reserve the right to divert the water conserved by those investments. Execution of the QSA extended the term of the program to 2078 and guaranteed Metropolitan at least 80,000 AF per year.
- Palo Verde Land Management and Crop Rotation Program – This program offers financial incentives to farmers with Palo Verde Irrigation District to not irrigate a portion of their land. A maximum of 29 percent of lands within Palo Verde Irrigation District can be fallowed in any year. The water conserved will be available to Metropolitan with a maximum of 111,000 AF per year expected.
- Hayfield Groundwater Storage Program – Metropolitan will divert Colorado River water and store it in the Hayfield Groundwater Basin in east Riverside County. Currently there is 73,000 AF of water in storage. Metropolitan expects the program to eventually develop a storage capacity of approximately 500,000 AF.
- Chuckwalla Groundwater Storage Program – Metropolitan proposes to store water when available in the Upper Chuckwalla Groundwater Basin for future delivery to Metropolitan.

- Lower Coachella Valley Groundwater Storage Program – Metropolitan, Coachella Valley Water District, and the Desert Water Agency are investigating the feasibility of a conjunctive use program in the Lower Coachella Groundwater Basin. The basin has the potential to store 500,000 AF of groundwater for Metropolitan.
- Salton Sea Restoration Transfer – A transfer of up to 1.6 MAF would be conserved by IID and made available to Metropolitan. The proceeds from the DWR transfer would be placed in the Salton Sea Restoration Fund.
- Lake Mead Storage – Metropolitan is exploring options for storing water in Lake Mead.

CVP/SWP Storage and Transfers Target

Metropolitan has focused on voluntary short and long-term transfer and storage programs with Central Valley Project and other SWP contractors. Currently, Metropolitan has enough transfer and storage programs to meet their 2010 target goal of 300,000 AF. Metropolitan has four CVP/SWP transfer and storage programs in place for a total of 317,000 AF of dry-year supply. Metropolitan is also pursuing a new storage program with Mojave Water Agency and continues to pursue Central Valley water transfers on an as needed basis. The operational programs include:

- Semitropic – 107,000 AF dry-year supply
- Arvin-Edison – 90,000 AF dry-year supply
- San Bernardino Valley Municipal Water District – 70,000 AF dry-year supply
- Kern Delta Water District – 50,000 AF dry-year supply
- Mojave Storage Program – 35,000 AF dry-year supply
- Central Valley Transfer Program – 160,000 AF dry-year supply

Municipal Water District of Orange County (MWDOC) Projects

Sufficient water storage programs will help to ensure adequate water supplies in the future and in time of drought. The need for local storage intensifies with Southern California's and the Orange County region's dependence on imported water to serve water demands. One of the most effective forms of storage in a highly dry and arid climate is conjunctive use wherein water is stored under ground during wet periods and pumped out during dry or drought periods.

The MWDOC 2005 Regional UWMP discusses a number of water supply opportunities in Orange County, including the GWRS, to protect and maximize the yield of the basin.

Orange County Water District (OCWD) Projects

OCWD is dedicated to maintaining a reliable supply of water for its groundwater users. OCWD has identified reliability measures to help mitigate emergency water shortages or increase water supply, including the following:

- OCWD has an agreement with San Bernardino Valley Municipal Water District (SBVMWD) to purchase groundwater supplies. SBVMWD's groundwater table is very high, making excess supply available for pumping to the Santa Ana River for OCWD's use.
- OCWD continues to discuss the purchase of non-SWP water supplies via SBVMWD's capacity in the SWP system.
- OCWD previously entered into a one-year contract with Western Water Company to purchase water from Northern California and plans to continue with similar contracts in the future.
- Wheeled water supplies are available for purchase through Metropolitan.
- Facilities to capture greater amounts of Santa Ana River Storm flows are being proposed and constructed such as recharge basins.
- OCWD continues to work with the Army Corps of Engineers to allow an increase in the water conservation pool level behind Prado Dam. An increase in the conservation pool level allows more storage of storm flows for later use as recharge water.

Orange County Sanitation Districts (OCSD) Projects

As mentioned earlier, OCSD supplies treated wastewater to OCWD for further treatment. OCWD relies on recycled water from OCSD's treatment facilities to protect the Basin through seawater intrusion barriers and landscape irrigation. OCSD in conjunction with OCWD have implemented the GWRS, beginning in October 2002 with OCWD and OCSD signing a Joint Exercise of Powers Agreement for the GWRS. The first phase is currently underway, which will treat wastewater to drinking water standards for direct injection into the existing seawater intrusion barrier and percolation through recharge basins in Anaheim, California.⁵¹ The project is scheduled to go online in 2007 and will maintain and improve the reliability of the region's water supply. Further discussion on water recycling is included in Section 8 of this Plan.

4.5 TRANSFER AND EXCHANGE OPPORTUNITIES

On a continuous basis, the City maintains seven connections to the Metropolitan system and nine emergency inter-city connections with surrounding communities. In aggregate,

⁵¹ Orange County Water District, *Draft 2002-2003 Engineer's Report on Groundwater conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2004

these connections have the ability to supply 56,100 gpm into the City distribution system if needed. The Metropolitan connections are typically operating as constant flow sources.

The City is currently exploring an opportunity in partnership with the City of Anaheim and MWDOC to transfer up to 10,000 AF of water from Northern California by 2006/07. The three agencies continue communications with the South Feather Water and Power Agency for a 10,000 AF water transfer for a two year period anticipated for 2006-2008. Deliveries would be made the months of October through December.

The City has not entered into any other agreements for transfer or exchange of water. Additionally, Metropolitan, OCWD and others are exploring options that would benefit the entire Orange County region. These exchanges were discussed earlier under proposed projects and are more specifically discussed in the Metropolitan 2005 UWMP and OCWD's 2004 Groundwater Management Plan.

4.6 DESALINATED WATER OPPORTUNITIES

Desalination is viewed as a way to develop a local, reliable source of water that assists agencies reduce their demand on imported water, reduce groundwater overdraft, and in some cases make unusable groundwater available for municipal uses. Currently, there are no identified City projects for desalination of seawater or impaired groundwater. However, from a regional perspective, desalination projects within the region indirectly benefit the City.

Department of Water Resources Desalination Task Force

Assembly Bill 2717 called for DWR to establish a Desalination Task Force to evaluate the following: 1) Potential opportunities for desalination of seawater and brackish water in California, 2) Impediments to using desalination technology, and 3) the role of the State in furthering the use of desalination.⁵² The task force comprised of 27 organizations and in October 2003 provided a list of recommendations related to the following issues: general, energy, environment, planning, and permitting.

Metropolitan's Seawater Desalination Program

In August 2001, Metropolitan launched its Seawater Desalination Program. The program objectives were to provide financial and technical support for the development of cost-effective seawater desalination projects that will contribute to greater water supply reliability. Metropolitan's IRP 2004 Update includes a target of 150,000 AFY for seawater desalination projects to meet future demands. A call for proposals, under the Seawater Desalination Program, produced five projects by member agencies including the Los Angeles Department of Water and Power, Long Beach Water Department, MWDOC, San Diego County Water Authority, and West Basin Municipal Water District. Collectively, the projects could produce approximately 126,000 AFY. This additional source of water supply would provide greater water reliability for Southern California residents.

⁵² DWR, California Water Plan Update 2005, Volume 2 – Resource Management Strategies

Metropolitan has also provided funding to five member agencies to research specific aspects of seawater desalination. The agencies are reviewing and assessing treatment technologies, pretreatment alternatives, brine disposal, permitting, and regulatory approvals associated with delivery of desalinated seawater to the local distribution system.⁵³ Metropolitan continues to work with its member agencies to develop local projects, inform decision makers about the role of desalinated sea water on future supplies, and secure funding from various state and federal programs.

Department of Water Resources Proposition 50 Funding

In January 2005, DWR received 42 eligible applications requesting \$71.3 million from funds available through Proposition 50. Proposition 50, the Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Act was passed by voters in 2002. Projects eligible for the program include construction projects, research and development, feasibility studies, pilot projects, and demonstration programs. Local agencies, water districts, academic and research institution will be able to use the funds in the development of new water supplies through brackish water and seawater desalination.

DWR is recommending funding for 25 of the 42 projects with the available \$25 million under the current desalination grant cycle. With this funding recommendation, 54 percent of the fund will support brackish water desalination related projects and 46 percent will support ocean desalination related projects. The projects recommended for funding include facilities in Marin, Alameda and San Bernardino counties. Pilot projects in Long Beach, Santa Cruz, San Diego and Los Angeles are among those that will receive grants under the proposed funding plan. Research and development activities at the Lawrence Livermore National Laboratory and the University of California, Los Angeles are included in the recommendations, as are feasibility studies by agencies in the Bay Area, Monterey, and Riverside County.

MWDOC and OCWD's Seawater Desalination Concept Analysis

MWDOC and OCWD conducted a study, *Seawater Desalination Concept Analysis*, in March 1999, to determine the relative cost-effectiveness of ocean desalting compared to other potential supplies. They continued to develop a program concept and in 2003 published their draft *Ocean Water Desalination Program Concept Development Paper (Concept Paper)*. The Concept Paper was prepared to provide the OCWD and MWDOC with additional information on potentially developing an ocean water desalter at the AES Huntington Beach Generating Station site, owned by AES Corporation.

The purpose was to outline the AES site opportunities and identify the key issues to be resolved before moving forward with planning and implementation efforts. The project continues to be conceptual in nature; however, the concept paper investigates the opportunities surrounding the planning and feasibility of ocean desalination in Orange

⁵³ Metropolitan Water District of Southern California, 2005 Regional Urban Water Management Plan

County using a specified site with existing infrastructure. The project concept is the development of a 50 MGD ocean water desalination plant to provide base water supply for the OCWD service area. A 50 MGD plant could be expected to produce 50,000 AFY.

The implementation of an ocean water desalination plant can reduce groundwater pumping levels in coastal OCWD and assist in refilling the groundwater basin. It could serve as an emergency backup supply for South Orange County as well as reduce the amount of water required for seawater barrier injection. Implementation of the ocean water desalination plant would require regulatory compliance, environmental stewardship stakeholder interface, and a lengthy completion schedule.

Proposed Projects for Desalination

In Orange County, there are three proposed ocean desalination projects that could serve the region, including one specifically that may benefit the City. The proposed projects are more thoroughly discussed in MWDOC's 2005 Regional UWMP and summarized below.

Poseidon Resources Corporation Proposed Project – Poseidon Resources Corporation, a private company, is proposing a seawater desalination project to be located adjacent to the AES Generation Power Plant in Huntington Beach. The proposed project would provide 50 MGD of water supply to coastal and south Orange County. In 2003, the City of Huntington Beach denied certification of the Environmental Impact Report (EIR). A Recirculated EIR was subsequently prepared. The project is currently in the environmental review and permitting phase and there are no contractual agreements in place for the purchase of water.

Joint San Diego/Orange County Proposed Regional San Onofre Project – This joint project is currently being investigated to determine project feasibility. The project size is anticipated to range from 50 – 150 MGD and utilize the decommissioned Unit 1 San Onofre Nuclear Generation Station cooling water inlet and outlet conduits for feedwater and brine disposal. The project may be implemented in 2020.

MWDOC Proposed Dana Point Ocean Desalination Project – MWDOC is currently investigating the feasibility of a desalination project in Dana Point adjacent to San Juan Creek. The feasibility study will evaluate feedwater supply, concentrated RO reject disposal, and energy. The recommended capacity is 25 mgd. MWDOC received DWR Proposition 50 funding in the amount of \$1,000,000 to investigate horizontal directional drilling with water well technology for use in constructing feedwater supply wells in the marine alluvial channel system.⁵⁴

⁵⁴ MWDOC 2005 Regional Urban Water Management Plan.

**SECTION 5
WATER USE PROVISIONS**

5.1 PAST, CURRENT AND PROJECTED WATER USE AMONG SECTORS

Table 5.1-1 shows the water use per classification for the City. No increase in water demand is anticipated for the City’s service area due to build-out of land use, and the declining trend in water consumption coupled with the increasing trend in population. The projected water use by sector reflects the water demand projections shown in Table 4.2-4 in Section 4.2.

**Table 5.1-1
Past, Current and Projected Water Use by Sector
Normal Water Year
(AF)**

Sector	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	20,569	16,684	19,300	20,430	21,500	22,790	22,880
Multi Family Residential	12,117	12,319	14,240	15,090	15,880	16,820	16,890
Commercial, Industrial, Institutional	13,436	12,139	14,030	14,870	15,650	16,570	16,650
Landscape	2,541	2,069	2,390	2,530	2,670	2,820	2,840
Recycled Water	146	168	190	210	220	230	230
Other	49	38	40	50	50	50	50
Subtotal	50,858	45,422	50,190	53,180	55,970	59,280	59,540
Unaccounted-for System Losses ^[1]	2,119	1,527	2,510	2,660	2,800	2,960	2,980
Total Water Use	50,977	44,944	52,700	55,840	58,770	62,240	62,520

Source: City of Santa Ana 2004/05 Data, Consumption by Class, 7/8/05; projections for 2010 through 2030 are broken down by sector in the same percentages as reflected in 2005 data. All figures rounded to nearest 10 AF; projections for recycled water and “other” are assumed to remain stable as shown in table

^[1] Actual losses for 2000 and 2005; future projections are based on an estimated average 5.0% (based on approximate average unaccounted for water losses over the past five years)

Unaccounted-for water is the difference between water production and water consumption and represents “lost” water. Unaccounted-for water occurs for a number of reasons:

- » Water lost from system leaking, i.e., from pipes, valves, pumps, and other water system appurtenances.
- » The City Fire Department performs hydrant testing to monitor the level of fire protection available throughout the City. The City Utilities Division performs hydrant flushing to eliminate settled sediment and ensure better water quality. Hydrant testing and flushing is not metered. However, this quantity of water is estimated and taken into consideration when calculating unaccounted-for water.
- » Water used by the Fire Department to fight fires. This water is also not metered.
- » Customer meter inaccuracies. Meters have an inherent accuracy for a specified flow range. However, flow above or below this range is usually registered at a lower rate. Meters become less accurate with time due to wear.

Table 5.1-2 shows the number of water service customers by sector for 2000 and 2005, and projections of customers through 2030. The number of service connections is anticipated to increase very slightly through 2030, consistent with the projected small increase in population.

**Table 5.1-2
Number of Water Service Connections by Sector**

Sector	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	39,244	38,951	39,000	39,000	39,000	39,000	39,000
Multi Family Residential	1,770	1,774	1,780	1,790	1,800	1,810	1,820
Commercial, Industrial, Institutional	4,969	4,969	4,970	4,980	4,990	4,995	5,000
Landscape	709	709	710	710	710	710	710
Recycled Water	13	13	13	13	13	13	13
Other	40	41	40	40	40	40	40
Total Connections	46,745	46,457	48,523	48,548	48,573	48,593	48,613

Source: City Utility records for 2005; 2000 total connections from records and breakdown by sector is estimated; all future projections are estimated based on current breakdown by sector.

SECTION 6 WATER DEMAND MANAGEMENT

6.1 INTRODUCTION

The City of Santa Ana recognizes water use efficiency as an integral component of current and future water strategy for its service area. Through the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), 14 Best Management Practices (BMPs) have been established. The City of Santa Ana is signatory to the MOU and actively implements the BMPs through policies, programs, rules, regulations and ordinances, and the use of devices, equipment and facilities that provide a significant reduction in water demand.

6.2 DETERMINATION OF DMM IMPLEMENTATION

As signatory to the MOU, the City has committed to a good faith effort in implementing the 14 cost-effective BMPs. "Implementation" means achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition, and to satisfy the commitment by the signatories to use good faith efforts to optimize savings from implementing BMPs as described in the MOU. A BMP as defined in the MOU is a "practice for which sufficient data are available from existing water conservation practices to indicate that significant conservation or conservation related benefits can be achieved; that the practice is technically and economically reasonable and not environmentally or socially unacceptable; and that the practice is not otherwise unreasonable for most water agencies to carry out." BMPs are to be implemented at a level of effort projected to achieve at least the coverages specified in each BMP's definition, and in accordance with each BMP's implementation schedule.

The 14 BMPs include technologies and methodologies that have been sufficiently documented in multiple demonstration projects that result in more efficient water use and conservation. Many of the BMPs are implemented by the City in coordination with Metropolitan and their regional conservation programs.

As signatory to the MOU, the City is responsible for completing and submitting BMP Activity Reports to the CUWCC every two years for each year prior. The City's BMP Activity Report is a comprehensive document that shows implementation of each BMP and provides a determination of implementation from the City's 2000 UWMP. The City has maintained complete compliance with all the BMPs to date. Appendix E includes the Annual Reports for 2001-2002, Activity Reports for 2003-2004, and the Coverage Reports. The Coverage Report indicates that the City is on track for meeting BMP coverage in its service area according to the MOU.

6.3 DEMAND MANAGEMENT MEASURES

As signatory to the MOU, the City has committed to use good-faith efforts to implement the 14 cost-effective BMPs established by the CUWCC. The 14 BMPs include:

1. Water survey programs for single-family residential and multifamily residential customers
2. Residential plumbing retrofit
3. System water audits, leak detection, and repair
4. Metering with commodity rates for all new connections and retrofit of existing connections
5. Large landscape conservation programs and incentives
6. High-efficiency washing machine rebate programs
7. Public information programs
8. School education programs
9. Conservation programs for commercial, industrial, and institutional accounts
10. Wholesale agency programs
11. Conservation pricing
12. Water conservation coordinator
13. Water waste prohibition
14. Residential ultra-low-flush toilet replacement programs

The City of Santa Ana continues to implement the 14 BMPs, as demonstrated by the completed BMP Activity Reports, Coverage Reports, and Annual Reports included in Appendix E. Collectively, these reports demonstrate the commitment to actively implement the BMPs in order to reduce overall water demand and assist in water reliability for the region.

SECTION 7 WATER SHORTAGE CONTINGENCY PLAN

7.1 INTRODUCTION

California's extensive system of water supply infrastructure, its reservoirs, groundwater basins, and inter-regional conveyance facilities, mitigates the effect of short-term dry periods. Defining when a drought begins is a function of drought impacts to water users. Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Droughts occur slowly, over a multiyear period. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

In order to meet short-term water demand deficiencies, and short- or long-term drought requirements, the City has implemented precautionary methods. The Water Utility has recently updated its Emergency Response Plan, which is component of the City's Disaster Services Plan. The City has nine emergency connections with neighboring cities to assist in short-term emergency situations. The City's supervisory control and data acquisition system enables operators to control wells and Metropolitan connections remotely from a central location. This system provides continuous monitoring and allows for the curtailment or startup of select production sources in the event of an emergency.

In addition, the City follows Metropolitan's adopted Water Surplus and Drought Management Plan (WSDM Plan). The WSDM Plan guides the management of regional water supplies to achieve the reliability goals of Southern California's Integrated Water Resource Plan.

7.2 STAGES OF ACTION

Rationing Stages and Reduction Goals

Santa Ana's Emergency Water Conservation Plan (EWCP) was passed by the City on March 6, 1991. A copy of the EWCP, Ordinance No. 2073, is attached as Appendix F. The purpose of the EWCP is to provide a guide to deal with extended water shortages in a timely and systematic manner. It provides procedures, rules, and regulations for mandatory water conservation that gain results while minimizing the effect of a water shortage on the City's water customers. The EWCP is a multi-function plan that guides conservation actions in a variety of emergencies including drought, earthquakes, fires, or other emergencies that can create water shortage conditions.

The City is fully dependent on Metropolitan and OCWD for its water supply. Confirmation of an extended water shortage emergency would generally be received from one or both of these agencies. An actual shortage does not have to exist; merely the threat of a shortage is sufficient cause to impose sanctions. In past droughts, actions taken by the governing boards of Metropolitan and OCWD have dictated the City's course of action.

When a water shortage appears imminent, the City Manager notifies the City Council and recommends holding a public hearing for the purpose of determining whether a water shortage emergency exists. If the City Council determines a water shortage exists, it then makes the decision as to the appropriate phase of the EWCP to implement. The Phase selection will be based on rationing or sanctions adopted by Metropolitan and/or OCWD.

The EWCP sets forth three basic implementation phases keyed to the severity of the water shortage as included in the Santa Ana Code shown as follows:

Section 39-106. Phase I: During water conservation Phase I no person shall:

- 1) Wash sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required to dispose of dangerous liquids or substances dangerous to the public health and safety.
- 2) Water lawn, landscape or other turf areas except between the hours of 4:00 p.m. and 10:00 a.m.
- 3) Use water to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures unless such water is part of a recycling system.
- 4) Serve drinking water to any customer unless expressly requested. Nor shall any restaurant, hotel, café, cafeteria or other public place where food is sold, served or offered for sale serve drinking water to any customer unless expressly requested.

Section 39-107. Phase II: During water conservation Phase II no person shall:

- 1) Violate the provisions of section 39-106, except that the restrictions on watering lawn, landscape or other turf areas shall be modified to prohibit watering more often than every other day and such areas shall only be watered between the hours of 6:00 p.m. and 6:00 a.m. This provision shall not apply to commercial nurseries and golf courses.
- 2) Water lawn, landscape or other turf areas shall be modified to prohibit watering more often than every other day and such areas shall only be watered between the hours of 6:00 p.m. and 6:00 a.m. There shall be no restriction on watering utilizing reclaimed water.
- 3) Make, cause, use or permit the use of water for any purpose in an amount in excess of ninety (90) percent of the amount used on that customer's premises during the corresponding billing period during the prior calendar year.

Section 39-108. Phase III: During water conservation Phase III no person shall:

- 1) Same as action 1 in Phase II.
- 2) Same as action 2 in Phase II.
- 3) Use water from fire hydrants except for fire fighting and related activities. Other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.

- 4) Make, cause, use or permit the use of water for any purpose in excess of eighty (80) percent of the amount used on the customer's premises during the corresponding billing period of the prior calendar year.

Each month the Water Utility shall monitor and evaluate the demand for water by customers and the projected available supply. Upon determination of potential or actual water shortage, the Director of Public Works shall recommend to the City Council the extent of the conservation phase required by customers in order for the Water Utility to prudently supply water to customers.

The City Council shall make findings of shortage and declare the conservation phase by resolution. The resolution shall specify the start date of the conservation phase. The resolution shall be published once in a daily newspaper of general circulation within the City and shall become effective immediately upon such publication. A draft resolution is included in Appendix G.

The City's EWCP appropriately includes percentage reductions listed as 90% and 80% in Phases II and III, respectively. The curtailment provision means a customer must reduce his demands to 90% (or 80 %) or less than his base year demands. Violations result in increased surcharges, written notices, installation of flow restrictors, and as a last resort, termination of water service. Since the provision includes the "or less" this allows the City to enforce a reduction of 50% for residential and/or total water demand in times of severe water shortages. A resolution will be adopted to implement the appropriate stage and consumption reduction percentage.

In order to meet short-term water demand deficiencies and short- or long-term drought requirements, the City will implement its EWCP, in response to and in coordination with Metropolitan's Water Surplus and Drought Management Plan.

Metropolitan's Water Surplus and Drought Management (WSDM) Plan

In 1999, Metropolitan in conjunction with its member agencies developed the WSDM Plan. This plan addresses both surplus and shortage contingencies.

The WSDM Plan will guide management of regional water supplies to achieve the reliability goals of Southern California's IRP. The IRP sought to meet long-term supply and reliability goals for future water supply planning. The WSDM Plan guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local resource programs.
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years.
- Pursue innovative transfers and banking programs to secure more imported water for use in dry years.
- Increase public awareness about water supply issues.

The WSDM Plan guides the operations of water resources (local resources, Colorado River, State Water Project, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions Metropolitan will take during surpluses and shortages of water to minimize the probability of severe shortages that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable, however, in the event of an extreme shortage an allocation plan will be adopted in accordance with the principles of the WSDM Plan.

The WSDM Plan distinguishes between *Surpluses*, *Shortages*, *Severe Shortages*, and *Extreme Shortages*. Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's capability to deliver water to the City.

Surplus: Metropolitan can meet full-service and interruptible program demands, and it can deliver water to local and regional storage.

Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program (IAWP) deliveries in accordance with IAWP.

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

The WSDM Plan also defines five surplus management stages and seven shortage management stages to guide resource management activities. Each year, Metropolitan will consider the level of supplies available and the existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to: 1) avoid an Extreme Shortage to the maximum extent possible; and 2) minimize adverse impacts to retail customers should an "Extreme Shortage" occur. The current sequencing outline in the WSDM Plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix. This sequencing may change as the resource mix evolves.

WSDM Plan Shortage Actions by Shortage Stage

When Metropolitan must make net withdrawals from storage, it is considered to be in a shortage condition. However, under most of these stages, it is still able to meet all end-use demands for water. The following summaries describe water management actions to be taken under each of the seven shortage stages.

Shortage Stage 1. Metropolitan may make withdrawals from Diamond Valley Lake.

Shortage Stage 2. Metropolitan will continue Shortage Stage 1 actions and may draw from out-of-region groundwater storage.

Shortage Stage 3. Metropolitan will continue Shortage Stage 2 actions and may curtail or temporarily suspend deliveries to Long Term Seasonal and Replenishment Programs in accordance with their discounted rates.

Shortage Stage 4. Metropolitan will continue Shortage Stage 3 actions and may draw from conjunctive use groundwater storage (such as the North Las Posas program) and the SWP terminal reservoirs.

Shortage Stage 5. Metropolitan will continue Shortage Stage 4 actions. Metropolitan's Board of Directors may call for extraordinary conservation through a coordinated outreach effort and may curtail Interim Agricultural Water Program deliveries in accordance with their discounted rates. In the event of a call for extraordinary conservation, Metropolitan's Drought Program Officer will coordinate public information activities with member agencies and monitor the effectiveness of ongoing conservation programs. The Drought Program Officer will implement monthly reporting on conservation program activities and progress and will provide quarterly estimates of conservation water savings.

Shortage Stage 6. Metropolitan will continue Shortage Stage 5 actions and may exercise any and all water supply option contracts and/or buy water on the open market either for consumptive use or for delivery to regional storage facilities for use during the shortage.

Shortage Stage 7. Metropolitan will discontinue deliveries to regional storage facilities, except on a regulatory or seasonal basis, continue extraordinary conservation efforts, and develop a plan to allocate available supply fairly and efficiently to full-service customers. The allocation plan will be based on the Board-adopted principles for allocation listed previously. Metropolitan intends to enforce these allocations using rate surcharges. Under the current WSDM Plan, the surcharges will be set at a minimum of \$175 per af for any deliveries exceeding a member agency's allotment. *Any deliveries exceeding 102% of the allotment will be assessed a surcharge equal to three times Metropolitan's full-service rate.*

The overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage. Given present resources, Metropolitan fully expects to achieve this goal over the next ten years.

Reliability Modeling of the WSDM Plan

Using a technique known as “sequentially indexed Monte Carlo simulation,” Metropolitan undertook an extensive analysis of system reservoirs, forecasted demands, and probable hydrologic conditions to estimate the likelihood of reaching each Shortage Stage through 2010. The results of this analysis demonstrated the benefits of coordinated management of regional supply and storage resources. Expected occurrence of a Severe Shortage is four percent or less in most years and never exceeds six percent; equating to an expected shortage occurring once every 17 to 25 years. An Extreme Shortage was avoided in every simulation run.

Metropolitan also tested the WSDM Plan by analyzing its ability to meet forecasted demands given a repeat of the two most severe California droughts in recent history. Hydrologic conditions for the years 1923–34 and 1980–91 were used in combination with demographic projections to generate two hypothetical supply and demand forecasts for the period 1999–2010. Metropolitan then simulated operation to determine the extent of regional shortage, if any. The results again indicate 100 percent reliability for full-service demands through the forecast period.

Allocation of Supply for M&I Demands

The equitable allocation of supplies is addressed by the Implementation Goals for the WSDM Plan, with the first goal being to “avoid mandatory import water allocations to the extent practicable.” The reliability modeling for the WSDM Plan discussed above results in 100 percent reliability for full-service demands through the year 2010. However, the second fundamental goal of the WSDM Plan is to “equitably allocate imported water on the basis of agencies’ needs.” Factors for consideration in establishing the equitable allocation include retail and economic impacts, recycled water production, conservation levels, growth, local supply production, and participation and investment in Metropolitan’s system and programs. In the event of an extreme shortage, an allocation plan will be adopted in accordance with the principles of the WSDM Plan.

In an effort to avoid allocation, import water reliability is planned through the Southern California IRP and the WSDM Plan. The IRP presents a comprehensive water resource strategy to provide the region with a reliable and affordable water supply for the next 25 years. The WSDM Plan will guide management of regional water supplies to achieve the reliability goals of the IRP.

Under a drought scenario, OCWD may have Metropolitan replenishment water temporarily unavailable to them for replenishment of the groundwater basin. OCWD would first attempt to purchase other water supplies at a similar cost to replace the Metropolitan source. If no alternative water supply sources are economically available, OCWD may temporarily mine the basin by increasing the BPP to meet local demand and refill it in the future. OCWD used this strategy during the later years of the 1986-92 drought period. If this option is not available, then OCWD may lower the current BPP to match the basin’s Dependable Yield. Under this last scenario, the City may request

increased imported water along with conservation and water use efficiency measures by customers to meet demand. The OCWD Master Plan Report, Chapter 14 – Basin Management Issues, further describes OCWD activities that may affect the City during a declared drought.

Health and Safety Requirements

The primary goal of the City’s water system is to preserve the health and safety of its personnel and the public. Meeting this goal is a continuous function of the system – before, during and after a disaster or water shortage. Fire suppression capabilities will continue to be maintained during any water shortage contingency stage. Some water needs are more immediate than others. The following list of public health needs and the allowable time without potable water is a guideline and will depend on the magnitude of the water shortage:

- Hospitals – continuous need
- Emergency shelters – immediate need
- Kidney dialysis – 24 hours
- Drinking water – 72 hours
- Personal hygiene, waste disposal – 72 hours

Based on commonly accepted estimates of interior residential water use in the United States, Table 7.2-1 indicates per capita health and safety water requirements. During the initial stage of a shortage, customers may adjust either interior and/or outdoor water use in order to meet the voluntary water reduction goal.

**Table 7.2-1
Per Capita Health and Safety Water Quantity Calculations**

	Non-Conserving Fixtures		Habit Changes ^[1]		Conserving Fixtures ^[2]	
Toilet	5 flushes x 5.5 gpf	27.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	5 min. x 4.0 gpm	20.0	4 min. x 3.0 gpm	12.0	4 min. x 2.5 gpm	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Other	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Total		68.0		48.0		37.5
CCF per capita per year		33.0		23.0		18.0

gpcd = gallons per capita per day

gpf = gallons per flush

gpm = gallons per minute

ccf = hundred cubic feet

^[1] Reduced shower use results from shorter/reduced flow. Reduced washer use results from fuller loads.

^[2] Fixtures include ULF 1.6 gpf toilets, 2.5 gpm showerheads, and efficient clothes washers.

Priority by Use

Conditions prevailing in the City area require that the water resources available be put to maximum beneficial use to the extent to which they are capable. The waste or unreasonable use, or unreasonable method of use, of water should be prevented and that water conservation and water use efficiency is encouraged with a view to the maximum reasonable and beneficial use thereof in the interests of the people of the City and for the public welfare. Preservation of health and safety will be a top priority for the City.

7.3 ESTIMATE OF MINIMUM SUPPLY FOR NEXT THREE YEARS

Metropolitan has projected 100 percent reliability for full-service demands through the year 2025. Additionally, through a variety of groundwater reliability programs conducted by OCWD and participated in by the City, local supplies are projected to be maintained at demand levels. The City anticipates the ability to meet water demand through the next three years based on the driest historic three-years as shown in Table 7.3-1.

Under the worst-case supply scenario, Metropolitan would curtail deliveries of potable water to the City by about 30 percent for three years consecutively, according to Stage VI of the mandatory rationing schedule found in the Metropolitan modified 1995 Incremental Interruption and Conservation Program (IICP). Projections for a 3-year minimum supply under a worst case supply projection are based on a projected 2006 base year supply of 52,760 AFY (obtained from Table 4.2-6). Table 7.3-1 shows the minimum supplies under this scenario, assuming that a major drought emergency occurs in the current year.

**Table 7.3-1
3-Year Estimated Minimum Water Supply Based on
Driest 3-Year Historic Sequence (AFY)**

Source	2005	Base Year	Multiple Dry Years ^[2]		
		2006	2006	2007	2008
Imported Water	16,003	21,320	20,200	19,630	19,970
Groundwater ^[1]	28,749	31,260	35,910	34,900	35,510
Recycled Water	168	150	150	150	150
Total^[3]	44,920	52,730	56,260	54,680	55,630

^[1] In 2004/05, OCWD set the BPP at 66%; in 2005/06, OCWD set the BPP at 64%

^[2] Assumes 64% BPP in 2006-2008

^[3] Total and breakdown for 2005 are actual demands; totals and breakdowns for other years are estimated supplies based on data obtained from Table 4.2-6

Reliability of water supplies is discussed in Section 1.4 Water Utility Division and Facilities, and Section 4 Water Reliability Planning. Supplies discussed include regionally beneficial programs, including management of water system pressures and peak demands, water exchanges or transfers, conjunctive use programs, recycled water projects and desalination. These options include programs for expanded local supplies. Additional actions to manage limited supplies would include both operational and demand management measures, encompassing alternative rate structures, distribution of water use efficiency devices, and enhanced school education and public information.

7.4 CATASTROPHIC SUPPLY INTERRUPTION PLAN

As presented earlier, the City's Emergency Water Conservation Plan, implemented through the approval of Ordinance No. NS-2073, considers earthquakes and other emergencies that can create water shortage conditions. The City is fully dependent on Metropolitan and OCWD for its water supply. Confirmation of an extended water shortage emergency would generally be received from one or both of these agencies.

The Water Utility's Emergency Response Plan identifies the immediate actions that the City will take to respond, in coordination with the City's Emergency Response Plan, to a declared water shortage. The City will work in close cooperation with Metropolitan and the Metropolitan Area Radio System (MARS) Network, an organization of water utilities within the service area of Metropolitan to immediately contact its customer agencies during an emergency about potential interruption of services. MARS is an emergency communications system to facilitate the flow of information, control, and exchange of materials and mutual aid within Metropolitan's service area. Metropolitan and its member agencies formed MARS to improve emergency response, provide alternate means of communication in emergencies, and expedite mutual aid. In the case that the Metropolitan Emergency Operations Center (MEOC) is activated, the MEOC will direct all coordination with member agencies

The Water Utility's ERP describes the organizational and operational policies and procedures required to meet the needs of sufficient water for firefighting operations and safe drinking water and provide a system for organizing and prioritizing water repairs. It also cites authorities and specifies the public and private organizations responsible for providing water service.

The Water Utility will operate under normal operating procedures until a situation is beyond its control. This includes implementation of any allocation plan passed on by Metropolitan, and water shortage contingency plans of OCWD.

If the situation is the Water Utility's control, the Water Operations Center (WOC) may be activated to better manage the situation. If the situation warrants, the City EOC may be activated at which time a water representative will be sent to the EOC to coordinate water emergency response with all other City department's emergency response.

In the event the EOC is activated, the City management Policy Group will set priorities. When the EOC is activated, the WOC will take its direction from the EOC. An EOC *Action Plan* will be developed in the EOC that will carry out the policies dictated by the *Policy Group*. The WOC will use the EOC *Action Plan* in determining its course of action. Coordination between the WOC and the EOC will be done by the Water Operations Manager (located in the WOC) and the representative located in the EOC under the direction of the *Public Works Chief* (located in the EOC).

If the situation is beyond the Water Utility and the City's control, additional assistance will be sought through coordination with MARS and the Water Emergency Response Organization of Orange County (WEROC) (previously known as VEPO – Volunteer Emergency Preparedness Organization) to facilitate an organized and effective response to the emergency including mutual aid.

Water Emergency Response Organization of Orange County (WEROC)

The City of Santa Ana Water Department actively participates in the Water Emergency Response Organization of Orange County (WEROC). WEROC performs coordination of information and mutual-aid requests among water agencies, and conducts disaster training exercises for the Orange County water community and with Metropolitan.

In 1983, the Orange County water community developed a *Water Supply Emergency Preparedness Plan* to respond effectively to disasters impacting the regional water distribution system. This plan was jointly funded by three regional water agencies: Coastal Municipal Water District, MWDOC, and OCWD, with the support and guidance from the Orange County Water Association (OCWA). The collective efforts of these agencies resulted in the formation of the countywide WEROC, which is unique in its ability to provide a single point of contact for representation of water agencies in Orange County during a disaster. The MWDOC 2000 Regional Urban Water Management Plan, Section 7, presents the details of WEROC.

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

7.5 PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS

In the occurrence of a drought, the City will select needed conservation practices in response to the drought condition and use appropriate public outreach to encourage all customers to reduce their water consumption during early phases of water conservation, and then to demand all customers to reduce their water consumption during severe or emergency phases of water conservation. Such practices include irrigation scheduling, exterior washing prohibition, and ornamental or recreational use prohibitions, as outlined in the Emergency Water Conservation Plan, Ordinance No-NS 2073, provided in Appendix F.

Penalties for Unreasonable Use and/or Wastage

In the event of unreasonable use or waste, the City reserves the right to impose penalties in addition to the financial incentives described below, including the right to install flow restrictors or shut-off supply. Penalties will be imposed through a three tier system.

- (1) *First Violation.* The director of public works or his designee shall issue a written notice of the fact of a first violation to the customer.
- (2) *Second Violation.* For a second violation during any one (1) proclaimed water shortage, the director of public works or his designee shall impose a surcharge in an amount equal to fifteen (15) percent of the customer's water bill.
- (3) *Third and Subsequent Violations.* For a third and each subsequent violation during any one (1) proclaimed water shortage, the director of public works or his designee shall install a flow-restricting device of one (1) gallon per minute capacity for services up to one and one-half (1½) inches size, and comparatively sized restrictors for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The department shall charge the customer the reasonable costs incurred for installing and for removing the flow-restricting device and any other penalties or charges due the city from the customer or due from any person who has applied for water service, shall be paid before normal service can be restored.

Relief from Compliance

A customer may file an application for relief from any provision of this section, which may include a request to be relieved, in whole or in part, from the water use curtailment provisions. In determining whether to grant relief, the following factors are taken into consideration:

- 1) Whether any additional reduction in water consumption will result in unemployment
- 2) Whether additional members have been added to the household

- 3) Whether any additional landscaped property has been added to the property since the corresponding billing period of the prior calendar year
- 4) Changes in vacancy factors in multifamily housing
- 5) Increased number of employees in commercial, industrial and governmental offices
- 6) Increased production requiring increased process water
- 7) Water uses during new construction
- 8) Adjustments to water use caused by emergency health or safety hazards
- 9) First filling of a permit-constructed swimming pool
- 10) Water use necessary for reasons related to family illness or health

Relief will only be considered after a customer has shown that he has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. Failure to provide information necessary for resolution of the request for relief will cause no relief to be granted.

7.6 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME THOSE IMPACTS

Actions and Conditions that Impact Revenues and Expenditures

Implementation of Phase I of the City's EWCP and conservation measures will result in reduced demands and, although expenditures for water purchases will also be reduced, it is anticipated that reduced revenue from water sales will occur. Therefore, the City's EWCP addresses the impact of reduced sales and revenues.

Rate Adjustment to Overcome Revenue Impacts

Since implementation of the City's EWCP and conservation measures will reduce demands and revenue, the City's EWCP has two provisions for handling shortfalls of revenue. The two provisions are described as follows:

- A. An Emergency Water Conservation Plan Fund is established within the Water Utility's account system to be used for the Water Utility's costs and expenses of administering and enforcing the EWCP and for any revenue shortfall due to water shortages and conservation measures. Monies collected from penalty surcharges and the Water Conservation Surcharge described below are placed in a fund. The fund may also be used to offset the cost of and provide a Council-approved citywide incentive for customer conservation efforts and retrofits.
- B. The City Council may adopt a system-wide Water Conservation Surcharge to make up for revenue shortages resulting from the implementation of the water conservation measures contained in the plan. Any funds collected are deposited in the Emergency Water Conservation Plan Fund described above. Implementation of

the Water Conservation Surcharge may be determined at the time of the water shortage emergency plan implementation or at a later time.

“Determining the Value of Water Supply Reliability in Orange County, California;” A Study on Economic Impacts of Water Shortages in Orange County

In September 2003, MWDOC partnered with the Orange County Business Council and prepared a report, *“Determining the Value of Water Supply Reliability in Orange County, California.”* The study provides insights into how to value water supply reliability by providing projected estimates of the economic impacts of different water shortages that could result in Orange County. The study does not assess the likelihood of different disruptions to water supply, but instead estimates the economic impacts of the resulting water shortages if a particular supply interruption occurs. Two types of shortages are examined in the study – short-term emergency disruptions and multiple-year droughts. A range of scenarios was examined for both situations. Those scenarios were:

- » Emergency Disruptions: Water supply reductions of 20%, 40%, 60%, and 80% for 10, 20, 30, and 60 days.
- » Drought: Water supply reductions of 5% and 20% for one, two, and three years.

The estimated economic impacts are separated into business impacts and residential impacts. Residential users are often required to reduce their water usage by more than business customers during water shortages to help preserve the economic base of the area. In addition to residential and business impacts, this report also includes an estimate of the value of landscape losses that would be expected during droughts, and a discussion of the impact of emergency outages on damages from firestorms due to a lack of water supply for firefighting.

The study has produced dollar estimates of economic impacts of given water shortages to both the business and residential sectors of three regions within Orange County. The water shortage scenarios analyzed included both short-term emergency disruptions (10 to 60 days in duration) and multiple-year drought situations (1 to 3 years). The three regions of the County analyzed were defined based on the availability of local supplies and the potential risk of supply reliability impacts.

The results revealed that business impacts are larger than residential impacts. For short-term, emergency disruptions, the difference between business impacts and residential impacts varies depending on the magnitude and length of a shortage. For an 80% water loss in South Orange County for 60 days, business impacts are approximately five times as large as residential impacts. For a 20% water loss in the Basin, business impacts are approximately ten times as large as resident impacts. At low levels of water disruption, resident impacts more closely approximate business impacts. For example, the residential impacts from a 20% water loss for 10 days in South Orange County are about 75% of the business impacts from the same disruption.

For all of Orange County during an emergency outage that causes a 20% water supply shortfall and lasts from 10 to 60 days, the economic impacts range from \$0.4 to \$3 billion. Employment losses were estimated at 3,000 to 23,000 over the 10—60 days. For all of Orange County during a drought that results in a 5% shortage to the Basin area and 20% shortage outside the basin area for a 1 to 3 year period, the economic impacts range from \$15 to \$43 billion. Employment losses were estimated at 75,000 to 225,000 over the one to three-year period.

If shortages were to occur:

- South Orange County would experience approximately 12% of the business and employment impacts, but 25% of the residential and landscape losses. South Orange County has a higher dependence on imported water supplies and hence is more vulnerable to supply outages.
- The Orange County Basin would experience 84% of the business impacts and 71% of the residential and landscape losses, but has a significant supply of water available from the groundwater basin and hence is somewhat insulated from imported water supply emergency disruptions.
- Brea/La Habra area would experience about 3% of all impacts.

Drought scenarios generally cause a higher level of impact than do emergency outages and exceed all but the worst-case emergency disruptions. The exception is a 60-day 60% reduction in water supplies to the Basin business sector, which would exceed the impact of a yearlong 5% drought in the Basin. (20% reduction in imported supply assuming a 75% BPP.) In most scenarios, about ½ of the business losses are in the manufacturing and service sectors. Employment losses are highest in services and retail throughout the County.

This report provides extensive insight into the City's water reliability and water shortage contingency plan for planning for the future. This report demonstrates the extensive importance to the City's water reliability and water shortage contingency plan for planning for the future. If such impacts occur in the residential and business community, the municipal community will be impacted correspondingly. Economic impacts to the community create economic impacts to the City revenue from water sales, among other City revenue sources. The City must and will continue to be diligent in maintaining appropriate water rates and rate structure, and making reasonable adjustments as justified; maintaining sufficient water reserve funds; and managing expenses accordingly.

7.7 WATER SHORTAGE CONTINGENCY ORDINANCE AND DRAFT RESOLUTION

Santa Ana's Emergency Water Conservation Plan (EWCP) was passed by the City on March 6, 1991. The purpose of the ECWP is to provide a permanent mechanism that allows the City to deal with extended water shortages in a timely and systematic manner.

It provides procedures, rules, and regulations for mandatory water conservation that gain results while minimizing the effect of a water shortage on the City's water customers. It helps ensure that, at a minimum, there will be a sufficient supply of water available for domestic use, sanitation, and safety. A copy of the EWCP is included in Appendix F.

Additionally, during an extended water shortage, the City Council will adopt by resolution the water shortage implementation stage. A Draft Resolution to implement stages of the EWCP is included in Appendix G.

7.8 MECHANISM TO DETERMINE REDUCTIONS IN WATER USE

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

As stages of water shortage are declared by Metropolitan, the City will follow implementation of those stages and continue to monitor water demand levels. It is not until Shortage Stage 5 that Metropolitan may call for extraordinary conservation. During this stage, Metropolitan's Drought Program Officer will coordinate public information activities and monitor the effectiveness of ongoing conservation programs. Monthly reporting on estimated conservation water savings will be provided.

The City will also participate in regular member agency meetings with OCWD to monitor and discuss monthly water allocation charts. This will enable the City to be aware of groundwater conditions on a timely basis, and when combined with response to import water conditions, will result in specific actions taken responding to the City's EWCP.

Specifically, the City's EWCP includes the following measures to monitor the Implementation of Water Conservation Phases:

- 1) Monthly monitoring and evaluation of water demand and the projected available supply. Upon determination of potential or actual shortage, a recommendation to the City Council is made on the extent of the conservation phase required.
- 2) The City Council adopts a resolution making the findings and specify the start date of the conservation phase.

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SECTION 8 WATER RECYCLING

8.1 RECYCLED WATER IN SOUTHERN CALIFORNIA

The Southern California region, from Ventura to San Diego, discharges over 1 billion gallons of treated wastewater to the ocean each day. This is considered a reliable and drought-proof water source and could greatly reduce the area and City's reliance on imported water. As technological improvements continue to reduce treatment cost, and as public perception and acceptance continue to improve, numerous reuse opportunities should develop. Recycled water is a critical part of the California water picture because of the strong drought potential and as technology continues to improve, demand continues to increase for its use.

8.2 COORDINATION OF RECYCLED WATER IN SERVICE AREA

Recycled water is defined as domestic wastewater purified through primary, secondary and tertiary treatment. Recycled water is acceptable for most non-potable water purposes such as irrigation and commercial and industrial processes. Although the City has not completed a recycled water master plan, the City recently completed a sewer master plan in September 2003.

The City maintains an agreement with the OCWD to supply Green Acres Project (GAP) water to customers where available. The City has limited recycled water infrastructure in the south part of the city, and it is not anticipated to be expanded in the 25-year planning horizon. Additionally, the GAP has experienced limitations of recycled water production and has been unable to meet the local agency projections.

Although the City serves a limited supply of recycled water, approximately 150 AFY, the City supports regional efforts to increase the use of recycled water. Because the City produces a majority of its water supply from the groundwater basin, the City benefits from the actions of OCWD using recycled water to protect the Basin through seawater intrusion barriers and groundwater recharge basins. The City, therefore, indirectly benefits from this regional use of recycled water. The regional projects are discussed later in this section.

8.3 WASTEWATER COLLECTION AND TREATMENT

Wastewater from the City's water service area is collected and treated by OCSA. The City operates and maintains the localized sewer branches that feed into OCSA's trunk system from the City. The City sewer system includes 390 miles of sewer lines, 7,630 manholes and 2 lift stations. OCSA operates the third largest wastewater system on the west coast, consisting of nearly 600 miles of trunk sewers and 200 miles of subtrunk sewers, two regional treatment plants, and an ocean disposal system.

The OCSD sewerage system collects wastewater through an extensive system of gravity flow sewers, pump stations, and pressurized sewers (force mains). The sewer system consists of 12 trunk sewer systems ranging in size from 12 to 96 inches in diameter and collectively over 500 miles long. Additionally, there are 39 sewer interconnections and 87 diversions to maximize conveyance of flows through the system. Twenty pump stations are used to pump sewage from lower lying areas to the treatment plants.

Orange County Sanitation Districts (OCSD) Treatment Plants

OCSD's Reclamation Plant No. 1 is located in the City of Fountain Valley about 4 miles northeast of the ocean and adjacent to the Santa Ana River. The plant provides advanced primary and secondary treatment and supplies secondary treatment water to OCWD which further treats and distributes the water for various uses, including irrigation, groundwater recharge, and operation of the coastal seawater barrier system.

The treatment process at Reclamation Plant No. 1 includes secondary treatment through an activated sludge system. This plant receives raw wastewater from six major sewer pipes, often called "interceptors" or "trunk lines." The secondary effluent is either blended with the advanced primary effluent and routed to the ocean disposal system, or is sent to the OCWD facilities for advanced treatment and recycling. The solid materials removed in the treatment systems are processed in large tanks to facilitate natural decomposition. Half of the material is converted to methane, which is burned as fuel in the energy recovery system, and the remaining solids are used as a soil amendment or fertilizer in Kern, Kings, Riverside, and San Diego Counties.

OCSD's Treatment Plant No. 2 is located in the City of Huntington Beach adjacent to the Santa Ana River and about 1,500 feet from the ocean. This plant provides a mix of advanced primary and secondary treatment. The plant receives raw wastewater through five major sewers. The treatment process is similar to Plant No. 1. Approximately 33 percent of the influent receives secondary treatment through an activated sludge system, and all of the effluent is discharged to the ocean disposal system.

OCSD's treated wastewater is discharged through a 120-inch outfall at a depth of approximately 200 feet below sea level and nearly five miles offshore from the mouth of the Santa Ana River. Its high tide hydraulic capacity is 480 mgd. A 78-inch standby outfall stretches approximately one mile from shore that is used for emergency purposes. Table 8.3-1 projects the treated wastewater discharged to the ocean from Treatment Plant No. 1 and 2.

**Table 8.3-1
Wastewater Discharged to the Ocean
(AFY)**

Year	Wastewater Discharged to the Ocean
2005	249,678
2010	197,055
2015	217,209
2020	200,414
2025	200,414
2030	200,414

Source: MWDOC 2005 Regional UWMP

Current capacity for Reclamation Plant No. 1 is 218 million gallons per day (mgd) of wastewater, with an average day flow of 120 mgd. Current capacity for Plant No. 2 is 168 mgd of wastewater, with an average flow of 144 mgd.⁵⁵ The City provides a significant amount of wastewater to OCSD's plants. The quantities of wastewater generated are generally proportional to the population and the water use in the service area. Estimates of the wastewater flows in the City are included in Table 8.3-2. The wastewater flows were calculated using the population projections included in Section 1.

**Table 8.3-2
Wastewater Generated Within the City
(AFY)**

Year	Unit Flow Coefficient (gpcd) ¹	Wastewater Generated by the City
2000	104	39,300
2005	106	41,550
2010	109	43,850
2015	112	45,590
2020	115	47,320
2025	115	47,600
2030	115	47,590

¹ The OCSD Interim Strategic Plan Update, September 2002. Years 2025 and 2030 were assumed to be the same as 2020.

8.4 REGIONAL RECYCLED WATER PLANNING

Since the City depends on groundwater for at least 64 percent of its total water supply, the City supports the efforts of the regional water management agencies to utilize recycled water in Orange County. Recycled water is used to protect the Basin through

⁵⁵ MWDOC 2005 Regional Urban Water Management Plan.

recharge and prevention of saltwater intrusion. Recycled water in Orange County is also used to irrigate crops, golf courses, parks, schools, business landscapes, residential lawns, and some industrial uses thus offsetting potable water demands. In 2003/2004, over 10,000 AF of recycled water was applied by water retailers in the County.⁵⁶ The regional projects planned or currently used to provide recycled water are discussed in the following sections.

Green Acres Project (GAP)

OCSD produces recycled water year round for OCWD's Green Acres Project (GAP), providing recycled water for industrial customers and landscape irrigation in the cities of Santa Ana, Fountain Valley, Costa Mesa, and Newport Beach. The GAP has the capacity to treat up to 7.5 mgd of recycled water.

Water Factory 21

Although currently offline due to the construction of the GWRS, Water Factory 21 had been used by OCWD since 1976 to produce recycled water for injection into the groundwater basin to protect against seawater intrusion. Water Factory 21 purified approximately 4 mgd of recycled water and deep well water. This blended water supplied a hydraulic barrier system that consisted of a series of injection wells, located approximately four miles inland, to produce a fresh water mound within the groundwater aquifer to block further passage of seawater. The GWRS will replace Water Factory 21 and continue to provide recycled water for injection into the basin.

Southern California Comprehensive Water Reclamation and Reuse Study (SCCWRRS)

In 1993, the DWR, in cooperation with the U.S. Bureau of Reclamation (USBR) and seven southern California water agencies, including Metropolitan, undertook a study to evaluate the feasibility of a regional water reclamation plan. The Southern California Comprehensive Water Reclamation and Reuse Study (SCCWRRS) is a six-year effort to identify regional reclamation systems, and promote efficient use of total water resources by increasing the use of recycled water and identifying opportunities for and constraints to maximizing water reuse in Southern California.

Based upon draft findings of the SCCWRRS, a regional water recycling system that spans the entire study area is not practical or feasible; however, subregional systems warrant further evaluation. Orange County and the Lower Santa Ana River Watershed has been identified as one of the four geographical regions, and is being examined for a regional water recycling system for short-term (2010) and long-term (2040) applications.

⁵⁶ OCWD, 2003-2004 Engineer's Report, February 2005.

OCWD/OCSD Groundwater Replenishment System (GWRS)

The most immediate potential use for recycled water in Orange County is for groundwater basin recharge. To supplement regional water recycling projects such as the Green Acres Project, the GWRS (a groundwater recharge project) jointly sponsored by OCWD and OCSD is being implemented.

The GWRS is a water supply project designed to ultimately reuse approximately 110,000 AFY of advanced treated wastewater. The first phase is currently underway and is scheduled to go online in 2007. The first phase anticipates treating 61,000 AFY in 2007/08, 68,000 AFY in 2008/09, and eventually 72,000 AFY.⁵⁷ Timing of future phases will be determined by projected flow requirements for anticipated water demands.

The objective of the project is to develop a new source of reliable, high quality, low salinity water that will be used to replenish the Basin and expand the existing seawater intrusion barrier. The GWRS supplements existing water supplies, and provides a new, cost-effective and reliable source of water to recharge the Basin, protect the Basin from further degradation due to seawater intrusion, and augment the supply of recycled water for irrigation and industrial use. Thus, the GWRS is comprised of three major components: (1) Advanced Water Purification Facilities (AWPF) and pumping stations; (2) a major pipeline connecting the treatment facilities to existing recharge basins; and (3) expansion of an existing seawater intrusion barrier.

The GWRS will take secondary, treated municipal wastewater from the OCSD Treatment Plant No. 1 in Fountain Valley and further cleans this water to levels that exceed current drinking water standards. A portion of the treated product water would be pumped upstream via a major conveyance pipeline generally paralleling the Santa Ana River to the OCWD spreading basins where it would be allowed to percolate into the Basin. The treated water will also be injected into the ground to create an expanded seawater intrusion barrier.

A small portion of the treated water will be made available to supplement the irrigation demands of OCWD's existing GAP. Some of the treated water may also be made available for use as industrial process water, irrigation water or for other approved uses in industrial areas, business parks, golf courses, and parks located near the Santa Ana River pipeline alignment.

8.4.1 Current and Projected Recycled Water Use

The City currently provides limited recycled water in the south part of the City, which is provided by OCWD's GAP. Projected recycled water use is anticipated to remain constant since City infrastructure for recycled water is not expected to be expanded and the GAP is not expected to produce additional water to meet local agency future projections. The community is essentially built-out, therefore new recycled water mains

⁵⁷ Orange County Water District, Long Term Facilities Plan, Draft October 2005.

are not proposed. New users of recycled water are limited to those that can connect directly to the existing distribution system.

Table 8.4.1-1 shows the comparison 2000 projection of recycled water use by 2005 to the actual recycled water use in 2005, as well as projections to 2030. In 2000, the City estimated that approximately 480 AF of recycled water would be used within the service area. A large use of recycled water, a carpet dye company, is no longer utilizing recycled water due to a lack of water quality controls. The loss of this customer significantly reduced the demand for recycled water in the City.

**Table 8.4.1-1
Current and Projected Recycled Water Use
(AF)**

Current Users	2005		2010	2015	2020	2025	2030
	Projected in 2000	Actual Use					
Landscape Irrigation	480	168	150	150	150	150	150
Total Recycled Water Use	480	168	150	150	150	150	150

8.4.2 Potential Uses of Recycled Water

While the City recognizes the potential uses of recycled water in its community, such as landscape irrigation, parks, industrial and other uses, OCWD does not have the recycled water infrastructure to support additional use of recycled water within the City. Therefore, the City will continue to serve its current recycled water customers, and will support, encourage and contribute to the continued development of recycled water and potential uses throughout the region through the GWRS.

8.4.3 Encouraging Recycled Water Use

Studies of water recycling opportunities within southern California provide a context for promoting the development of water recycling plans. It is recognized that broad public acceptance of recycled water requires continued education and public involvement. However, planning for most of the recycled water available is being directed toward replenishment of the groundwater basin and improvements in groundwater quality. As a user of groundwater, the City supports the efforts of OCWD and OCSD to utilize recycled water as a primary resource for groundwater recharge in Orange County.

Public Education

The City participates in the MWDOC public education and school education programs, which include extensive sections on water recycling. MWDOC's water use efficiency public information programs are a partnership with agencies throughout the county.

Through a variety of public information programs, MWDOC reaches the public, including those in the City, with accurate information regarding present and future water supplies, the demands for a suitable quantity and quality of water, including recycled water, and the importance of implementing water efficient techniques and behaviors. Through MWDOC, water education programs have reached thousands of City students with grade-specific programs that include information on recycled water. From 2000/01 to 2004/05, 471 school education presentations were made in the City reaching 43,380 students. Eight schools are expected to participate between September 2005 and June 2006 with over 6,150 students in attendance.

Financial Incentives

The implementation of recycled water projects involves a substantial upfront capital investment for planning studies, environmental impact reports, engineering design and construction before there is any recycled water to market. For some water agencies, these capital costs exceed the short-term expense of purchasing additional imported water supplies from Metropolitan.

The establishment of new supplemental funding sources through federal, state and regional programs now provides significant financial incentives for local agencies to develop and make use of recycled water. Potential sources of funding include federal, state and local funding opportunities. These funding sources include the USBR, California Proposition 50 Water Bond, and Metropolitan Local Resources Program. These funding opportunities may be sought by the City or possibly more appropriately by regional agencies. The City will continue to support seeking funding for regional water recycling projects and programs.

8.4.4 Optimizing Recycled Water Use

In Orange County, the majority of recycled water is used for irrigating golf courses, parks, schools, business and communal landscaping. However, future recycled water use can increase by requiring dual piping in new developments, retrofitting existing landscaped areas and constructing recycled water pumping stations and transmission mains to reach areas far from the treatment plants. Gains in implementing some of these projects have been made throughout the county; however, the additional costs, large energy requirements and facilities to create such projects is very expensive to pursue.

To optimize the use of recycled water, a cost/benefit analysis must be conducted for each potential project. Once again, this brings about the discussion on technical and economic feasibility of a recycled water project requiring a relative comparison to alternative water supply options. For the City, analysis has shown capital costs exceed the short-term expense of purchasing additional imported water supplies from Metropolitan. Except for some limited irrigation expansion it is not anticipated that direct reuse projects will be pursued by the City.

The City will continue to conduct cost/benefit analyses for recycled water projects, and seek creative solutions and a balance to recycled water use, in coordination with OCWD, Metropolitan and other cooperative agencies. These include solutions for funding, regulatory requirements, institutional arrangements and public acceptance.

APPENDIX A

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT OF 1983 AS AMENDED TO 2005

Established: AB 797, Klehs, 1983

Amended: AB 2661, Klehs, 1990

AB 11X, Filante, 1991

AB 1869, Speier, 1991

AB 892, Frazee, 1993

SB 1017, McCorquodale, 1994

AB 2853, Cortese, 1994

AB 1845, Cortese, 1995

SB 1011, Polanco, 1995

AB 2552, Bates, 2000

SB 553, Kelley, 2000

SB 610, Costa, 2001

AB 901, Daucher, 2001

SB 672, Machado, 2001

SB 1348, Brulte, 2002

SB 1384, Costa, 2002

SB 1518, Torlakson, 2002

AB 105, Wiggins, 2004

SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6 PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require

specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The

components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

- (2) Each urban water supplier shall 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.
- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
- (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

- (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
- (c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

- (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
- (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
 - (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part

2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

- (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department 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.

- (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
- (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

- (1) An average water year.
- (2) A single dry water year.
- (3) Multiple dry water years.

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.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)

- (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

- (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, or conjunctive use, or any combination thereof.
 - (I) Agricultural.
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).
- (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
- (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
 - (A) Water survey programs for single-family residential and multifamily residential customers.
 - (B) Residential plumbing retrofit.
 - (C) System water audits, leak detection, and repair.
 - (D) Metering with commodity rates for all new connections and retrofit of existing connections.
 - (E) Large landscape conservation programs and incentives.
 - (F) High-efficiency washing machine rebate programs.
 - (G) Public information programs.
 - (H) School education programs.
 - (I) Conservation programs for commercial, industrial, and institutional accounts.
 - (J) Wholesale agency programs.
 - (K) Conservation pricing.
 - (L) Water conservation coordinator.
 - (M) Water waste prohibition.
 - (N) Residential ultra-low-flush toilet replacement programs.
 - (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
 - (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
 - (4) 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 supplier's ability to further reduce demand.
- (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being

implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

- (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
- (2) Include a cost-benefit analysis, identifying total benefits and total costs.
- (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
- (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year

increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
- (b) 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.
- (c) 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.
- (d) 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.
- (e) 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.
- (f) Penalties or charges for excessive use, where applicable.

- (g) 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.
- (h) A draft water shortage contingency resolution or ordinance.
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- (a) A description of 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.
- (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
- (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
- (e) 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 pursuant to this subdivision.
- (f) A description of 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.
- (g) 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.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare 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. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the 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. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time

and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if

the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657.

(a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

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APPENDIX B

2005 URBAN WATER MANAGEMENT PLAN “REVIEW FOR COMPLETENESS” FORM



Service Area Information

Water Code § 10631 (a)

- Include current and projected population Sec 1, p.1-2 Reference & Page Number
- Population projections were based on data from state, regional or local agency Sec 1, p.1-2,4 Reference & Page Number

Table 2						
Population - Current and Projected						
	2005	2010	2015	2020	2025	2030 - opt
Service Area Population	337,997	350,625	359,823	368,026	370,196	370,130

- Describe climate characteristics that affect water management Sec 1, p.1-3 Reference & Page Number
- Describe other demographic factors affecting water management Sec 1, p.1-3 Reference & Page Number

Table 3						
Climate						
	January	February	March	April	May	June
Standard Average ETo						
Average Rainfall	3.04	2.74	2.22	0.93	0.21	0.07
Average Temperature	68.1	69.4	70.2	72.7	74.5	77.8

Table 3 (continued)							
Climate							
	July	August	September	October	November	December	Annual
Average ETo							0
Average Rainfall	0.01	0.08	0.25	0.25	1.36	1.75	12.91
Average Temperature	82.7	84.1	83.6	79.3	73.7	68.8	75.4

Water Sources		(Water Code § 10631 (b))	
<input checked="" type="checkbox"/>	Identify existing and planned water supply sources	<u>Sec 2, p.2-1</u>	Reference & Page Number
<input checked="" type="checkbox"/>	Provide current water supply quantities	<u>Sec 2, p.2-3</u>	Reference & Page Number
<input checked="" type="checkbox"/>	Provide planned water supply quantities	<u>Sec 2, p.2-3</u>	Reference & Page Number

Table 4 Current and Planned Water Supplies - AFY						
Water Supply Sources	2005	2010	2015	2020	2025	2030 - opt
Water purchased from:						
Metropolitan Water District of Southern California - Imported	14,572	19,630	20,140	22,340	22,260	21,030
Orange County Water District - Groundwater	34,000	35,030	37,120	39,070	41,390	41,570
Orange County Sanitation District - Recycled	150	150	150	150	150	150
Total	48,722	54,810	57,410	61,560	63,800	62,750

If Groundwater identified as existing or planned source		(Water Code §10631 (b)(1-4))	
<input type="checkbox"/>	Has management plan	_____	Reference & Page Number
<input type="checkbox"/>	Attached management plan (b)(1)	_____	Reference & Page Number
<input checked="" type="checkbox"/>	Description of basin(s) (b)(2)	<u>Sec 2, p.2-4</u>	Reference & Page Number
<input type="checkbox"/>	Basin is adjudicated	_____	Reference & Page Number
<input type="checkbox"/>	If adjudicated, attached order or decree (b)(2)	_____	Reference & Page Number
<input type="checkbox"/>	Quantified amount of legal pumping right (b)(2)	_____	Reference & Page Number

Table 5 Groundwater Pumping Rights - AF Year	
Basin Name	Pumping Right - AFY
Orange County Groundwater Basin (Coastal Plain of Orange County)	Managed Basin
Total	0

<input checked="" type="checkbox"/>	DWR identified, or projected to be, in overdraft (b)(2)	<u>Sec 2, p. 2-5</u>	Reference & Page Number
<input checked="" type="checkbox"/>	Plan to eliminate overdraft (b)(2)	<u>Sec 2, p. 2-5</u>	Reference & Page Number
<input checked="" type="checkbox"/>	Analysis of location, amount & sufficiency, last five years (b)(3)	<u>Sec 2, p.2-9</u>	Reference & Page Number
<input checked="" type="checkbox"/>	Analysis of location & amount projected, 20 years (b)(4)	<u>Sec 2, p.2-9</u>	Reference & Page Number

Table 6 Amount of Groundwater pumped - AFY					
Basin Name (s)	2000	2001	2002	2003	2004
Orange County Groundwater Basin (Coastal Plain of Orange County)	38,419.6	43,268.5	27,717.3	29,714.6	28,043.0
% of Total Water Supply	75.0%	86.0%	56.0%	63.0%	58.0%

Table 7 Amount of Groundwater projected to be pumped - AFY					
Basin Name(s)	2010	2015	2020	2025	2030 - opt
Orange County Groundwater Basin - based on demand	34,920	37,020	38,970	41,290	41,470
% of Total Demand	70%	70%	70%	70%	70%
% of Total Water Supply	63.7%	64.5%	63.3%	64.7%	66.1%

Reliability of Supply

(Water Code §10631 (c) (1-3)

Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage

Sec. 4,4-1,27 Reference & Page Number

Table 8 Supply Reliability - AF Year					
Average / Normal Water Year (2006)	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
52,730	53,250	57,610	56,110	56,280	
% of 2006 Normal	101.0%	109.3%	106.4%	106.7%	0.0%
% of Normal for Each Year	101.0%	107.1%	103.4%	102.7%	0.0%

Table 9 Basis of Water Year Data			
Water Year Type	Year	Source name	Source name
Average Water Year	2001/2004	City of SA	
Single-Dry Water Year	1977	MWD of SC	
Multiple-Dry Water Years	1990-92	MWD of SC	

Sec 4, p.4-19 Reference & Page Number

Sec 4, p.4-15 Reference & Page Number

Sec 4, p.4-15 Reference & Page Number

Water Sources Not Available on a Consistent Basis

(Water Code §10631 (c))

- Describe the reliability of the water supply due to seasonal or climatic shortages Sec 4, p.4-27 Reference & Page Number
- Describe the vulnerability of the water supply to seasonal or climatic shortages Sec 4, p.4-27 Reference & Page Number
- No unreliable sources Sec 4, p.4-27 Reference & Page Number

Table 10 Factors resulting in inconsistency of supply				
Name of supply	Legal	Environmental	Water Quality	Climatic

- Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs _____ Reference & Page Number
- No inconsistent sources Sec 4, p.4-1 Reference & Page Number

Transfer or Exchange Opportunities

(Water Code §10631 (d))

- Describe short term and long term exchange or transfer opportunities Sec 4, p.4-35 Reference & Page Number
- No transfer opportunities _____ Reference & Page Number

Table 11 Transfer and Exchange Opportunities - AF Year					
Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
Anaheim, MWDOC & No Calif	Transfer	X	10,000 AF		
Total			0		0

Identify and quantify additional water uses

Sec 5, p.5-1 Reference & Page Number

Table 14 Additional Water Uses and Losses - AF Year							
Water Use	2000	2005	2010	2015	2020	2025	2030 - op
Unaccounted for System Losses	2,119	1,527	2,510	2,660	2,800	2,960	2,980
Total	2,119	1,527	2,510	2,660	2,800	2,960	2,980

Any recycled water was included in table 12 should not be included in table 14.

Table 15 Total Water Use - AF Year							
Water Use	2000	2005	2010	2015	2020	2025	2030 - op
Total of Tables 12, 13, 14	50,977	44,944	52,700	55,840	58,770	62,240	62,520

2005 Urban Water Management Plan "Review of DMMs for Completeness" Form

(Water Code §10631 (f))

(Water Code §10631 (f) & (g), the 2005 Urban Water Management Plan "Review of DMMs for Completeness" Form is found on Sheet 2

Planned Water Supply Projects and Programs, including non-implemented DMMs

(Water Code §10631 (g))

No non-implemented / not scheduled DMMs

Sec 6, p.6-1 Reference & Page Number

Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors)

_____ Reference & Page Number

Cost-Benefit analysis includes total benefits and total costs

_____ Reference & Page Number

Identifies funding available for Projects with higher per-unit-cost than DMMs

_____ Reference & Page Number

Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners

Sec 6, p.6-1 Reference & Page Number

Table 16 Evaluation of unit cost of water resulting from non-implemented / non-scheduled DMMs and planned water supply project and programs	
Non-implemented & Not Scheduled DMM / Planned Water Supply Projects (Name)	Per-AF Cost (\$)

If Supplier receives or projects receiving water from a wholesale supplier

(Water Code §10631 (k))

Yes

- Agency receives, or projects receiving, wholesale water Sec 4, p.4-20 Reference & Page Number
- Agency provided written demand projections to wholesaler, 20 years Sec 2, p.2-3 Reference & Page Number

Table 19 Agency demand projections provided to wholesale suppliers - AFY					
Wholesaler	2010	2015	2020	2025	2030 - opt
Metropoitan WD of So Calif	15,010	15,910	16,750	17,740	17,820
(name 2)					
(name 3)					

- Wholesaler provided written water availability projections, by source, to agency, 20 years Sec 4, p.4-16 Reference & Page Number
(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 20 Wholesaler identified & quantified the existing and planned sources of water- AFY					
Wholesaler sources	2010	2015	2020	2025	2030 - opt
Imported Water	19,630	20,140	22,340	22,260	21,030
(source 2)					
(source 3)					

- Reliability of wholesale supply provided in writing by wholesale agency Sec 4, p.4-16 Reference & Page Number
(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 21 Wholesale Supply Reliability - % of normal AFY					
Wholesaler sources	Multiple Dry Water Years				
	Single Dry	Year 1	Year 2	Year 3	Year 4
Imported Water	106.5%	98.2%	98.2%	98.2%	
(source 2)					
(source 3)					

Table 22 Factors resulting in inconsistency of wholesaler's supply				
Name of supply	Legal	Environment	Water Quality	Climatic

Water Shortage Contingency Plan Section

(Water Code § 10632)

Stages of Action

(Water Code § 10632 (a))

<input checked="" type="checkbox"/>	Provide stages of action	<u>Sec 7, p.7-1</u> Reference & Page Number
<input checked="" type="checkbox"/>	Provide the water supply conditions for each stage	<u>Sec 7, p.7-2</u> Reference & Page Number
<input checked="" type="checkbox"/>	Includes plan for 50 percent supply shortage	<u>Sec 7, p.7-2</u> Reference & Page Number

Table 23 Water Supply Shortage Stages and Conditions RATIONING STAGES		
Stage No.	Water Supply Conditions	% Shortage
City - Phase 1	Water use for landscaping, refillings pools, etc.	
City - Phase 2	Phase 1 plus 90% excess water use on customer's premises	
City -Phase 3	Phase 2 plus 90% excess water use on customer's premises	
MWD - Shortage Stage 1	Withdrawals from Diamond Valley Lake	
MWD - Shortage Stage 2	Continue with Stage 1 & out of region groundwater storage	
MWD - Shortage Stage 3	Continue with Stage 2, Long Term Seasonal & Replenishment Programs	
MWD - Shortage Stage 4	Continue with Stage 3, gdwtr. Storage, SWP terminal reservoirs	
MWD - Shortage Stage 5	Continue with Stage 4, monthly reports on conservation program	
MWD - Shortage Stage 6	Continue with Stage 5, water supply option contracts	
MWD - Shortage Stage 7	Metropolitan discontinues deliveries to regional storage facilities.	

Three-Year Minimum Water Supply

(Water Code §10632 (b))

<input checked="" type="checkbox"/>	Identifies driest 3-year period	<u>Sec 4, p.4-15</u> Reference & Page Number
<input checked="" type="checkbox"/>	Minimum water supply available by source for the next three years	<u>Sec 7, p.7-8</u> Reference & Page Number

Table 24 Three-Year Estimated Minimum Water Supply - AF Year					
source**	Base Year		Multiple Dry Years		
	2005	2006	2006	2007	2008
Imported Water	16,003	21,320	20,200	19,630	19,970
Groundwater	28,749	31,260	35,910	34,900	35,510
Recycled Water	168	150	150	150	150
Total	44,920	52,730	56,260	54,680	55,630

*Note: If reporting after 2005, please change the column headers (year 1, 2, & 3) to the appropriate years

Preparation for catastrophic water supply interruption

(Water Code §10632 (c))

Provided catastrophic supply interruption plan

Sec 7, p.7-9 Reference & Page Number

Table 25 Preparation Actions for a Catastrophe	
Possible Catastrophe	Check if Discussed
Regional power outage	X
Earthquake	X
Water Repairs	X

Prohibitions

(Water Code § 10632 (d))

List the mandatory prohibitions against specific water use practices during water shortages

Sec 7, p.7-2 Reference & Page Number
Appendix F

Table 26 Mandatory Prohibitions	
Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Washing of sidewalks, driveways, parking areas, paved surfaces	Phase 1
Watering of landscape, lawn, turf areas	Phase 1,2,3
Refilling swimming pools, ponds, spa, fountains	Phase 1,2,3
Restaurant water service unless requested	Phase 1,2,3
Use of water in excess of 90% on customer's premises	Phase 2
Using water from fire hydrants	Phase 3
Use of water in excess of 80% on customer's premises	Phase 3

Consumption Reduction Methods

(Water Code § 10632 (e))

List the consumption reduction methods the water supplier will use to reduce water use in the most restrictive stages with up to a 50% reduction.

Sec 7, p.7-3 Reference & Page Number
Appendix F

Table 27 Consumption Reduction Methods		
Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Reduce water consumption use for particular activities	Phase 1	
Reduce water consumption use for particular activities	Phase 2	90%
Reduce water consumption use for particular activities	Phase 3	80%

Penalties**(Water Code § 10632 (f))**

List excessive use penalties or charges for excessive use

Sec 7, p.7-11 Reference & Page Number

Table 28 Penalties and Charges	
Penalties or Charges	Stage When Penalty Takes Effect
Notice of violation to customer	First Violation
Surcharge of 15% of customer's water bill	Second Violation
Installation of flow-restricting device plus charging fees	Third Violation

Revenue and Expenditure Impacts**(Water Code § 10632 (g))**

Describe how actions and conditions impact revenues

Sec 7, p.7-12 Reference & Page Number

Describe how actions and conditions impact expenditures

Sec 7, p.7-12 Reference & Page Number

Describe measures to overcome the revenue and expenditure impacts

Sec 7, p.7-12 Reference & Page Number

Table 29 Proposed measures to overcome revenue impacts	
Names of measures	Check if Discussed
Emergency Water Conservation Plan Fund	X
Water Conservation Surcharge	X

Table 30 Proposed measures to overcome expenditure impacts	
Names of measures	Check if Discussed
City's EWCP Phase I	X
Conservation Measures	X

Water Shortage Contingency Ordinance/Resolution**(Water Code § 10632 (h))**

Attach a copy of the draft water shortage contingency resolution or ordinance.

Sec 7, p.7-14 Reference & Page Number

Reduction Measuring Mechanism

(Water Code § 10632 (i))

Provided mechanisms for determining actual reductions

Sec 7, p.7-15 Reference & Page Number

Table 31 Water Use Monitoring Mechanisms	
Mechanisms for determining actual reductions	Type data expected (pop-up?)
Daily/Weekly/Monthly Reports	Estimated water savings
Drought Program Officer activities	Monitored effectiveness
City's EWCP- monthly monitoring	Evaluation of water demand and projected available supply

Recycling Plan Agency Coordination

Water Code § 10633

Describe the coordination of the recycling plan preparation information to the extent available.

Sec 8, p.8-1 Reference & Page Number

Table 32 Participating agencies	
	participated
Water agencies	OCWD
Wastewater agencies	OCSD
Groundwater agencies	
Planning Agencies	

Wastewater System Description

(Water Code § 10633 (a))

Describe the wastewater collection and treatment systems in the supplier's service area

Sec 8, p.8-1 Reference & Page Number

Quantify the volume of wastewater collected and treated

Sec 8, p.8-3 Reference & Page Number

Table 33 Wastewater Collection and Treatment - AF Year							
Type of Wastewater	2000	2005	2010	2015	2020	2025	2030 - or
Wastewater collected & treated in service area	39,300	41,550	43,850	45,590	47,320	47,600	47,5€
Volume that meets recycled water standard	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1

Wastewater Disposal and Recycled Water Uses (Water Code § 10633 (a - d))

- Describes methods of wastewater disposal Sec 8, p.8-2 Reference & Page Number
- Describe the current type, place and use of recycled water Sec 8, p.8-5 Reference & Page Number
- None Reference & Page Number
- Describe and quantify potential uses of recycled water Sec 8, p.8-6 Reference & Page Number

Table 34 Disposal of wastewater (non-recycled) AF Year							
Method of disposal	Treatment Level	2005	2010	2015	2020	2025	2030 - opt
Discharged to Ocean	Primary and Secondary	249,678	197,055	217,209	200,414	200,414	200,414
Total		249,678	197,055	217,209	200,414	200,414	200,414

Table 35 Recycled Water Uses - Actual and Potential (AFY)							
User type	2005		2010	2015	2020	2025	2030
Current Users	Projected in 2000	Actual Use					
Landscape	480	168	150	150	150	150	150
Total	480	168	150	150	150	150	150

- Determination of technical and economic feasibility of serving the potential uses Sec 8, p.8-6,7 Reference & Page Number

Projected Uses of Recycled Water (Water Code § 10633 (e))

- Projected use of recycled water, 20 years Sec 8, p.8-6 Reference & Page Number

Table 36 Projected Future Use of Recycled Water in Service Area - AF Year					
	2010	2015	2020	2025	2030 - opt
Projected use of Recycled Water	150	150	150	150	150

- Compare UWMP 2000 projections with UWMP 2005 actual (§ 10633 (e)) Sec 8, p.8-6 Reference & Page Number
- None Reference & Page Number

Table 37 Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY		
User type	2000 Projection for 2005	2005 actual use
Landscape, Commercial	480	168
Total	480	168

Plan to Optimize Use of Recycled Water

(Water Code § 10633 (f))

Describe actions that might be taken to encourage recycled water uses
Describe projected results of these actions in terms of acre-feet of recycled water used per year

Sec 8, p.8-6 Reference & Page Number
Sec 8, p.8-6 Reference & Page Number

Table 38 Methods to Encourage Recycled Water Use					
Actions	AF of use projected to result from this action				
	2010	2015	2020	2025	2030 - opt
Financial incentives					
Public Education					
Total	0	0	0	0	0

Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses)

Sec 8, p.8-7 Reference & Page Number

Water quality impacts on availability of supply

(Water Code §10634)

Discusses water quality impacts (by source) upon water management strategies and supply reliability

Sec 3, p.3-10 Reference & Page Number

No water quality impacts projected

Table 39 Current & projected water supply changes due to water quality - percentage						
water source	2005	2010	2015	2020	2025	2030 - opt

Supply and Demand Comparison to 20 Years

(Water Code § 10635 (a))

Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments.

Sec 4, p.4-20 Reference & Page Number

Table 40 Projected Normal Water Supply - AF Year					
(from table 4)	2010	2015	2020	2025	2030 - opt
Supply	54,810	57,410	61,560	63,800	62,750
% of year 2005	100%	100%	100%	100%	100%

Table 41 Projected Normal Water Demand - AF Year					
(from table 15)	2010	2015	2020	2025	2030 - opt
Demand	50,190	53,180	55,970	59,280	59,540
% of year 2005	110.8%	110.8%	113.8%	114.6%	114.6%

Table 42 Projected Supply and Demand Comparison - AF Year					
	2010	2015	2020	2025	2030 - opt
Supply totals	54,810	57,410	61,560	63,800	62,750
Demand totals	50,190	53,180	55,970	59,280	59,540
Difference	4,620	4,230	5,590	4,520	3,210
Difference as % of Supply	8.4%	7.4%	9.1%	7.1%	5.1%
Difference as % of Demand	9.2%	8.0%	10.0%	7.6%	5.4%

Supply and Demand Comparison: Single-dry Year Scenario

(Water Code § 10635 (a))

Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments. Sec 4, p.4-21 Reference & Page Number

Table 43 Projected single dry year Water Supply - AF Year					
	2010	2015	2020	2025	2030 - opt
Supply	55,710	60,290	63,880	66,100	65,270
% of projected normal	101.6%	105.0%	103.8%	103.6%	104.0%

Table 44 Projected single dry year Water Demand - AF Year					
	2010	2015	2020	2025	2030 - opt
Demand	52,950	56,100	59,050	62,540	62,810
% of projected normal	105.5%	105.5%	105.5%	105.5%	105.5%

Table 45 Projected single dry year Supply and Demand Comparison - AF Year					
	2010	2015	2020	2025	2030 - opt
Supply totals	55,710	60,290	63,880	66,100	65,270
Demand totals	52,950	56,100	59,050	62,540	62,810
Difference	2,760	4,190	4,830	3,560	2,460
Difference as % of Supply	5.0%	6.9%	7.6%	5.4%	3.8%
Difference as % of Demand	5.2%	7.5%	8.2%	5.7%	3.9%

Supply and Demand Comparison: Multiple-dry Year Scenario**(Water Code § 10635 (a))**

Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years

Sec 4, p.4-22 Reference & Page Number

Table 46					
Projected supply during multiple dry year period ending in 2010 - AF Year					
	2006	2007	2008	2009	2010
Supply	52,730	53,250	57,610	56,110	56,280
% of projected normal	100.0%	100.0%	107.1%	103.4%	102.7%

Table 47					
Projected demand multiple dry year period ending in 2010 - AFY					
	2006	2007	2008	2009	2010
Demand	48,990	49,250	52,830	51,620	52,790
% of projected normal	100.0%	100.0%	106.7%	103.7%	105.5%

Table 48					
Projected Supply and Demand Comparison during multiple dry year period ending in 2010- AF Year					
	2006	2007	2008	2009	2010
Supply totals	52,730	53,250	57,610	56,110	56,280
Demand totals	48,990	49,250	52,830	51,620	52,790
Difference	3,740	4,000	4,780	4,490	3,490
Difference as % of Supply	7.1%	7.5%	8.3%	8.0%	6.2%
Difference as % of Demand	7.6%	8.1%	9.0%	8.7%	6.6%

Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years

Sec 4, p.4-23 Reference & Page Number

Table 49					
Projected supply during multiple dry year period ending in 2015 - AF Year					
	2011	2012	2013	2014	2015
Supply	55,330	55,850	60,160	59,620	60,830
% of projected normal	100.0%	100.0%	106.7%	104.8%	106.0%

Table 50					
Projected demand multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Demand	50,790	51,390	55,460	54,530	56,100
% of projected normal	100.0%	100.0%	106.7%	103.7%	105.5%

Table 51					
Projected Supply and Demand Comparison during multiple dry year period ending in 2015- AF Year					
	2011	2012	2013	2014	2015
Supply totals	55,330	55,850	60,160	59,620	60,830
Demand totals	50,790	51,390	55,460	54,530	56,100
Difference	4,540	4,460	4,700	5,090	4,730
Difference as % of Supply	8.2%	8.0%	7.8%	8.5%	7.8%
Difference as % of Demand	8.9%	8.7%	8.5%	9.3%	8.4%

Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 Sec 4, p.4-24 Reference & Page Number and compare projected supply and demand during those years

Table 52					
Projected supply during multiple dry year period ending in 2020 - AF Year					
	2016	2017	2018	2019	2020
Supply	58,240	59,080	63,180	62,890	64,460
% of projected normal	100.0%	100.0%	105.5%	103.6%	104.7%

Table 53					
Projected demand multiple dry year period ending in 2020 - AFY					
	2016	2017	2018	2019	2020
Demand	53,740	54,300	58,520	57,460	59,050
% of projected normal	100.0%	100.0%	106.7%	103.7%	105.5%

Table 54					
Projected Supply and Demand Comparison during multiple dry year period ending in 2020- AF Year					
	2016	2017	2018	2019	2020
Supply totals	58,240	59,080	63,180	62,890	64,460
Demand totals	53,740	54,300	58,520	57,460	59,050
Difference	4,500	4,780	4,660	5,430	5,410
Difference as % of Supply	7.7%	8.1%	7.4%	8.6%	8.4%
Difference as % of Demand	8.4%	8.8%	8.0%	9.5%	9.2%

Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 Sec 4,p.4-25 Reference & Page Number and compare projected supply and demand during those years

Table 55					
Projected supply during multiple dry year period ending in 2025 - AF Year					
	2021	2022	2023	2024	2025
Supply	62,010	62,460	66,160	65,410	66,610
% of projected normal	100.0%	100.0%	105.2%	103.3%	104.4%

Table 56 Projected demand multiple dry year period ending in 2025 - AFY					
	2021	2022	2023	2024	2025
Demand	56,630	57,290	61,840	60,790	62,540
% of projected normal	100.0%	100.0%	106.7%	103.7%	105.5%

Table 57 Projected Supply and Demand Comparison during multiple dry year period ending in 2025- AF Year					
	2021	2022	2023	2024	2025
Supply totals	62,010	62,460	66,160	65,410	66,610
Demand totals	56,630	57,290	61,840	60,790	62,540
Difference	5,380	5,170	4,320	4,620	4,070
Difference as % of Supply	8.7%	8.3%	6.5%	7.1%	6.1%
Difference as % of Demand	9.5%	9.0%	7.0%	7.6%	6.5%

Provision of Water Service Reliability section to cities/counties within service area (Water Code § 10635(b))

Provided Water Service Reliability section of UWMP to cities and counties within which it provides water supplies within 60 days of UWMP submission to DWR Sec 1, p.1-2 Reference & Page Number

Does the Plan Include Public Participation and Plan Adoption (Water Code § 10642)

Attach a copy of adoption resolution Sec 1, p.1-2 Appendix C Reference & Page Number
 Encourage involvement of social, cultural & economic community groups Sec 1, p.1-2 Reference & Page Number
 Plan available for public inspection Sec 1, p.1-2 Appendix C Reference & Page Number
 Provide proof of public hearing Sec 1, p.1-2 Reference & Page Number
 Provided meeting notice to local governments Sec 1, p.1-2 Reference & Page Number

Review of implementation of 2000 UWMP (Water Code § 10643)

Reviewed implementation plan and schedule of 2000 UWMP throughout Reference & Page Number
 Implemented in accordance with the schedule set forth in plan throughout Reference & Page Number
 2000 UWMP not required _____ Reference & Page Number

Provision of 2005 UWMP to local governments (Water Code § 10644 (a))

Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption Sec 1, p.1-2 Reference & Page Number

Does the plan or correspondence accompanying it show where it is available for public review (Water Code § 10645)

Does UWMP or correspondence accompanying it show where it is available for public review Back Cover Reference & Page Number

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APPENDIX C

***NOTICE OF PUBLIC HEARING,
REQUEST FOR COUNCIL ACTION FOR PLAN
ADOPTION, AND
MINUTE ORDER FOR ADOPTION OF PLAN***

ORANGE COUNTY REPORTER
- SINCE 1921 -

600 W SANTA ANA BLVD, SANTA ANA, CA 92701
Telephone (714) 543-2027 / Fax (714) 542-6841

PATRICIA JACQUEZ-NARES
CITY OF SANTA ANA/CITY CLERK
20 CIVIC CENTER PLAZA M-30
SANTA ANA, CA - 92701

PROOF OF PUBLICATION

(2015 5 C C P)

State of California)
County of ORANGE) ss

Notice Type: HRG - NOTICE OF HEARING

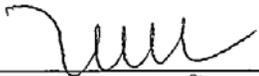
Ad Description: NOTICE OF PUBLIC HEARING - URBAN WATER
MANAGEMENT PLAN

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer and publisher of the ORANGE COUNTY REPORTER, a newspaper published in the English language in the city of SANTA ANA, county of ORANGE, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of ORANGE, State of California, under date 06/20/1922, Case No. 13421. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

10/21/2005, 10/28/2005

Executed on: 10/28/2005
At Los Angeles, California

I certify (or declare) under penalty of perjury that the foregoing is true and correct



Signature

This space for filing stamp only

OR #: 882318

NOTICE OF PUBLIC HEARING
BEFORE THE CITY COUNCIL
SANTA ANA, CALIFORNIA

URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN: That the City Council of the City of Santa Ana will hold a public hearing to consider the City's Urban Water Management Plan in accordance with Section 10642 of the Urban Water Management Planning Act of 1993. The purpose of the hearing will be to solicit public comment prior to adoption of the plan.

Copies of the Urban Water Management Plan are available for public inspection at the Clerk of the Council Office, Santa Ana City Hall, 20 Civic Center Plaza. Additional information on the above plan and/or public hearing may be obtained by contacting Water Resources Manager, Thom Coughran at (714) 647-3318.

This matter will be heard on November 7, 2005 at 6:00 p.m. or as soon as possible thereafter, in the Council Chambers, 22 Civic Center Plaza, Santa Ana, California. All persons interested in this matter are notified to appear at this time.

If you challenge the decision of the City Council on the above matter in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice or in written correspondence delivered to the City Council of the City of Santa Ana at or prior to the public hearing.

Patricia E. Healy,
Clerk of the Council
10/21/2005, 10/28/2005

OR-882318#

REQUEST FOR COUNCIL ACTION



CITY COUNCIL MEETING DATE:

NOVEMBER 7, 2005

TITLE:

**PUBLIC HEARING: URBAN WATER
MANAGEMENT PLAN**

CLERK OF COUNCIL USE ONLY.

APPROVED

- As Recommended
- As Amended
- Ordinance on 1st Reading
- Ordinance on 2nd Reading
- Implementing Resolution
- Set Public Hearing For _____

CONTINUED TO _____

FILE NUMBER _____



CITY MANAGER

RECOMMENDED ACTION

Adopt the updated 2005 Urban Water Management Plan.

DISCUSSION

Urban water suppliers are required by the Urban Water Management Plan Act to update and submit a plan to the Department of Water Resources every five years. The Act requires water suppliers to describe and evaluate sources of water supply, efficient uses of water, demand management measures, implementation strategy and schedule, and other relevant information and programs.

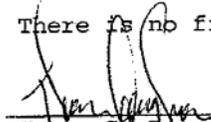
In May 2005, the City approved an agreement with Psomas to prepare the updated 2005 Urban Water Management Plan. The Plan is complete and copies are available for review in the Clerk of the Council's office. Staff recommends the adoption of the City's 2005 Plan.

ENVIRONMENTAL IMPACT

In accordance with Section 15282 of the CEQA Guidelines, preparation and adoption of urban water management plans are statutorily exempt from further environmental review. Statutory Exemption Environmental Review No. 2005-187 will be filed for this project.

FISCAL IMPACT

There is no fiscal impact associated with this action.



James G. Ross
Executive Director
Public Works Agency

75D-1

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APPENDIX D

REFERENCES



City of Santa Ana
2005 Urban Water Management Plan

REFERENCES

- Assembly Bill 797, *California Water Code Division 6 Part 2.6 Urban Water Management Planning*, 1983, as amended to 2005
- California Urban Water Conservation Council, *Memorandum of Understanding Regarding Urban Water Conservation in California (MOU)*, September 1991
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- Santa Ana Regional Water Quality Control Board, *Watershed Management Initiative*,
May 2004

APPENDIX E

CUWCC WATER CONSERVATION BEST MANAGEMENT PRACTICES ANNUAL REPORTS FOR 2003 AND 2004 AND COVERAGE REPORTS

Water Supply & Reuse

Reporting Unit:
City of Santa Ana

Year:
2004

Report Not Filed

Accounts & Water Use

Reporting Unit Name:
City of Santa Ana

Submitted to CUWCC
02/26/2005

Year:
2004

A. Service Area Population Information:

1. Total service area population 348143

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	35431	17296	0	0
2. Multi-Family	3530	12862	0	0
3. Commercial	4374	8492	0	0
4. Industrial	98	1593	0	0
5. Institutional	271	2506	0	0
6. Dedicated Irrigation	658	2167	0	0
7. Recycled Water	12	147	0	0
8. Other	5	2	0	0
9. Unaccounted	NA	0	NA	0
Total	44379	45065	0	0

Metered

Unmetered

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

- | | |
|---|------------|
| 1. Based on your signed MOU date, 10/04/1999, your Agency STRATEGY DUE DATE is: | 10/03/2001 |
| 2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |
| 3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None

11. Were customers provided with information packets that included evaluation results and water savings recommendations?	no	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		None
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?		No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."		

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no
 - a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? yes
3. Estimated percent of single-family households with low-flow showerheads: 100%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? yes
5. Estimated percent of multi-family households with low-flow showerheads: 86.6%
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.
 In 2000, MWDOC and MET conducted the OC Saturation Survey and found countywide low flow showerhead saturation rates of 66.9% in single-family and 59.8% in multifamily dwelling units. Saturation rates provide above represent linear extrapolations of saturation survey results for 02/03 and 03/04.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? no
 - a. If YES, when did your agency begin implementing this strategy? 06/01/1991
 - b. Describe your targeting/ marketing strategy.
 Neighborhood events. City sponsored events, water billing inserts. Contractor has done radio ads and newsprint ads.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	239	100
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	184	100
6. Does your agency track the distribution and cost of low-flow devices?		no
<ol style="list-style-type: none"> a. If YES, in what format are low-flow devices tracked? b. If yes, describe your tracking and distribution system : 		

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	7000	7000
2. Actual Expenditures	1911.32	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

- | | |
|--|-------|
| 1. Has your agency completed a pre-screening system audit for this reporting year? | no |
| 2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: | |
| a. Determine metered sales (AF) | 44379 |
| b. Determine other system verifiable uses (AF) | 0 |
| c. Determine total supply into the system (AF) | 48018 |
| d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. | 0.92 |
| 3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? | yes |
| 4. Did your agency complete a full-scale audit during this report year? | no |
| 5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? | no |
| 6. Does your agency operate a system leak detection program? | no |
| a. If yes, describe the leak detection program: | |

B. Survey Data

- | | |
|--|-----|
| 1. Total number of miles of distribution system line. | 453 |
| 2. Number of miles of distribution system line surveyed. | 0 |

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 699 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | no |
| a. If YES, when did your agency begin implementing this strategy? | |
| b. Description of marketing / targeting strategy: | |
| 2. Number of Surveys Offered. | 0 |
| 3. Number of Surveys Completed. | 0 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | no |
| b. Distribution Uniformity Analysis | no |
| c. Review / Develop Irrigation Schedules | no |
| d. Measure Landscape Area | no |
| e. Measure Total Irrigable Area | no |
| f. Provide Customer Report / Information | no |
| 5. Do you track survey offers and results? | no |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

- | | |
|---|-----|
| 1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets? | no |
| 2. Number of CII mixed-use accounts with landscape budgets. | 0 |
| 3. Do you offer landscape irrigation training? | yes |
| 4. Does your agency offer financial incentives to improve landscape water use efficiency? | no |

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services?

No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities?

yes

a. If yes, is it water-efficient?

yes

b. If yes, does it have dedicated irrigation metering?

yes

7. Do you provide customer notices at the start of the irrigation season?

no

8. Do you provide customer notices at the end of the irrigation season?

no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?

No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

- | | |
|---|-----|
| 1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? | yes |
| a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.
Edison and SCG have rebates. MWDOC does not have the information on the amounts. | |
| 2. Does your agency offer rebates for high-efficiency washers? | yes |
| 3. What is the level of the rebate? | 100 |
| 4. Number of rebates awarded. | 188 |

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | no |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

D. Comments

BMP 07: Public Information Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.
 Water Billing, School Programs, City sponsored events.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	yes	4
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	no	
g. Speaker's Bureau	yes	1
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	1500	1500
2. Actual Expenditures	1500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	37	3357	0
Grades 4th-6th	yes	24	2104	0
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 1/01/1992

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

- | | |
|--|-----|
| 1. Has your agency identified and ranked COMMERCIAL customers according to use? | yes |
| 2. Has your agency identified and ranked INDUSTRIAL customers according to use? | yes |
| 3. Has your agency identified and ranked INSTITUTIONAL customers according to use? | yes |

Option A: CII Water Use Survey and Customer Incentives Program

- | | |
|---|----|
| 4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? | no |
|---|----|

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	296	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

- | | |
|---|-----|
| 5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option? | yes |
| 6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings? | yes |
| 7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991. | 0 |
| 8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991. | 0 |

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|---|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| <p>a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."</p> | |

D. Comments

Santa Ana participates in a Regional CII Rebate Program facilitated by our regional Wholesaler, Metropolitan Water District of S.C. We have put in the number of rebates but not the dollar amounts or acre/feet associated with them. Metropolitan tracks these.

BMP 09a: CII ULFT Water Savings

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

1. Did your agency implement a CII ULFT replacement program in the reporting year? Yes
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. CII Sector or subsector
CII ULFT Study subsector
targeting

- a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

We found CII sectors and sub sectors most effective because we were able to version our marketing efforts appropriately.

2. How does your agency advertise this program? Check all that apply.

Bill insert
Direct letter
Newsletter
Web page
Newspapers
Trade publications
Other print media
Trade shows and events
Telemarketing

- a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

For the purposes of this program, Trade Allies have proven to be the most effective overall marketing tool, as well as the most effective per dollar expended. Trade Allies include plumbers, distributors, retail home improvement stores and product manufacturers.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? Yes
3. What is the total number of customer accounts participating in the program during the last year ? 3

CII Subsector	Number of Toilets Replaced			
	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
4.				
a. Offices	0	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	0	0	0	0
h. Government	0	0	0	0
i. Churches	0	0	0	0
j. Other	12	0	0	0

5. Program design. Rebate or voucher

6. Does your agency use outside services to implement this program? Yes

a. If yes, check all that apply. Consultant

7. Participant tracking and follow-up. Telephone Site Visit

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

- a. Disruption to business 1
- b. Inadequate payback 3
- c. Inadequate ULFT performance 2
- d. Lack of funding 5
- e. American's with Disabilities Act 0
- f. Permitting 0

g. Other. Please describe in B. 9.

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness.

Customers are generally more willing to participate in the program if the cost of the retrofit is in balance with the amount of the rebate, and the projected water savings is significant. Resistance occurs if the out-of-pocket expense for the retrofit is too costly and the rebate amount is too low.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

See the MWD of SC program for details.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	720
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	720

D. Comments

BMP 11: Conservation Pricing

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$23396730
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

2. Commercial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$6669457
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

3. Industrial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$1202097
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$1815690
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

5. Irrigation

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$1551759
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

6. Other

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$81338
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 10%
 - b. Coordinator's Name George Hunt
 - c. Coordinator's Title Water Quality Supervisor
 - d. Coordinator's Experience and Number of Years 13
 - e. Date Coordinator's position was created (mm/dd/yyyy) 1/01/1991
6. Number of conservation staff, including Conservation Coordinator. 2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	1600	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 13: Water Waste Prohibition

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no
 - a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no
 - a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.
 - a. Gutter flooding no
 - b. Single-pass cooling systems for new connections no
 - c. Non-recirculating systems in all new conveyor or car wash systems no
 - d. Non-recirculating systems in all new commercial laundry systems no
 - e. Non-recirculating systems in all new decorative fountains no
 - f. Other, please name no
2. Describe measures that prohibit water uses listed above:
Not applicable at this time.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:
 - a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no
 - b. Develop minimum appliance efficiency standards that:
 - i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no
 - ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no
 - c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no
4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

	Single-Family Accounts	Multi- Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Number of Toilets Replaced by Agency Program During Report Year		
Replacement Method	SF Accounts	MF Units
2. Rebate	145	47
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	4823	5155
Total	4968	5202

6. Describe your agency's ULFT program for single-family residences.
 Santa Ana participates in a region wide ULFT rebate program for both SF & MF. Our regional wholesaler (MWDOC) administers the program on our behalf. They contract with a vendor to market the program and facilitate the rebate process for our customers. The "Other" program is a distribution program that MWDOC administers on our behalf. They contract with a separate vendor that facilitates the distribution of ULFT's to our customers. This program is also for SF & MF.
7. Describe your agency's ULFT program for multi-family residences.
 See #6 above.
8. Is a toilet retrofit on resale ordinance in effect for your service area? no
9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Water Supply & Reuse

Reporting Unit:
City of Santa Ana

Year:
2003

Report Not Filed

Accounts & Water Use

Reporting Unit Name:
City of Santa Ana

Submitted to CUWCC
02/26/2005

Year:
2003

A. Service Area Population Information:

1. Total service area population 348143

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	35357	17293.1	0	0
2. Multi-Family	3556	13232.2	0	0
3. Commercial	4384	7975.1	0	0
4. Industrial	101	2103.5	0	0
5. Institutional	263	2492.8	0	0
6. Dedicated Irrigation	659	2177.8	0	0
7. Recycled Water	11	102.7	0	0
8. Other	7	6	0	0
9. Unaccounted	NA	0	NA	0
Total	44338	45383.2	0	0

Metered

Unmetered

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

- | | |
|--|------------|
| 1. Based on your signed MOU date, 10/04/1999, your Agency STRATEGY DUE DATE is: | 10/03/2001 |
| 2. Has your agency developed and implemented a targeting/marketing strategy for SINGLE-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |
| 3. Has your agency developed and implemented a targeting/marketing strategy for MULTI-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None

11. Were customers provided with information packets that included evaluation results and water savings recommendations?	no	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		None
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?		No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."		

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? yes

a. If YES, list local jurisdictions in your service area and code or ordinance in each:

Santa Ana Municipal Code and Uniform Plumbing Code.

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? yes

3. Estimated percent of single-family households with low-flow showerheads: 91.7%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? yes

5. Estimated percent of multi-family households with low-flow showerheads: 79.9%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

In 2000, MWDOC and MET conducted the OC Saturation Survey and found countywide low flow showerhead saturation rates of 66.9% in single-family and 59.8% in multifamily dwelling units. Saturation rates provided above represent linear extrapolations of saturation survey results for 02-03 and 03-04.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? yes

a. If YES, when did your agency begin implementing this strategy? 06/01/1991

b. Describe your targeting/ marketing strategy.
 Neighborhood events. City Sponsored Events, Water Billing Inserts.
 Contractor has done radio ads and newsprint ads.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	251	40
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	103	40
6. Does your agency track the distribution and cost of low-flow devices?		no

a. If YES, in what format are low-flow devices tracked?

b. If yes, describe your tracking and distribution system :

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5000	7000
2. Actual Expenditures	5945.15	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

- | | |
|--|-------|
| 1. Has your agency completed a pre-screening system audit for this reporting year? | no |
| 2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: | |
| a. Determine metered sales (AF) | 43729 |
| b. Determine other system verifiable uses (AF) | 0 |
| c. Determine total supply into the system (AF) | 46534 |
| d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. | 0.94 |
| 3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? | yes |
| 4. Did your agency complete a full-scale audit during this report year? | no |
| 5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? | no |
| 6. Does your agency operate a system leak detection program? | no |
| a. If yes, describe the leak detection program: | |

B. Survey Data

- | | |
|--|-----|
| 1. Total number of miles of distribution system line. | 453 |
| 2. Number of miles of distribution system line surveyed. | 0 |

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 674 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | no |
| a. If YES, when did your agency begin implementing this strategy? | |
| b. Description of marketing / targeting strategy: | |
| 2. Number of Surveys Offered. | 0 |
| 3. Number of Surveys Completed. | 0 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | no |
| b. Distribution Uniformity Analysis | no |
| c. Review / Develop Irrigation Schedules | no |
| d. Measure Landscape Area | no |
| e. Measure Total Irrigable Area | no |
| f. Provide Customer Report / Information | no |
| 5. Do you track survey offers and results? | no |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

- | | |
|---|-----|
| 1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets? | no |
| 2. Number of CII mixed-use accounts with landscape budgets. | 0 |
| 3. Do you offer landscape irrigation training? | yes |
| 4. Does your agency offer financial incentives to improve landscape water use efficiency? | no |

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services?

No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities?

yes

a. If yes, is it water-efficient?

yes

b. If yes, does it have dedicated irrigation metering?

yes

7. Do you provide customer notices at the start of the irrigation season?

no

8. Do you provide customer notices at the end of the irrigation season?

no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?

No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

- | | |
|--|-----|
| 1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? | yes |
| a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.
Edison and SCG. MWDOC does not have the information on the amounts. | |
| 2. Does your agency offer rebates for high-efficiency washers? | yes |
| 3. What is the level of the rebate? | 100 |
| 4. Number of rebates awarded. | 69 |

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | no |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

D. Comments

BMP 07: Public Information Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.
 Water Billing, School Programs, City sponsored events.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	yes	4
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	no	
g. Speaker's Bureau	yes	2
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	1500	1500
2. Actual Expenditures	1500	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	51	5618	0
Grades 4th-6th	yes	43	3136	0
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 1/01/1992

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

- | | |
|--|-----|
| 1. Has your agency identified and ranked COMMERCIAL customers according to use? | yes |
| 2. Has your agency identified and ranked INDUSTRIAL customers according to use? | yes |
| 3. Has your agency identified and ranked INSTITUTIONAL customers according to use? | yes |

Option A: CII Water Use Survey and Customer Incentives Program

- | | |
|---|-----|
| 4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? | yes |
|---|-----|

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	yes	yes
f. Evaluation of all water-using apparatus and processes	yes	yes	yes
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	yes	yes	yes

Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	173	38430
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	no
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	no
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	5.46
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	49.15

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	10000	10000
2. Actual Expenditures	46453.5	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

Santa Ana participates in a Regional CII Rebate Program facilitated by our regional Wholesaler, Metropolitan Water District of S. C. We have put in the number of rebates but not the dollar amounts or acre/feet associated with them. Metropolitan tracks these.

BMP 09a: CII ULFT Water Savings

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

1. Did your agency implement a CII ULFT replacement program in the reporting year? Yes
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. CII Sector or subsector
CII ULFT Study subsector
targeting

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

We found CII sectors and sub sectors most effective because we were able to version our marketing efforts appropriately.

2. How does your agency advertise this program? Check all that apply.

Bill insert
Direct letter
Newsletter
Web page
Newspapers
Trade publications
Other print media
Trade shows and events
Telemarketing

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

For the purposes of this program, Trade Allies have proven to be the most effective overall marketing tool, as well as the most effective per dollar expended. Trade Allies include plumbers, distributors, retail home improvement stores and product manufacturers.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? Yes
3. What is the total number of customer accounts participating in the program during the last year ? 4

CII Subsector	Number of Toilets Replaced			
	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
4.				
a. Offices	6	0	0	0
b. Retail / Wholesale	24	0	0	0
c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	0	0	0	0
g. Eating	2	0	0	0
h. Government	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program design. Rebate or voucher

6. Does your agency use outside services to implement this program? Yes

a. If yes, check all that apply. Consultant

7. Participant tracking and follow-up. Telephone Site Visit

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

- a. Disruption to business 1
- b. Inadequate payback 3
- c. Inadequate ULFT performance 2
- d. Lack of funding 5
- e. American's with Disabilities Act 0
- f. Permitting 0

g. Other. Please describe in B. 9.

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness.

Customers are generally more willing to participate in the program if the cost of the retrofit is in balance with the amount of the rebate, and the projected water savings is significant. Resistance occurs if the out-of-pocket expense for the retrofit is too costly and the rebate amount is too low.

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

See the MWD of SC program for details.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	1980
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	1980

D. Comments

BMP 11: Conservation Pricing

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$20240352
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

2. Commercial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$5749151
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

3. Industrial

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$1409254
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$1614834
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

5. Irrigation

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$1511737
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

6. Other

a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Increasing Block
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 10%
 - b. Coordinator's Name George Hunt
 - c. Coordinator's Title Water Quality Supervisor
 - d. Coordinator's Experience and Number of Years 12
 - e. Date Coordinator's position was created (mm/dd/yyyy) 1/1/1991
6. Number of conservation staff, including Conservation Coordinator. 2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	7100	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 13: Water Waste Prohibition

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no
a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no
a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.
 - a. Gutter flooding no
 - b. Single-pass cooling systems for new connections no
 - c. Non-recirculating systems in all new conveyor or car wash systems no
 - d. Non-recirculating systems in all new commercial laundry systems no
 - e. Non-recirculating systems in all new decorative fountains no
 - f. Other, please name no
2. Describe measures that prohibit water uses listed above:
Not applicable at this time

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:
 - a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no
 - b. Develop minimum appliance efficiency standards that:
 - i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no
 - ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no
 - c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no
4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

	Single-Family Accounts	Multi- Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Number of Toilets Replaced by Agency Program During Report Year		
Replacement Method	SF Accounts	MF Units
2. Rebate	233	104
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	6290	4426
Total	6523	4530

6. Describe your agency's ULFT program for single-family residences.
 Santa Ana participates in a region wide ULFT rebate program for both SF & MF. our regional wholesaler (MWDOC) administers the program on our behalf. They contract with a vendor to market the program and facilitate the rebate process for our customers. The "Other " program is a distribution program that MWDOC administers on our behalf. They contract with a separate vendor that facilitates the distribution of ULFT's to our customers. This program is also for SF & MF.
7. Describe your agency's ULFT program for multi-family residences.
 See #6 above.
8. Is a toilet retrofit on resale ordinance in effect for your service area? no
9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Water Supply & Reuse

Reporting Unit:

Year:
2001

Report Not Filed

Accounts & Water Use

Reporting Unit Name:
City of Santa Ana

Form Status:
0% Complete

Year:
2001

Report Not Filed

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

- | | |
|---|------------|
| 1. Based on your signed MOU date, 10/04/1999, your Agency STRATEGY DUE DATE is: | 10/03/2001 |
| 2. Has your agency developed and implemented a targeting/marketing strategy for SINGLE-FAMILY residential water use surveys?
a. If YES, when was it implemented? | no |
| 3. Has your agency developed and implemented a targeting/marketing strategy for MULTI-FAMILY residential water use surveys?
a. If YES, when was it implemented? | no |

B. Water Survey Data

Survey Counts:

	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	1	0
2. Number of surveys completed:	1	0

Indoor Survey:

3. Check for leaks, including toilets, faucets and meter checks	yes	yes
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	yes

5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary	yes	yes
---	-----	-----

Outdoor Survey:

6. Check irrigation system and timers	yes	yes
7. Review or develop customer irrigation schedule	yes	yes
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	yes
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	no	no
a. If yes, in what form are surveys tracked?		
b. Describe how your agency tracks this information.		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	1000	1000
2. Actual Expenditures	200	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:
City of Santa Ana

BMP Form Status:
95% Complete

Year:
2001

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? yes
 - a. If YES, list local jurisdictions in your service area and code or ordinance in each:
 Santa Ana Municipal Code & Uniform Plumbing Code
2. Has your agency satisfied the 75% saturation requirement for single-family housing units? no
3. Estimated percent of single-family households with low-flow showerheads: 11%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? no
5. Estimated percent of multi-family households with low-flow showerheads: 10%
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? yes
 - a. If YES, when did your agency begin implementing this strategy? 6/1/1991
 - b. Describe your targeting/ marketing strategy.
 Neighborhood Events, City Sponsored Events, Water Billing Inserts

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	353	150
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0
6. Does your agency track the distribution and cost of low-flow devices?		no
<ol style="list-style-type: none"> a. If YES, in what format are low-flow devices tracked? b. If yes, describe your tracking and distribution system : 		

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5000	7000
2. Actual Expenditures	5000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

- | | |
|--|-------|
| 1. Has your agency completed a pre-screening system audit for this reporting year? | no |
| 2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production: | |
| a. Determine metered sales (AF) | 47324 |
| b. Determine other system verifiable uses (AF) | 0 |
| c. Determine total supply into the system (AF) | 50412 |
| d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. | 0.94 |
| 3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? | no |
| 4. Did your agency complete a full-scale audit during this report year? | no |
| 5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? | no |
| 6. Does your agency operate a system leak detection program? | no |
| a. If yes, describe the leak detection program: | |

B. Survey Data

- | | |
|--|-----|
| 1. Total number of miles of distribution system line. | 453 |
| 2. Number of miles of distribution system line surveyed. | 0 |

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

E. Comments

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

- 1. Does your agency require meters for all new connections and bill by volume-of-use? yes
- 2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use? no
 - a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?
 - b. Describe the program:
- 3. Number of previously unmetered accounts fitted with meters during report year. 0

B. Feasibility Study

- 1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no
 - a. If YES, when was the feasibility study conducted? (mm/dd/yy)
 - b. Describe the feasibility study:
- 2. Number of CII accounts with mixed-use meters. 4764
- 3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 637 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | no |
| a. If YES, when did your agency begin implementing this strategy? | |
| b. Description of marketing / targeting strategy: | |
| 2. Number of Surveys Offered. | 0 |
| 3. Number of Surveys Completed. | 0 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | no |
| b. Distribution Uniformity Analysis | no |
| c. Review / Develop Irrigation Schedules | no |
| d. Measure Landscape Area | no |
| e. Measure Total Irrigable Area | no |
| f. Provide Customer Report / Information | no |
| 5. Do you track survey offers and results? | no |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

- | | |
|---|----|
| 1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets? | no |
| 2. Number of CII mixed-use accounts with landscape budgets. | 0 |

3. Do you offer landscape irrigation training? yes
4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget Number (Dollars/ Year)	Awarded to Customers	Total Amount Awarded
a. Rebates			
b. Loans			
c. Grants			

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below:
Literature

6. Do you have irrigated landscaping at your facilities? yes
- a. If yes, is it water-efficient? yes
- b. If yes, does it have dedicated irrigation metering? yes

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

- | | |
|---|-----|
| 1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? | yes |
| a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.
SCE - 100. SCG - 50. | |
| 2. Does your agency offer rebates for high-efficiency washers? | no |
| 3. What is the level of the rebate? | 0 |
| 4. Number of rebates awarded. | 0 |

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | no |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

D. Comments

BMP 07: Public Information Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.
 Water billing. School programs. City sponsored events.

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	
b. Public Service Announcement	no	
c. Bill Inserts / Newsletters / Brochures	yes	3
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	no	
g. Speaker's Bureau	yes	2
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	1000	1500
2. Actual Expenditures	1000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 08: School Education Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	9	5570	0
Grades 4th-6th	yes	9	5585	0
Grades 7th-8th	yes	2	500	0
High School	yes	1	280	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 1/1/1992

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

- | | |
|--|-----|
| 1. Has your agency identified and ranked COMMERCIAL customers according to use? | yes |
| 2. Has your agency identified and ranked INDUSTRIAL customers according to use? | yes |
| 3. Has your agency identified and ranked INSTITUTIONAL customers according to use? | yes |

Option A: CII Water Use Survey and Customer Incentives Program

- | | |
|---|-----|
| 4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? | yes |
|---|-----|

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	1	0
b. Number of New Surveys Completed	0	1	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	yes	yes
f. Evaluation of all water-using apparatus and processes	yes	yes	yes
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	yes	yes	yes

Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	no
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	no
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	0
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	10000	10000
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

BMP 09a: CII ULFT Water Savings

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

Report Not Filed

BMP 11: Conservation Pricing

Reporting Unit:
City of Santa Ana

BMP Form Status:
0% Complete

Year:
2001

Report Not Filed

BMP 12: Conservation Coordinator

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? no
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ? no
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 15%
 - b. Coordinator's Name Nancy Bailey
 - c. Coordinator's Title Water Quality Coordinator
 - d. Coordinator's Experience and Number of Years 11
 - e. Date Coordinator's position was created (mm/dd/yyyy) 1/1/1991
6. Number of conservation staff, including Conservation Coordinator. 2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	20000
2. Actual Expenditures	20000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 13: Water Waste Prohibition

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no
 - a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no
 - a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.
 - a. Gutter flooding no
 - b. Single-pass cooling systems for new connections no
 - c. Non-recirculating systems in all new conveyor or car wash systems no
 - d. Non-recirculating systems in all new commercial laundry systems no
 - e. Non-recirculating systems in all new decorative fountains no
 - f. Other, please name no
2. Describe measures that prohibit water uses listed above:
Not applicable at this time.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:
 - a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no
 - b. Develop minimum appliance efficiency standards that:
 - i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no
 - ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no
 - c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no
4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:
City of Santa Ana

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	761	0
5. Other	0	0
Total	761	0

6. Describe your agency's ULFT program for single-family residences.
 We hold 1 - 4 giveaways at our Corporate Yard each year. Contractor targets neighborhoods and delivers to customers.

7. Describe your agency's ULFT program for multi-family residences.
 Contractor contacts customers and arranges distribution of ULFT's.

8. Is a toilet retrofit on resale ordinance in effect for your service area? yes

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

Santa Ana Municipal Code	N/A
--------------------------	-----

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	15000	15000
2. Actual Expenditures	15000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Warning: The BMP 1 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

City of Santa Ana to Implement Targeting/Marketing Program by:	2001		
		<u>Single-Family</u>	<u>Multi-Family</u>
Year City of Santa Ana Reported Implementing Targeting/Marketing Program:			
City of Santa Ana Met Targeting/Marketing Coverage Requirement:	NO	NO	

Test for Condition 2

			<u>Single-Family</u>	<u>Multi-Family</u>
Survey Program to Start by:	2000	Residential Survey Offers (%)		
Reporting Period:	03-04	Survey Offers \geq 20%	NO	NO

Test for Condition 3

	Completed Residential Surveys
	<u>Single Family</u> <u>Multi-Family</u>
Total Completed Surveys 1999 - 2004:	11
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	
Total + Credit	_____

Residential Accounts in Base Year	43,007	31,925
City of Santa Ana Survey Coverage as % of Base Year Residential Accounts	0.03%	
Coverage Requirement by Year 5 of Implementation per Exhibit 1	4.90%	4.90%
City of Santa Ana on Schedule to Meet 10-Year Coverage Requirement	NO	NO

BMP 1 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 2 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

Report Year	Report Period	<u>Single-Family</u>		<u>Multi-Family</u>	
		<u>Reported Saturation</u>	<u>Saturation ≥ 75%?</u>	<u>Reported Saturation</u>	<u>Saturation ≥ 75%?</u>
1999	99-00				
2000	99-00				
2001	01-02	11.00%	NO	10.00%	NO
2002	01-02	11.00%	NO	10.00%	NO
2003	03-04	91.70%	YES	79.90%	YES
2004	03-04	100.00%	YES	86.60%	YES

Test for Condition 2

<u>Report Year</u>	<u>Report Period</u>	<u>City of Santa Ana has ordinance requiring showerhead retrofit?</u>
1999	99-00	
2000	99-00	
2001	01-02	YES
2002	01-02	YES
2003	03-04	YES
2004	03-04	NO

Test for Condition 3

Reporting Period: 03-04

<u>1992 SF Accounts</u>	<u>Num. Showerheads Distributed to SF Accounts</u>	<u>Single-Family Coverage Ratio</u>	<u>SF Coverage Ratio > 10%</u>
42,000	490	1.2%	NO
<u>1992 MF Accounts</u>	<u>Num. Showerheads Distributed to MF Accounts</u>	<u>Multi-Family Coverage Ratio</u>	<u>MF Coverage Ratio > 10%</u>
30,000	140	0.5%	NO

BMP 2 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 3 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00				
2000	99-00				
2001	01-02	NO	93.9%	No	NO
2002	01-02	YES	94.3%	No	NO
2003	03-04	NO	94.0%	No	NO
2004	03-04	NO	92.4%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits Reported through 2004

No. of Unmetered Accounts in Base Year

Meter Retrofit Coverage as % of Base Year Unmetered Accounts

Coverage Requirement by Year 4 of Implementation per Exhibit 1 24.0%

RU on Schedule to meet 10 Year Coverage Requirement YES

BMP 4 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>No. of Irrigation Meter Accounts</u>	<u>No. of Irrigation Accounts with Budgets</u>	<u>Budget Coverage Ratio</u>	<u>90% Coverage Met by Year 4</u>
1999	99-00	-1				NA
2000	99-00					NA
2001	01-02	1	637			NA
2002	01-02	2	675			NA
2003	03-04	3	674			NA
2004	03-04	4	699			No

Test for Condition 2a (survey offers)

Select Reporting Period:

03-04

Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts

Survey Offers Equal or Exceed 20% Coverage Requirement

NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through Credit for Surveys Completed Prior to Implementation of Reporting Database	
Total + Credit	
CII Accounts in Base Year	4,231
RU Survey Coverage as a % of Base Year CII Accounts	
Coverage Requirement by Year of Implementation per Exhibit 1	3.6%
RU on Schedule to Meet 10 Year Coverage Requirement	NO

Test for Condition 2b (mixed use budget or meter retrofit program)

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>Agency has mix-use budget program</u>	<u>No. of mixed-use budgets</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1	NO	
2002	01-02	2	NO	
2003	03-04	3	NO	
2004	03-04	4	NO	

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 4 Implementation Year</u>	<u>No. of mixed use CII accounts</u>	<u>No. of mixed use CII accounts fitted with irrig. meters</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1	4,764	
2002	01-02	2	4,764	
2003	03-04	3	4,692	
2004	03-04	4	4,692	

Test for Condition 3

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>RU offers financial incentives?</u>	<u>No. of Loans</u>	<u>Total Amt. Loans</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	NO		
2002	01-02	2	NO		
2003	03-04	3	NO		
2004	03-04	4	NO		
<u>Report Year</u>	<u>Report Period</u>	<u>No. of Grants</u>	<u>Total Amt. Grants</u>	<u>No. of rebates</u>	<u>Total Amt. Rebates</u>
1999	99-00				
2000	99-00				
2001	01-02				
2002	01-02				
2003	03-04				
2004	03-04				

BMP 5 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>Rebate Offered by ESP?</u>	<u>Rebate Offered by RU?</u>	<u>Rebate Amount</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	YES	NO	
2002	01-02	2	YES	NO	
2003	03-04	3	YES	YES	100.00
2004	03-04	4	YES	YES	100.00

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>No. Rebates Awarded</u>	<u>Coverage Met?</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1		NO
2002	01-02	2	54	NO
2003	03-04	3	69	YES
2004	03-04	4	188	YES

BMP 6 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 7 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00		
2000	99-00	1	
2001	01-02	2	YES
2002	01-02	3	YES
2003	03-04	4	YES
2004	03-04	5	YES

BMP 7 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 8 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00		
2000	99-00	1	
2001	01-02	2	YES
2002	01-02	3	YES
2003	03-04	4	YES
2004	03-04	5	YES

BMP 8 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:
City of Santa Ana

Reporting
Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.

OR

Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.

OR

Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Ranked Com. Use</u>	<u>Ranked Ind. Use</u>	<u>Ranked Inst. Use</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	YES	YES	YES
2002	01-02	2	YES	YES	YES
2003	03-04	3	YES	YES	YES
2004	03-04	4	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2004			
Credit for Surveys Completed Prior to Implementation of Reporting Databases			
Total + Credit		1	
CII Accounts in Base Year	4,100	82	49
RU Survey Coverage as % of Base Year CII Accounts		1.2%	
Coverage Requirement by Year 4 of Implementation per Exhibit 1	2.4%	2.4%	2.4%
RU on Schedule to Meet 10 Year Coverage Requirement	NO	NO	NO

Test for Condition 2a

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Performance Target Savings (AF/yr)</u>	<u>Performance Target Savings Coverage</u>	<u>Performance Target Savings Coverage Requirement</u>	<u>Coverage Requirement Met</u>
1999	99-00	-1				YES
2000	99-00					YES
2001	01-02	1			0.5%	NO
2002	01-02	2			1.0%	NO
2003	03-04	3	18	0.1%	1.7%	NO
2004	03-04	4			2.4%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	1
BMP 9 Survey Coverage	0.0%
BMP 9 Performance Target Coverage	0.1%
BMP 9 Survey + Performance Target Coverage	0.2%
Combined Coverage Equals or Exceeds Coverage Requirement?	NO

BMP 9 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 12 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00		
2000	99-00		
2001	01-02	YES	2
2002	01-02	YES	2
2003	03-04	YES	2
2004	03-04	YES	2

BMP 12 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:
City of Santa Ana

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Warning: The BMP 13 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

Year	<u>Gutter Flooding</u>	<u>Single-Pass Cooling Systems</u>	<u>Single-Pass Car Wash</u>	<u>Single-Pass Laundry</u>	<u>Single-Pass Fountains</u>	<u>Other</u>	<u>RU has ordinance that meets coverage requirement</u>
1999							
2000							
2001	no	no	no	no	no	no	NO
2002	no	no	no	no	no	no	NO
2003	no	no	no	no	no	no	NO
2004	no	no	no	no	no	no	NO

BMP 13 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Santa Ana**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement. An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier is meeting coverage requirements for this BMP. as of 2004

<u>Coverage Year</u>	<u>BMP 14 Data Submitted to CUWCC</u>	<u>Exemption Filed with CUWCC</u>	<u>ROR Ordinance in Effect</u>	<u>Exhibit 6 Coverage Req'mt (AF)</u>	<u>Toilet Replacement Program Water Savings* (AF)</u>
2000	No	No	No		
2001	Yes	No	Yes		20.11
2002	No	No	Yes		39.42
2003	Yes	No	No		449.04
2004	Yes	No	No		1224.69
2005	No	No	No		
2006	No	No	No		
2007	No	No	No		
2008	No	No	No		
2009	No	No	No		

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Warning: The BMP 1 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

A Reporting Unit (RU) must meet three conditions to satisfy strict compliance for BMP 1.

Condition 1: Adopt survey targeting and marketing strategy on time

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period

Condition 3: Be on track to survey 15% of SF accounts and 15% of MF units within 10 years of implementation start date.

Test for Condition 1

City of Santa Ana to Implement Targeting/Marketing Program by:	2001		
		<u>Single-Family</u>	<u>Multi-Family</u>
Year City of Santa Ana Reported Implementing Targeting/Marketing Program:			
City of Santa Ana Met Targeting/Marketing Coverage Requirement:	NO	NO	

Test for Condition 2

			<u>Single-Family</u>	<u>Multi-Family</u>
Survey Program to Start by:	2000	Residential Survey Offers (%)	0.03%	
Reporting Period:	01-02	Survey Offers \geq 20%	NO	NO

Test for Condition 3

	Completed Residential Surveys	
	<u>Single Family</u>	<u>Multi-Family</u>
Total Completed Surveys 1999 - 2002:	11	
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):		
Total + Credit	11	
Residential Accounts in Base Year	43,007	31,925
City of Santa Ana Survey Coverage as % of Base Year Residential Accounts	0.03%	
Coverage Requirement by Year 3 of Implementation per Exhibit 1	2.50%	2.50%
City of Santa Ana on Schedule to Meet 10-Year Coverage Requirement	NO	NO

BMP 1 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

Warning: The BMP 2 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one of three conditions to satisfy strict compliance for BMP 2.

Condition 1: The agency has demonstrated that 75% of SF accounts and 75% of MF units constructed prior to 1992 are fitted with low-flow showerheads.

Condition 2: An enforceable ordinance requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts is in place for the agency's service area.

Condition 3: The agency has distributed or directly installed low-flow showerheads and other low-flow plumbing devices to not less than 10% of single-family accounts and 10% of multi-family units constructed prior to 1992 during the reporting period.

Test for Condition 1

Report Year	Report Period	<u>Single-Family</u>		<u>Multi-Family</u>	
		<u>Reported Saturation</u>	<u>Saturation ≥ 75%?</u>	<u>Reported Saturation</u>	<u>Saturation ≥ 75%?</u>
1999	99-00				
2000	99-00				
2001	01-02	11.00%	NO	10.00%	NO
2002	01-02	11.00%	NO	10.00%	NO
2003	03-04	91.70%	YES	79.90%	YES
2004	03-04	100.00%	YES	86.60%	YES

Test for Condition 2

<u>Report Year</u>	<u>Report Period</u>	<u>City of Santa Ana has ordinance requiring showerhead retrofit?</u>
1999	99-00	
2000	99-00	
2001	01-02	YES
2002	01-02	YES
2003	03-04	YES
2004	03-04	NO

Test for Condition 3

Reporting Period: 01-02

<u>1992 SF Accounts</u>	<u>Num. Showerheads Distributed to SF Accounts</u>	<u>Single-Family Coverage Ratio</u>	<u>SF Coverage Ratio > 10%</u>
42,000	757	1.8%	NO
<u>1992 MF Accounts</u>	<u>Num. Showerheads Distributed to MF Accounts</u>	<u>Multi-Family Coverage Ratio</u>	<u>MF Coverage Ratio > 10%</u>
30,000	250	0.8%	NO

BMP 2 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 3 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

Test for Conditions 1 and 2

<u>Report Year</u>	<u>Report Period</u>	<u>Pre-Screen Completed</u>	<u>Pre-Screen Result</u>	<u>Full Audit Indicated</u>	<u>Full Audit Completed</u>
1999	99-00				
2000	99-00				
2001	01-02	NO	93.9%	No	NO
2002	01-02	YES	94.3%	No	NO
2003	03-04	NO	94.0%	No	NO
2004	03-04	NO	92.4%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must be on track to retrofit 100% of its unmetered accounts within 10 years to be in compliance with BMP 4.

Test for Compliance

Total Meter Retrofits Reported through 2002

No. of Unmetered Accounts in Base Year

Meter Retrofit Coverage as % of Base Year Unmetered Accounts

Coverage Requirement by Year 2 of Implementation per Exhibit 1

10.0%

RU on Schedule to meet 10 Year Coverage Requirement

YES

BMP 4 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 05 Coverage: Large Landscape Conservation Programs and Incentives

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 5.

Condition 1: Develop water budgets for 90% of its dedicated landscape meter accounts within four years of the date implementation is to start.

Condition 2: (a) Offer landscape surveys to at least 20% of its CII accounts with mixed use meters each report cycle and be on track to survey at least 15% of its CII accounts with mixed use meters within 10 years of the date implementation is to start OR (b) Implement a dedicated landscape meter retrofit program for CII accounts with mixed use meters or assign landscape budgets to mixed use meters.

Condition 3: Implement and maintain customer incentive program(s) for irrigation equipment retrofits.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>No. of Irrigation Meter Accounts</u>	<u>No. of Irrigation Accounts with Budgets</u>	<u>Budget Coverage Ratio</u>	<u>90% Coverage Met by Year 4</u>
1999	99-00	-1				NA
2000	99-00					NA
2001	01-02	1	637			NA
2002	01-02	2	675			NA
2003	03-04	3	674			NA
2004	03-04	4	699			No

Test for Condition 2a (survey offers)

Select Reporting Period:

01-02

Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts

Survey Offers Equal or Exceed 20% Coverage Requirement

NO

Test for Condition 2a (surveys completed)

Total Completed Landscape Surveys Reported through Credit for Surveys Completed Prior to Implementation of Reporting Database	
Total + Credit	
CII Accounts in Base Year	4,231
RU Survey Coverage as a % of Base Year CII Accounts	
Coverage Requirement by Year of Implementation per Exhibit 1	1.5%
RU on Schedule to Meet 10 Year Coverage Requirement	NO

Test for Condition 2b (mixed use budget or meter retrofit program)

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>Agency has mix-use budget program</u>	<u>No. of mixed-use budgets</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1	NO	
2002	01-02	2	NO	
2003	03-04	3	NO	
2004	03-04	4	NO	

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 4 Implementation Year</u>	<u>No. of mixed use CII accounts</u>	<u>No. of mixed use CII accounts fitted with irrig. meters</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1	4,764	
2002	01-02	2	4,764	
2003	03-04	3	4,692	
2004	03-04	4	4,692	

Test for Condition 3

<u>Report Year</u>	<u>Report Period</u>	<u>BMP 5 Implementation Year</u>	<u>RU offers financial incentives?</u>	<u>No. of Loans</u>	<u>Total Amt. Loans</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	NO		
2002	01-02	2	NO		
2003	03-04	3	NO		
2004	03-04	4	NO		
<u>Report Year</u>	<u>Report Period</u>	<u>No. of Grants</u>	<u>Total Amt. Grants</u>	<u>No. of rebates</u>	<u>Total Amt. Rebates</u>
1999	99-00				
2000	99-00				
2001	01-02				
2002	01-02				
2003	03-04				
2004	03-04				

BMP 5 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet one condition to comply with BMP 6.

Condition 1: Offer a cost-effective financial incentive for high-efficiency washers if one or more energy service providers in service area offer financial incentives for high-efficiency washers.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>Rebate Offered by ESP?</u>	<u>Rebate Offered by RU?</u>	<u>Rebate Amount</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	YES	NO	
2002	01-02	2	YES	NO	
2003	03-04	3	YES	YES	100.00
2004	03-04	4	YES	YES	100.00

<u>Year</u>	<u>Report Period</u>	<u>BMP 6 Implementation Year</u>	<u>No. Rebates Awarded</u>	<u>Coverage Met?</u>
1999	99-00	-1		
2000	99-00			
2001	01-02	1		NO
2002	01-02	2	54	NO
2003	03-04	3	69	YES
2004	03-04	4	188	YES

BMP 6 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 7 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 7 Implementation Year</u>	<u>RU Has Public Information Program?</u>
1999	99-00		
2000	99-00	1	
2001	01-02	2	YES
2002	01-02	3	YES
2003	03-04	4	YES
2004	03-04	5	YES

BMP 7 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 8 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 8 Implementation Year</u>	<u>RU Has School Education Program?</u>
1999	99-00		
2000	99-00	1	
2001	01-02	2	YES
2002	01-02	3	YES
2003	03-04	4	YES
2004	03-04	5	YES

BMP 8 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:
City of Santa Ana

Reporting
Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

An agency must meet three conditions to comply with BMP 9.

Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts.

Condition 2(a): Agency is on track to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commence.

OR

Condition 2(b): Agency is on track to reduce CII water use by an amount equal to 10% of baseline use within 10 years of date implementation to commence.

OR

Condition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9 documentation.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Ranked Com. Use</u>	<u>Ranked Ind. Use</u>	<u>Ranked Inst. Use</u>
1999	99-00	-1			
2000	99-00				
2001	01-02	1	YES	YES	YES
2002	01-02	2	YES	YES	YES
2003	03-04	3	YES	YES	YES
2004	03-04	4	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2002			
Credit for Surveys Completed Prior to Implementation of Reporting Databases			
Total + Credit			
CII Accounts in Base Year	4,100	82	49
RU Survey Coverage as % of Base Year CII Accounts			
Coverage Requirement by Year 2 of Implementation per Exhibit 1	1.0%	1.0%	1.0%
RU on Schedule to Meet 10 Year Coverage Requirement	NO	NO	NO

Test for Condition 2a

<u>Year</u>	<u>Report Period</u>	<u>BMP 9 Implementation Year</u>	<u>Performance Target Savings (AF/yr)</u>	<u>Performance Target Savings Coverage</u>	<u>Performance Target Savings Coverage Requirement</u>	<u>Coverage Requirement Met</u>
1999	99-00	-1				YES
2000	99-00					YES
2001	01-02	1			0.5%	NO
2002	01-02	2			1.0%	NO
2003	03-04	3	18	0.1%	1.7%	NO
2004	03-04	4			2.4%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	
BMP 9 Survey Coverage	
BMP 9 Performance Target Coverage	
BMP 9 Survey + Performance Target Coverage	
Combined Coverage Equals or Exceeds Coverage Requirement?	NO

BMP 9 COVERAGE STATUS SUMMARY:

Water supplier has not met one or more coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 11 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

<u>Year</u>	<u>Report Period</u>	<u>RU Employed Non Conserving Rate Structure</u>	<u>RU Meets BMP 11 Coverage Requirement</u>
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 12 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

<u>Report Year</u>	<u>Report Period</u>	<u>Conservation Coordinator Position Staffed?</u>	<u>Total Staff on Team (incl. CC)</u>
1999	99-00		
2000	99-00		
2001	01-02	YES	2
2002	01-02	YES	2
2003	03-04	YES	2
2004	03-04	YES	2

BMP 12 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit:
City of Santa Ana

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period?

No

Warning: The BMP 13 form is not 100% complete for one or more report years. This may produce inaccurate results for this report.

An agency must meet one condition to comply with BMP 13.

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.

Test for Condition 1

Agency or service area prohibits:

<u>Year</u>	<u>Gutter Flooding</u>	<u>Single-Pass Cooling Systems</u>	<u>Single-Pass Car Wash</u>	<u>Single-Pass Laundry</u>	<u>Single-Pass Fountains</u>	<u>Other</u>	<u>RU has ordinance that meets coverage requirement</u>
1999							
2000							
2001	no	no	no	no	no	no	NO

2002	no						
2003	no						
2004	no						

BMP 13 COVERAGE STATUS SUMMARY:

Coverage status cannot be calculated. Water supplier data is missing that is required to calculate coverage status for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Santa Ana**

MOU Exhibit 1 Coverage Requirement

A Reporting Unit (RU) must meet one of the following conditions to be in compliance with BMP 14.

Condition 1: Retrofit-on-resale (ROR) ordinance in effect in service area.

Condition 2: Water savings from toilet replacement programs equal to 90% of Exhibit 6 coverage requirement. An agency with an exemption for BMP 14 is not required to meet one of the above conditions. This report treats an agency with missing base year data required to compute the Exhibit 6 coverage requirement as out of compliance with BMP 14.

Status: Water supplier is meeting coverage requirements for this BMP. as of 2004

<u>Coverage Year</u>	<u>BMP 14 Data Submitted to CUWCC</u>	<u>Exemption Filed with CUWCC</u>	<u>ROR Ordinance in Effect</u>	<u>Exhibit 6 Coverage Req'tmt (AF)</u>	<u>Toilet Replacement Program Water Savings* (AF)</u>
2000	No	No	No		
2001	Yes	No	Yes		20.11
2002	No	No	Yes		39.42
2003	Yes	No	No		449.04
2004	Yes	No	No		1224.69
2005	No	No	No		
2006	No	No	No		
2007	No	No	No		
2008	No	No	No		
2009	No	No	No		

*NOTE: Program water savings listed are net of the plumbing code. Savings are cumulative (not annual) between 1991 and the given year. Residential ULFT count data from unsubmitted forms are NOT included in the calculation.

BMP 14 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

APPENDIX F

***EMERGENCY WATER CONSERVATION PLAN –
SANTA ANA CODE, ARTICLE VI CONSERVATION OF
PUBLIC WATER SUPPLY, SECTIONS 39-84
THROUGH 39-115***

ARTICLE VI. CONSERVATION
OF PUBLIC WATER SUPPLY

DIVISION 1. GENERALLY

Sec. 39-84. Purpose.

The purpose of this article is to prevent the waste or unreasonable use of water and to provide a mandatory water conservation plan during a proclaimed water shortage. Because of the water supply conditions prevailing in the city and in the area of this state from which the city obtains a portion of its supply, the general welfare requires that the conservation of such water be practiced for the benefit of the people of the city and for the public welfare.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-85. Authorization.

The director of public works is authorized and empowered to enforce and administer the provisions of this article.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-86. Public health and safety not to be affected.

Nothing in this article shall be construed to require the department to curtail the supply of water to any customer when such water is required by that customer to maintain an adequate level of public health and safety.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-87. Environment.

This article and the actions hereafter taken pursuant thereto are exempt from the provisions of the California Environmental Quality Act of 1970 as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Section 507(c) of the State EIR Guidelines.

(Ord. No. NS-2073, § 1, 9-4-90)

DIVISION 2. DEFINITIONS

Sec. 39-88. General.

The words and phrases used in this article shall be construed as defined in section 39-15, unless separately defined in this article or the context clearly requires otherwise. Unless a different definition is set forth in section 39-15 or elsewhere in this article, the definitions set forth in the other provisions of this Code shall likewise apply.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-89. Phasing.

Phasing shall refer to the city council action of declaring water conservation Phase I, II or III by resolution.

(Ord. No. NS-2073, § 1, 9-4-90)

Secs. 39-90--39-95. Reserved.

DIVISION 3. GENERAL PROHIBITIONS

Sec. 39-96. Leaks.

All customers shall repair all leaks from indoor and outdoor plumbing fixtures.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-97. Runoff.

No customer shall cause or allow water to run off landscape areas into adjoining streets, sidewalks or other paved surfaces due to incorrectly directed or maintained sprinklers or excessive watering.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-98. Washing of vehicles and equipment.

Washing of motor vehicles, trailers, boats and other types of mobile equipment shall be done only with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses, except that washing may be done at the immediate premises of a commercial car wash.

(Ord. No. NS-2073, § 1, 9-4-90)

Secs. 39-99--39-104. Reserved.

DIVISION 4. REGULATIONS GOVERNING WATER CONSERVATION PHASES

Sec. 39-105. Determination of conservation phase.

The city council shall make findings of shortage and declare the applicable water conservation phase by resolution.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-106. Water conservation Phase I.

During water conservation Phase I no person shall:

(1) Wash sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required to dispose of dangerous liquids or substances dangerous to the public health and safety.

(2) Water lawn, landscape or other turf areas except between the hours of 4:00 p.m. and 10:00 a.m.

(3) Use water to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures unless such water is part of a recycling system.

(4) Serve drinking water to any customer unless expressly requested. Nor shall any restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale serve drinking water to any customer unless expressly requested.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-107. Water conservation Phase II.

During water conservation Phase II no person shall:

(1) Violate the provisions of section 39-106, except that the restrictions on watering lawn, landscape or other turf areas shall be modified to prohibit watering more often than every other day and such areas shall only be watered between the hours of 6:00 p.m. and 6:00 a.m. This provision shall not apply to commercial nurseries and golf courses.

(2) Water lawn, landscape or other turf areas of commercial nurseries or golf courses except between the hours of 6:00 p.m. and 6:00 a.m. There shall be no restriction on watering utilizing reclaimed water.

(3) Make, cause, use or permit the use of water for any purpose in an amount in excess of ninety (90) per cent of the amount used on that customer's premises during the corresponding billing period during the prior calendar year.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-108. Water conservation Phase III.

During water conservation Phase III no person shall:

(1) Violate the provisions of section 39-106, except that the restrictions on watering lawn, landscape or other turf areas shall be modified to prohibit watering more often than every third day and such areas shall only be watered between the hours of 6:00 p.m. and 6:00 a.m. This provision shall not apply to commercial nurseries and golf courses.

(2) Water lawn, landscape or other turf areas of commercial nurseries or golf courses more often than every other day and shall only water between the hours of 6:00 p.m. and 6:00 a.m. There shall be no restriction on watering utilizing reclaimed water.

(3) Use water from fire hydrants except for fire fighting and related activities. Other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.

(4) Make, cause, use or permit the use of water for any purpose in excess of eighty (80) per cent of the amount used on the customer's premises during the corresponding billing period of the prior calendar year.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-109. Implementation of water conservation phases.

(a) Each month the department shall monitor and evaluate the demand for water by customers and the projected available supply. Upon determination of potential or actual water shortage, the director of public works shall recommend to the city council the extent of the conservation phase required by customers in order for the department to prudently supply water to customers.

(b) The city council shall make findings of shortage and declare the conservation phase by resolution. Said resolution shall specify the start date of the conservation phase. The resolution

shall be published once in a daily newspaper of general circulation within the city and shall become effective immediately upon such publication.

(c) The provisions of sections 39-107(3) and 39-108(4) requiring curtailment in the use of water shall be effective the first full billing period commencing on or after the date of such publication.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-110. Exclusivity of penalties.

Notwithstanding any other provision of the Santa Ana Municipal Code, the penalties set forth in section 39-111 shall be exclusive and not cumulative with any other section of this Code.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-111. Enforcement of water conservation phases.

Violation by any customer of sections 39-96 through 39-108 shall be penalized as follows:

(1) First violation. The director of public works or his designee shall issue a written notice of the fact of a first violation to the customer.

(2) Second violation. For a second violation during any one (1) proclaimed water shortage, the director of public works or his designee shall impose a surcharge in an amount equal to fifteen (15) per cent of the customer's water bill.

(3) Third and subsequent violations. For a third and each subsequent violation during any one (1) proclaimed water shortage, the director of public works or his designee shall install a flow-restricting device of one (1) gallon per minute capacity for services up to one and one-half (1 1/2) inches size, and comparatively sized restrictors for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The department shall charge the customer the reasonable costs incurred for installing and for removing the flow-restricting devices and for restoration of normal service. The charge for installing and removing a flow-restricting device and any other penalties or charges due the city from the customer or due from any person who has applied for water service, shall be paid before normal service can be restored.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-112. Relief from compliance.

(a) A customer may file an application for relief from any provision of this section. The director of public works shall develop such procedures as necessary to determine such application and shall, upon the filing by the customer of an application for relief, take such steps as reasonably necessary to determine the application for relief.

(b) The application for relief may include a request that the customer be relieved, in whole or in part, from the water use curtailment provisions of sections 39-96 through 39-108 and shall contain the basis for such request.

(c) In determining whether to grant relief and the nature of any relief, the director of public works shall take into consideration all relevant factors including, but not limited to:

(1) Whether any additional reduction in water consumption will result in unemployment;

(2) Whether additional members have been added to the household;

(3) Whether any additional landscaped property has been added to the property since the corresponding billing period of the prior calendar year;

(4) Changes in vacancy factors in multifamily housing;

(5) Increased number of employees in commercial, industrial and governmental offices;

(6) Increased production requiring increased process water;

(7) Water uses during new construction;

(8) Adjustments to water use caused by emergency health or safety hazards;

(9) First filling of a permit-constructed swimming pool; and

(10) Water use necessary for reasons related to family illness or health.

(d) In order to be considered, an application for relief must be filed with the department within fifteen (15) days from the date of publication of the resolution from which relief is sought. No relief shall be granted unless the customer shows that he has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief shall be granted to any customer who, when requested by the department, fails to provide any information necessary for resolution of the customer's application for relief.

(e) The decision of the director of public works shall be final.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-113. Exemption.

Single-family residential customers shall not be required to reduce consumption below twenty-seven (27) billing units per billing period during Phase II or below twenty-four (24) billing units per billing period during Phase III.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-114. Notice of violation.

The director of public works or his designee shall give notice of violation to the customer committing the violation as follows:

(1) Notice of violation of the water use curtailment of sections 39-96 through 39-108 shall be given in writing in the following manner:

a. By giving the notice to the customer personally; or

b. If the customer is absent from or unavailable at the premises at which the violation occurred, by leaving a copy with some person of suitable age and discretion at the premises and sending a copy through the regular mail to the address at which the customer is normally billed; or

c. If a person of suitable age or discretion cannot be found, then by affixing a copy in a conspicuous place at the premises at which the violation occurred and also sending a copy through the regular mail to the address at which the customer is normally billed.

(2) The notice shall contain a description of the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the violation pursuant to section 39-115.

(Ord. No. NS-2073, § 1, 9-4-90)

Sec. 39-115. Hearing regarding violation.

(a) Any customer receiving notice of a second or subsequent violation shall have a right to a hearing by the director of public works or his designee, provided that a written request for hearing is filed within fifteen (15) days from the date of the notice of violation and the customer deposits with the city a sum equal to the billed surcharge and pays all other outstanding water charges.

(b) The customer's timely written request for a hearing shall automatically stay installation of a flow-restricting device on the customer's premises until the department renders a decision.

(c) If it is determined that the surcharge was wrongly assessed, the city will refund any money deposited to the customer.

(d) The decision of the director of public works or his designee shall be final.

(Ord. No. NS-2073, § 1, 9-4-90)

APPENDIX G

DRAFT WATER SHORTAGE CONTINGENCY PLAN IMPLEMENTATION RESOLUTION



----DRAFT----

Resolution No. _____

A RESOLUTION OF THE CITY COUNCIL OF
THE CITY OF SANTA ANA FINDING THE
EXISTENCE OF A WATER SHORTAGE,
ORDERING THE IMPLEMENTATION OF STAGE __ OF
THE EMERGENCY WATER CONSERVATION PLAN, AND
ADOPTING A SCHEDULE OF PENALTIES

WHEREAS, the Metropolitan Water District of Southern California has implemented a mandatory reduction program for its member agencies, including Santa Ana; and

WHEREAS, the City Council has adopted Ordinance No. 2073, which was passed by the City on March 6, 1991 and added City Code Section 39, which provides that the City Council may, upon finding that a water shortage exists, order implementation of a plan which it deems appropriate to address such water shortage and shall establish a schedule of penalties to be assessed for violation of that plan.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SANTA ANA AS FOLLOWS:

1. That, for the reasons hereinabove set forth, the City Council hereby finds and determines that a Water Shortage exists in the City of Santa Ana.
2. That the City Council hereby orders implementation of the Emergency Water Conservation Plan, Stage ____, as set forth in Section 39 of the Santa Ana City Code.
3. That the following penalties shall be assessed for violation of any of the provisions of the Section 39 Emergency Water Conservation Plan.
 - a) *First Violation.* The director of public works or his designee shall issue a written notice of the fact of a first violation to the customer.
 - b) *Second Violation.* For a second violation during any one (1) proclaimed water shortage, the director of public works or his designee shall impose a surcharge in an amount equal to fifteen (15) percent of the customer's water bill.
 - c) *Third and Subsequent Violations.* For a third and each subsequent violation during any one (1) proclaimed water shortage, the director of public works or his designee shall install a flow-restricting device of one (1) gallon per minute capacity for services up to one and one-half (1½) inches size, and comparatively sized restrictors for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The department shall charge the customer the reasonable costs incurred for installing and for removing the flow-restricting

device and any other penalties or charges due the city from the customer or due from any person who has applied for water service, shall be paid before normal service can be restored.

THE FOREGOING RESOLUTION is approved and adopted by the City Council of the City of Santa Ana this __ day of _____, 20__

MAYOR OF THE CITY OF SANTA ANA

ATTEST:

CITY CLERK OF THE CITY OF SANTA ANA

City of Santa Ana

20 Civic Center Plaza, 4th Floor, Santa Ana, CA 92701
(714) 647-3318

