Urban WATER Management Plan

December 20, 2005

City of Anaheim

2005

PSOMAS

URBAN WATER MANAGEMENT PLAN 2005

City of Anaheim

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PSOMAS

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ACRONYMS and ABBREVIATIONS

AB	Assembly Bill
AF	Acre-Feet
AFY	Acre-Feet per Year
APUD	City of Anaheim Public Utilities Department
BEA	Basin Equity Assessment
BMP	Best Management Practices
BPP	Basin Pumping Percentage
CALSIM	California Water Allocation and Reservoir Operations Model
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial and Institutional
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
EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ETo	Evapotranspiration
GAP	Green Acres Project
GMP	Groundwater Management Plan
gpcd	Gallons per Capita per Day
GPM	Gallons per Minute
GWRS	Groundwater Replenishment System
HAA	Haloacetic Acids
HCF	Hundred Cubic Feet
HEW	High Efficiency Washing Machine
HGL	Hydraulic Grade Line
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
IRP	Integrated Water Resources Plan
IRWM	Integrated Regional Water Management
LRP	Local Resources Program
LTFP	Long Term Facilities Plan
LWTP	Lenain Water Treatment Plant
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
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
OCSD	Orange County Sanitation District
OCWD	Orange County Water District
pCi/L	Picocuries per liter
QSA	Quantification Settlement Agreement
RA	Replenishment Assessment
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana Regional Interceptor
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBVMWD	San Bernardino Valley Municipal Water District
SCCWRRS	Southern California Comprehensive Water Reclamation and Reuse Study
SOCWRS	South Orange County Water Reliability Study
SSS	Seasonal Storage Service
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
ULF	Ultra Low Flush
ULFT	Ultra Low Flush Toilet
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WCR	Walnut Canyon Reservoir
WEROC	Water Emergency Response Organization of Orange County
WOC	Water Operations Center
WSDM	Water Surplus and Drought Management

EXECUTIVE SUMMARY

The California Urban Water Management Planning Act of 1983, requires urban water suppliers to develop an urban water management plan (UWMP) every five years in years ending in zero and five.

The City of Anaheim (City) UWMP provides a level of planning to ensure the appropriate level of reliability in water service sufficient to meet the water needs of Anaheim Public Utility Department (APUD) customers during normal, single dry, or multiple dry years. The UWMP focuses on specific issues unique to the APUD service area. While some regional UWMP issues are introduced in this plan, comprehensive regional information is presented in Metropolitan Water District of Southern California's (Metropolitan) Regional UWMP.

The City's 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005, and includes the following discussions:

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

APUD water supplies include imported (treated and untreated) water from Metropolitan and groundwater from the Orange County Groundwater Basin (Basin) managed by the Orange County Water District (OCWD). Over the past several years, APUD has averaged approximately 73,000 AF in water sales to a service area population of about 347,000. Sixty-four percent of this amount can be provided from groundwater pumping based on the current Basin Pumping Percentage (BPP)[1]. Over the next 25-year planning period, total water use is anticipated to increase approximately 13 percent to 87,330 AFY and serve a population of nearly 401,000 people. APUD will continue to meet its future demands with imported water and groundwater supplies.

Protection of the quality of water supplies is a top priority. The quality of APUD's water supplies meets or exceeds state and federal standards. APUD has been fortunate to have exceptionally good groundwater resources in the past; however, recognizes the threat of contamination on its water supplies especially from volatile organic compounds (VOCs) and perchlorate. Monitoring, testing and treatment for required contaminants, pesticides

[1] The BPP is set each water year (currently 64%) by OCWD to manage the amount of production from the Basin. The BPP is based on groundwater conditions, availability of imported water supplies, and Basin management objectives. It is calculated by dividing the optimum producer's groundwater production (basin yield) by their total potable water demands.

and herbicides, as well as elements that are not yet regulated but have captured scientific and/or public interest, such as perchlorate, MTBE, and chromium VI, is a continual and high priority.

Reliability is a measure of a water service's system expected success in managing water shortages. The combination of demand management and supply augmentation options help to reduce the frequency and severity of shortages. APUD and the regional water agencies have implemented a variety of programs to ensure reliability through diversity of supply. Such programs in the region include water storage and transfers programs; enhanced conservation programs; development of additional local supplies, including recycled water, desalted water, groundwater cleanup and conjunctive use, and seawater barrier improvements; establishment of a preferred resource mix in the IRP; executing the Colorado River QSA, continuing SWP modeling, implementing the Santa Ana Regional Water Quality Control Board Basin Plan, and finalizing the OCWD Long-Term Facilities Plan to optimize the beneficial uses of ground and surface waters.

APUD's long-term plan to ensure a reliable water supply includes the following:

- Reduction of water demand through aggressive water use efficiency programs
- Groundwater production capacity and distribution ability to meet or exceed projected BPPs
- Cooperation with OCWD to maximize conservation activities throughout Orange County
- Increase groundwater recharge capabilities

APUD recognizes water use efficiency as an integral component of current and future water strategy for its service area due to growing competition for limited supplies, and increasing costs and difficulties in developing new supplies, among other factors. APUD is signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California. APUD actively implements the 14 conservation best management practices through policies, programs, rules, regulations and ordinances, and the use of devices, equipment and facilities that provide a significant reduction in water demand.

Finally, APUD has implemented a Water Shortage Plan to reduce water demands during water shortage emergencies. The Water Shortage Plan is formalized through Ordinance No. 5204 (1991) establishing three stages of action, and is designed to provide a minimum 50 percent of normal supply during a severe or extended water shortage. Increased groundwater pumping would serve as a critical component of the shortage strategy. APUD will also respond to Metropolitan's Water Surplus and Drought Management (WSDM) plan, which guides the management of regional water supplies in both surplus and shortage conditions.

The City's UWMP demonstrates planning efforts in coordination with Metropolitan and other regional agencies that ensure reliability of a sufficient supply of water to meet the needs of APUD's customers during normal, dry, or multiple dry years. The Water Reliability Analysis included in Section 4 shows that APUD will maintain a surplus of

water supply above demands in normal years ranging from approximately 9 percent to 14 percent through 2030. For a single dry year, a surplus of water supply ranging from approximately 8 percent to 12 percent; and for multiple dry years, a surplus of water supply ranging from approximately 7 percent to 16 percent. The results indicated that APUD can expect to meet all of its water demands over the next 25 years for average (normal), single and multiple dry years.

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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 in water service sufficient to meet the needs of its various categories of customers during normal, dry, or multiple dry years. The California Urban 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 the 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 Anaheim 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005[2] (Appendix A), and includes the following discussions:

- Water Service Area
- Water Division and 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 UWMP UPDATE PREPARATION

The City's 2005 UWMP revises the 2000 UWMP prepared by the Water Engineering Division of the City of Anaheim, Public Utilities Department (APUD) 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).

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

The UWMP also incorporates water use efficiency efforts that the City has implemented as signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU).[3]

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 (DWR) 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 resolution of the Anaheim City Council on December 20, 2005, following a public hearing on December 1, 2005. The public hearing was noticed in the Anaheim Bulletin on November 10, 2005, November 17, 2005 and November 24, 2005. The adopted Plan was submitted to the California DWR within 30 days of Council approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendix C. Draft copies of the Plan were made available prior to the public hearing and final copies of the Plan were available within 30 days following City Council adoption.

Agency Coordination and Public Participation

During plan development, APUD coordinated the development of this plan within the City with the City Planning Department, City Attorney, and City Clerk.

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. OCWD 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.

Interagency activities included the exchange of data and incorporation of the agencies' comments to the City's Draft UWMP, as appropriate. The intent of this plan is to focus on specific issues unique to Anaheim's water service area. While some regional UWMP issues are introduced in this plan, comprehensive regional information is presented in Metropolitan's and the Municipal Water District of Orange County's (MWDOC) 2005 Regional UWMPs.

[3]The MOU was adopted in September 1991 by numerous water suppliers, public advocacy organizations and other interested groups. It created the California Urban Water Conservation Council and established the Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs.

To assist APUD Water Engineering staff in preparation of the City's 2005 UWMP, APUD staff and/or consultants to the City for preparation of the UWMP attended the following workshops facilitated by DWR, Metropolitan and MWDOC:

Metropolitan: 2005 Regional UWMP Workshop at the City of Santa Ana, June 6, 2005, as well as additional regional meetings with Metropolitan.

DWR: 2005 UWMP Workshop at San Diego County Water Authority, February 1, 2005; and City of Santa Ana, March 1, 2005.

MWDOC: 2005 Regional UMWP at MWDOC, January 12, 2005.

Table 1.2-1 lists the entities that APUD coordinated with in the development of the City's 2005 UWMP.

Table 1.2-1
City of Anaheim UWMP Development
Coordination and Public Involvement

Entities	Coordination and Public Involvement Actions					
	Participated in UWMP preparation	Contacted for assistance	Sent/ Available: Copy of Draft UWMP	Commented on Draft UWMP	Sent Notice of Public Hearing	Attended Public Hearing
APUD	X	X	X	X	X	X
City Planning	X	X	X	X	X	
City Clerk		X			X	
City Attorney	X				X	X
Metropolitan		X	X		X	
MWDOC		X	X		X	
OCWD		X	X		X	
OCSD		X	X		X	
Public Library			X		X	
General Public			X		X	

This UWMP details the specifics as they relate to APUD 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 may 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 System Planning Study and other City planning documents, will be used by APUD staff to guide the City's water use and management efforts through the year 2010, when the UWMP is required to be updated.

1.3 CITY OF ANAHEIM WATER SERVICE AREA

Background

The City was first incorporated by the State Legislature in 1870. At the request of taxpayers, the Legislature revoked the incorporation in 1872. However, the City was again incorporated, first by the Board of Supervisors in 1876 and then by the State Legislature in 1878. APUD commenced water operations in 1879 and metering of customers began in 1890. The early municipal water system consisted of a single well, pumping plant, and a 20,000-gallon redwood storage tank. Wells were the sole source of water for the City until the 1940's when surplus water from the Colorado River was made available by Metropolitan via the Colorado River Aqueduct (CRA).

Metropolitan was formed in 1928 as a regional agency to develop or contract for imported water, function as the wholesaler of imported water to its member agencies, and provide the principal facilities for transmission, storage and treatment of such water. Anaheim was one of the 13 founding members of Metropolitan. Anaheim is also a groundwater producer from the Orange County groundwater basin (basin) managed by OCWD. One member of the OCWD Board is appointed by the Anaheim City Council. OCWD protects and manages the basin, including extractions, replenishment, monitoring basin groundwater conditions, and water quality.

Location

The City of Anaheim is in the northern half of the County of Orange and rated the 10th largest city in California, according to the 2000 Census. APUD provides water service within a 48.2-square mile service area. The service area and City boundary are nearly contiguous, with the City serving water to a small portion outside its boundaries and other utilities serving water to small areas within the City boundaries. A map of the City's regional location is shown in Figure 1.1.

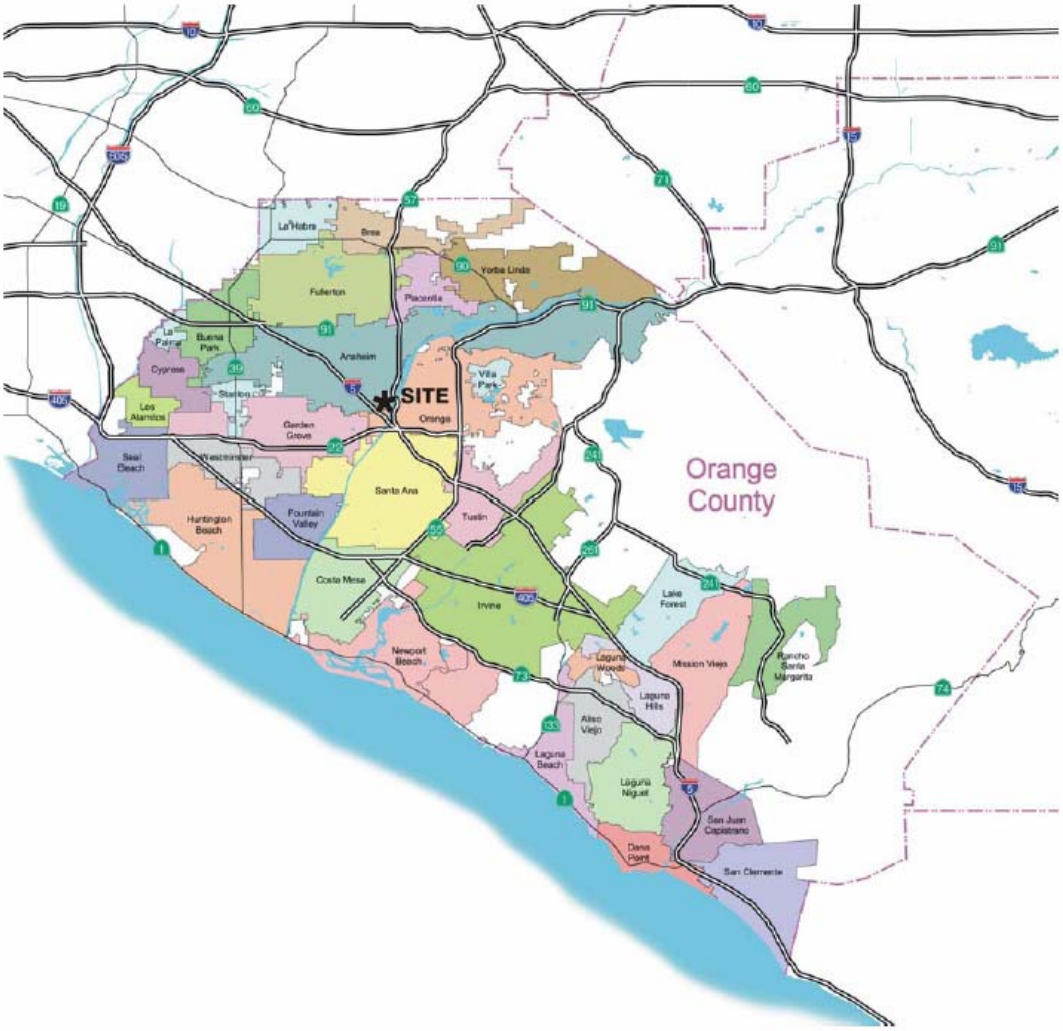
Climate Characteristics

Anaheim has a 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 daily high temperature ranges from 67 degrees Fahrenheit in January to 89 degrees Fahrenheit in August in a typical year. The average annual precipitation is nearly 14 inches,[4] although the region is subject to significant variations in annual precipitation.

[4] [on-line] Orange County Watershed and Coastal Resources Division, OC Rainfall. http://www.ocgov.com/pfrd/envres/Rainfall/rainfalldata.asp March 28, 2005

Figure 1.1
City of Anaheim Regional Location



Substantial precipitation occurred during the Fiscal Years 1992/93, 1994/95, and 1997/98; all exceeding 26 inches. In contrast, Fiscal Years 1998/99 and 1999/00 experienced modest precipitation at approximately 6.5 and 9 inches, respectively, while 2000/01 through 2004/05 experienced drought conditions. FY 2004/05 was one of the wettest years on record with approximately 28.1 inches[5] of rain. Evapotranspiration (ETo)[6] 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
Anaheim Water Service Area Climate

		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
Temperature (Fahrenheit)	Max	67.4	69.7	70.6	73.9	76.6	81.6	88.8	89.2	87.4	81.4	74.5	69.2	77.5
	Min	42.0	43.2	43.8	46.4	50.9	54.4	58.3	58.7	56.8	52.0	46.4	42.0	49.6
Average Rainfall (inches)		3.36	2.73	2.33	1.07	0.26	0.04	0.01	0.13	0.27	0.23	1.66	1.80	13.89

Source: http://www.ocalmanac.com/Weather/we02.htm#Rain; Yorba Linda Weather Station 7/1/1948 to 7/31/2003; Western Regional Climate Center.

Water Service Area

The City currently serves water to an area of approximately 48.2 square miles (30,800 acres) with elevations ranging from less than 60 feet to over 1,200 feet above sea level. The City's service area includes approximately 1.4 square miles (2.99% of the total service area) of water bodies. The City's Water Service Area excludes areas inside City limits serviced by other water purveyors and includes areas outside of City limits (between Brookhurst and Gilbert Streets) serviced by APUD. The City's water service area is shown in Figure 1.2.

Figure 1.3 shows Anaheim's water service area adjustments. Areas 1 through 5 are inside Anaheim City limits but serviced by other water purveyors. Areas 6 and 7 are outside Anaheim City limits but are serviced by APUD. Anaheim's basic water services include single-family and multi-family residential and general services (i.e. commercial, industrial, municipal, residential-agricultural, and agricultural consumers).

[5] [on-line] Orange County Watershed and Coastal Resources Division, OC Rainfall. http://www.ocgov.com/pfrd/envres/Rainfall/rainfalldata.asp, August 8, 2005

[6] 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.

Figure 1.2
City of Anaheim Public Utilities Water Service Area

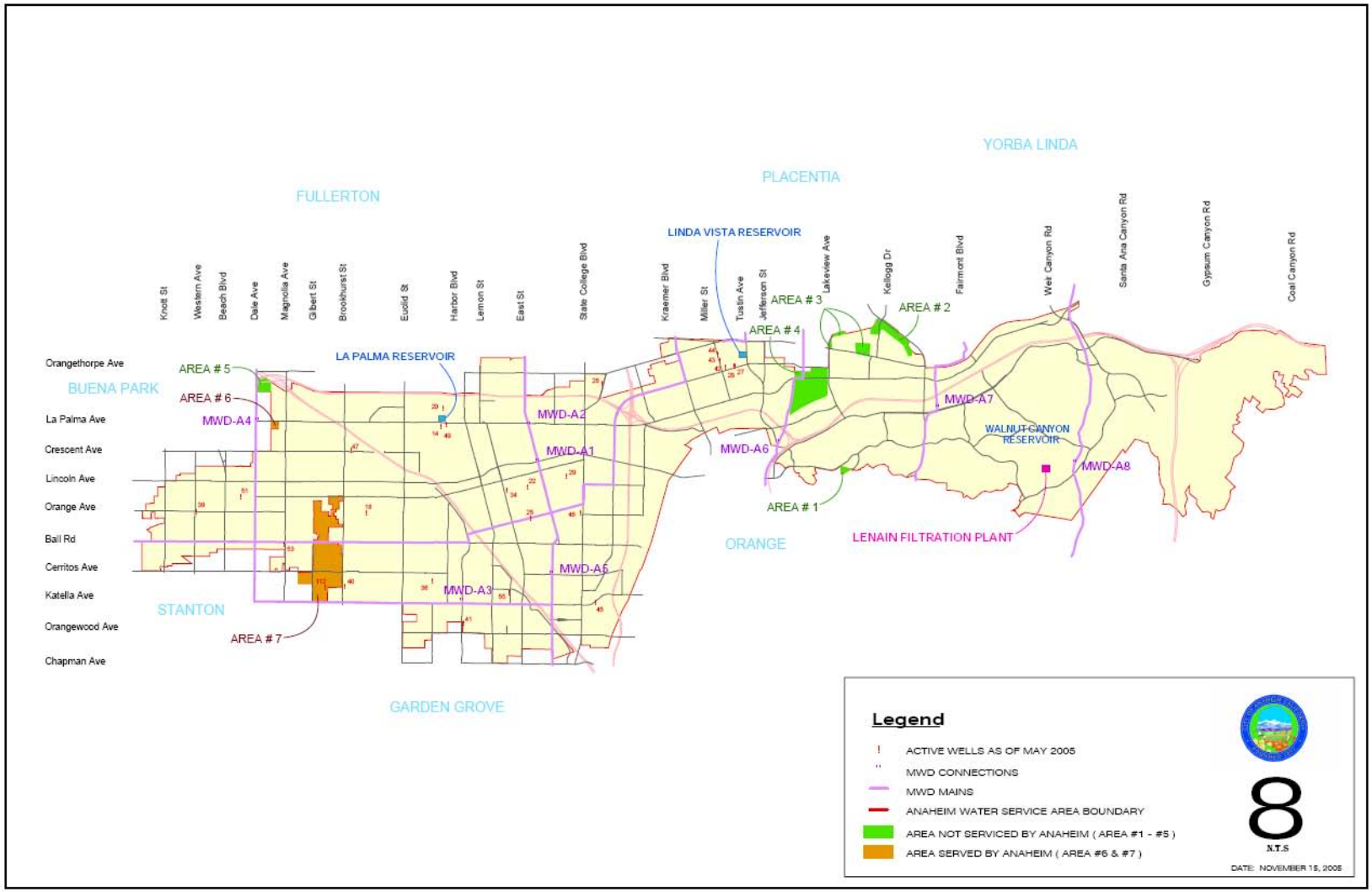
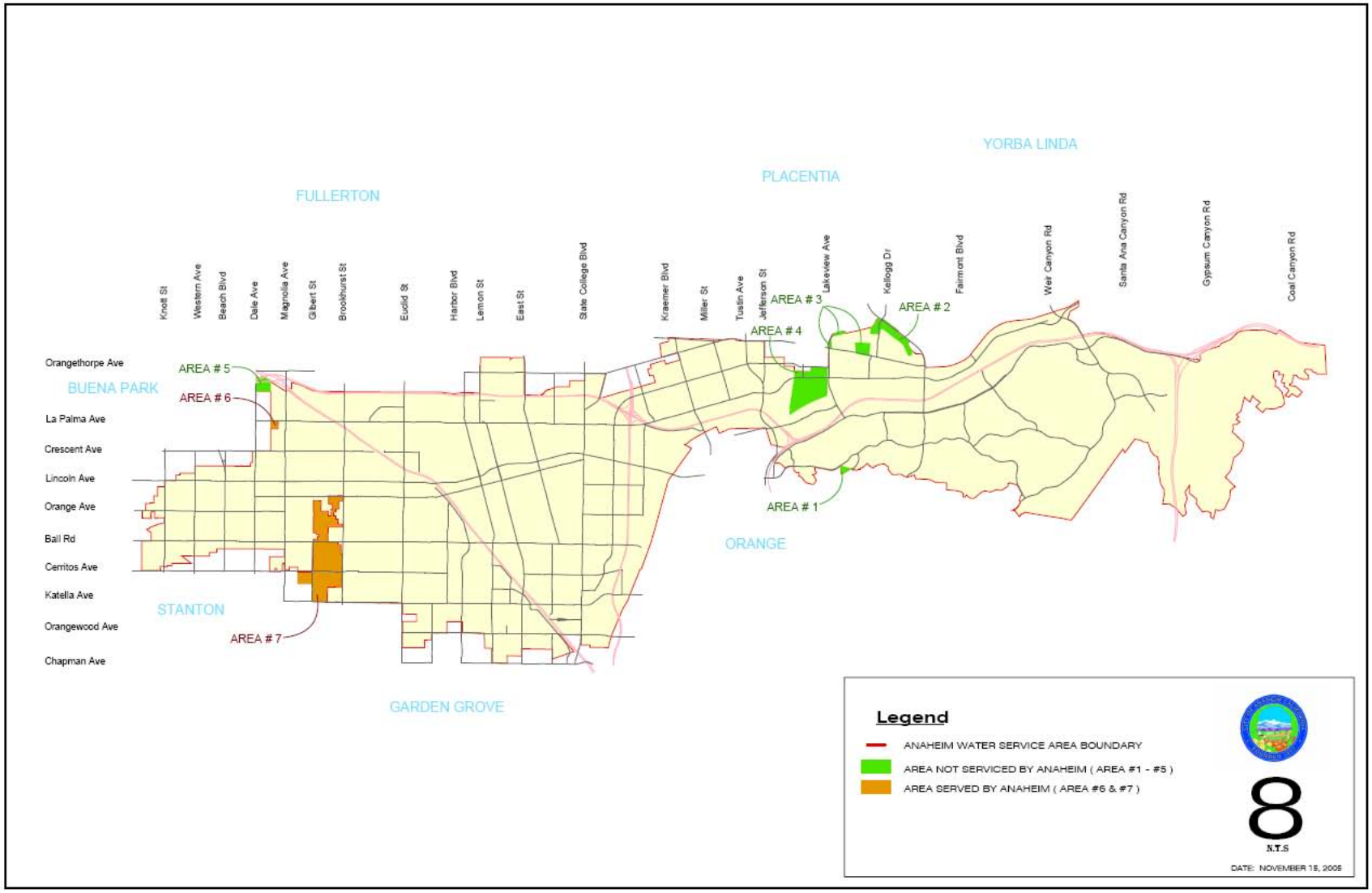


Figure 1.3
Anaheim Public Utilities Water Service Area Adjustments



As Anaheim has developed, APUD has correspondingly increased its number of connections, increased the quality of wells, built a series of reservoirs, and greatly expanded the transmission and distribution system in order to meet the water service requirements of a growing number of customers.

Demographics

According to the State of California, Department of Finance, Anaheim is the 10th most populated city in California. Anaheim is the second most populated city in Orange County with an estimated population of approximately 344,000[7].

The population in Anaheim was approximately 1,500 in 1900 and by 1950, the population was approximately 14,500. In 1955 and 1966, Disneyland and Anaheim Stadium were opened, respectively. These facilities, along with others, prompted a population increase to approximately 166,000 by 1970. Anaheim's water service area current year 2005 population of 346,932 is projected to increase to approximately 401,000 by the year 2030. Much of the growth will likely be attributed to higher population densities throughout Anaheim including The Platinum Triangle and the proposed Mountain Park single and multi-family residential development in Anaheim Hills. Some population growth will also occur in the redevelopment areas.

There are also approximately 3,000 additional people who reside outside Anaheim's City limits, but are served by APUD and are included in the total reflected in Table 1.3.2. This segment of the service area population is not expected to change significantly in the near future.

Table 1.3-2
Water Service Area Population – Past, Current and Projected

	2000	2005	2010	2015	2020	2025	2030
Service Area Population*	333,100	346,932	373,852	390,764	397,774	400,529	400,990

* Past, current and future population projections include approximately 3,000 people who reside outside of Anaheim City limits, but are served water by APUD. All data provided by City Planning Department.

1.4 CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT AND WATER FACILITIES

Anaheim Public Utilities Department (APUD)

APUD is the only municipal water and electric utility in Orange County. As a community-owned utility, APUD is governed by a locally elected City Council and Mayor. The five-member body is responsible for determining policy for APUD as well as

[7] Center for Demographic Research, California State University at Fullerton, 2005 estimated population

citizen appointments to the seven-member Anaheim Public Utilities Board. The Board acts as an advisory panel to the City Council on all utilities matters. The Public Utilities General Manager is responsible for all utility operations and reports to the City Manager.

As presented earlier, APUD began in 1879 and metering of customers began in 1890. Wells were the sole source of water for the City until the 1940's when surplus water from the Colorado River was made available by Metropolitan via the CRA. Metropolitan, the City's wholesale imported water agency, provides the principal facilities for transmission, storage and treatment of imported water.[8] Anaheim is also a groundwater producer from the basin managed by OCWD. Anaheim City Council appoints a member to the OCWD Board of Directors.

Water System Pressure Zones and Facilities

APUD's current major water system facilities consist of eight import connections to Metropolitan (one untreated water and seven treated water connections), 28 wells (23 active as of May 3, 2005, per the State of California, Department of Health Services), one 920 million gallon (MG) reservoir for untreated water, one 15 million gallon per day (MGD) water treatment plant, 12 treated water reservoirs with 28.75 MG of treated storage capacity, permanent chlorination facilities at various sites, nine booster pump stations, approximately 747 miles of water mains and approximately 7,850 fire hydrants.

APUD's water system serves areas ranging in elevation from less than 60 feet to over 1,200 feet above sea level. In order to provide appropriate operating pressures for such a wide range of elevations, the water system is divided into 19 pressure zones. The lowest pressure zone operates at a static hydraulic grade line (HGL) elevation of 220 feet above sea level and the highest pressure zone having a static HGL elevation of 1,320 feet above sea level. APUD's water distribution system is generally divided into two main geographic areas; the "Flatland Area" (i.e. 555 HGL elevation and below) and the "Hill and Canyon Area" (i.e. the 585 HGL elevation and above). The Flatland Area is approximately 21,000 acres, situated generally north and west of the Santa Ana River, and can almost be entirely served by groundwater (with Metropolitan imported water supplemented, as necessary.) The Hill and Canyon Area is approximately 11,000 acres, situated generally south and east of the Santa Ana River, and served primarily by the imported water from Metropolitan and the Lenain Water Treatment Plant (LWTP).

[8] In1951, Anaheim became part of MWDOC, a sub-regional agency formed to negotiated for Metropolitan water and to coordinate its use by local agencies. MWDOC is also a wholesaler of water, primarily serving water purveyors that are not Metropolitan member agencies. In 1986, Anaheim detached from MWDOC, mainly to reduce water costs for Anaheim. The detachment from MWDOC had no impact on Anaheim's water supply.

SECTION 2
WATER SOURCES AND SUPPLIES

2.1 WATER SOURCES

The APUD currently obtains water from the following primary water sources: 1) imported (treated and untreated) water from Metropolitan; and 2) naturally and artificially recharged local groundwater produced from APUD-owned wells from the basin. The APUD works together with Metropolitan and OCWD to insure a safe and high quality water supply, which will continue to serve the community in periods of drought and shortage.

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 Anaheim, Santa Ana 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. Following completion of Parker Dam and the CRA, water from the Colorado River flowed into Southern California. In the 1950's and 60's Metropolitan constructed the California Aqueduct to bring water from Northern California to the south. Metropolitan currently acquires water from the CRA and from northern California via the State Water Project (SWP) 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 APUD.

Orange County Water District (OCWD)

OCWD was formed in 1933 to protect and manage the basin under northern and central Orange County. OCWD has 23 major producers that extract water from the basin serving a population of approximately 2.8 million.[9] The non-adjudicated basin is managed by OCWD for the benefit of municipal, agricultural and private groundwater producers. 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.[10]

[9] Orange County Facts and Figures. Center for Demographic Research. Available: http://www.fullerton.edu/cdr/countyfacts.pdf. Note: Population served by OCWD is different than MWDOC as it serves the cities of Santa Ana, Fullerton, and Anaheim. June 2002.
[10] OCWD Master Plan Report. 1999.

As part of its original formation, OCWD was established by a special act of the State of California Legislature. This legislation is found in the State of California Statutes, Water – Uncodified Acts, Act 5683, as amended.[11] 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.'*[12] 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 (RA) and basin equity assessments (BEA) 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.[13]

2.2 WATER SUPPLY

The APUD currently receives approximately 64 percent of its water supply from its groundwater wells that access the basin and 36 percent imported water from Metropolitan. These percentages are established through the OCWD's allowable Basin Pumping Percentage (BPP). There is a financial disincentive for pumping above the BPP (i.e. BEA), however the APUD may pump above the BPP if basin conditions allow.

The BPP is typically set by OCWD on an annual basis. However, OCWD does have the option of revising the BPP as needed. Actual pumping percentages for APUD may vary somewhat on an annual basis depending on the extent in-lieu delivery programs are implemented, where the APUD will take more imported water in-lieu of pumping groundwater under a joint program of Metropolitan and OCWD. In addition, APUD maintains 17 interconnections with adjacent water purveyors that are temporarily utilized from time to time, on an as-needed or emergency basis.

Current and projected water supplies from imported water and groundwater are shown in Table 2.2-1 and described in subsequent sections. Projected water supplies are based on a long-term BPP of 70 percent. A BPP of 70 percent is used in accordance with the projections, projects and programs of OCWD's Long Term Facilities Plan (LTFP). The LTFP is discussed in greater detail in Section 4.1.1.

[11] Orange County Water District Act.
[12] Orange County Water District Act, Section 77.
[13] Orange County Water District Act, Sections 23 and 31.5.

Table 2.2-1
Anaheim Public Utilities Department
Current and Projected Water Supplies
(AFY)[1]

Water Supply Sources	2005	2010	2015	2020	2025	2030
Groundwater	43,410	30,780	30,890	33,030	31,250	29,410
Imported Water	25,867	57,850	60,000	60,890	61,240	61,300
Total	**69,277**	**88,630**	**90,890**	**93,920**	**92,490**	**90,710**

Note: Based on water supply data from Section 4, Table 4.2-4
[1] AFY = acre-feet per year

Imported Water

Currently, approximately 36 percent of the APUD's water supply comes from imported water wholesaled by Metropolitan. The APUD purchases both treated potable and untreated water from Metropolitan. The treated water is delivered through five major feeders; the East Orange County Feeder, Orange County Feeder, Second Lower Feeder, West Orange County Feeder, and Allen-McColloch Pipeline. Metropolitan's method of treatment includes filtration and disinfection processes at the Weymouth Filtration Plant located in LaVerne and the Diemer Filtration Plant located in Yorba Linda. The APUD maintains seven connections to the above treated Metropolitan feeders and one connection to untreated non-potable water. The characteristics of these connections are shown in Table 2.2-2.

Table 2.2-2
APUD Imported Water Connections

Designation	Location	Capacity (CFS)[1]
A-01	Orange County Feeder	10.0
A-02	Orange County Feeder	10.0
A-03	West Orange County Feeder	12.5
A-04	West Orange County Feeder	15.0
A-05	Orange County Feeder	15.0
A-06	East Orange County Feeder	35.0
A-07	Allen McColloch Pipeline	32.4
A-08	Santiago Lateral	40.0
Total		**169.9**

[1] CFS = cubic feet per second

Untreated Metropolitan water is delivered to the APUD's Walnut Canyon Reservoir (WCR), through Metropolitan Connection A-08, via the Santiago Lateral of the Lower Feeder System. The WCR has a total capacity of 2,823 acre-feet (AF), or 920 MG. This water is treated by the APUD's LWTP. Together, the WCR and LWTP form a receiving, storage, and treatment facility.

APUD intermittently participates in Metropolitan's Seasonal Storage Service (SSS) program. The SSS program offers a variety of participation options to increase storage in groundwater basins. APUD will continue to participate in the seasonal shift program, which provides credits for pumping groundwater in the summer months and receiving a like amount of water in the winter months. The seasonal shift program (and Metropolitan's capacity reservation charge) minimizes demands on Metropolitan during the summer months, thus reducing Metropolitan's water system improvements and expenditures. APUD's seasonal shift contract terminates on May 1, 2008.

Metropolitan's Surplus Water Program (or in-lieu) is a cost-neutral program for APUD that allows Metropolitan to make direct deliveries to APUD's distribution system in lieu of APUD producing water from the Orange County groundwater basin. This program indirectly replenishes the basin by reducing actual groundwater pumping. In the in-lieu program, OCWD requests APUD to reduce pumping by a specified quantity. APUD then takes replacement water through its import connections, which is purchased by APUD from Metropolitan at a reduced rate. OCWD further rebates APUD so that the cost of in-lieu water to APUD is equivalent to pumping groundwater from its wells. The in-lieu water is counted toward APUD's BPP as groundwater production. The deferred local production results in water being left in local storage for future use (e.g. dry weather periods, emergencies, etc.).

Reservoirs

APUD maintains 12 water reservoirs with a storage capacity of 28.75 MG. APUD also has a 920 MG reservoir for untreated water, subsequently treated at LWTP. Pumps draw water from the reservoirs into the water system during high demand periods. The reservoirs are utilized to meet peak water demands, enhance operational efficiency, and provide fire and short-term emergency storage for APUD.

Interconnections

APUD maintains 17 interconnections with neighboring cities and water districts including the City of Garden Grove, City of Orange, City of Fullerton, Golden State Water Company (formerly known as Southern California Water Company), and Yorba Linda Water District. Table 2.2-3 lists these interconnections, along with their corresponding agency, general location, and connection pipe diameter. These interconnections are primarily used to supply a nominal quantity of water during emergency situations or as necessary. The amount of water available from these connections is dependent on the capacity of hydraulic conditions of the neighboring agency's water system.

Table 2.2-3
APUD Interconnections

Interconnection Number	Agency	Description	Connection Pipe Diameter (inches)
1	Garden Grove	Katella Avenue, east of Easy Way	6
3	Garden Grove	Orangewood Avenue, east of Euclid Street	6
4	Garden Grove	Katella Avenue, west of Euclid Street	6
6	Orange	Simmons Avenue, east of Haster Street	6
7	Garden Grove	Simmons Avenue & Haster Street	6
9	Orange	At Burrel Reservoir	10
10	Fullerton	Harbor Boulevard, north of La Palma Avenue	8
11	Golden State Water Company	La Jolla Street, west of Red Gum Street	12
12	Yorba Linda Water District	La Palma Avenue, east of Jenifer Drive	10
13	Golden State Water Company	Orangethorpe Avenue & Concerto Drive	8
14	Yorba Linda Water District	Willow Woods Drive, north of Orangethorpe Avenue	8
15	Yorba Linda Water District	Weir Canyon Road @ Crystal Drive	16
16	Orange	Nohl Canyon Road, south of Nohl Ranch Road	8
17	Orange	Ardmore Street (To Anaheim Only)	4
18	Orange	Londerry Lane – 300’ south of Andover Drive	12
19	Fullerton	Raymond Avenue – 670’ south of Orangethorpe Avenue	10
20	Orange	Nohl Ranch Road, south of Camino Grande	12

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 potable water supply demand for Orange County basin groundwater producers. 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 AF.[14] 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 the following:

- Base and storm flows from the Santa Ana River percolated into the basin (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties)
- Imported water percolated into the basin
- Incidental recharge from regional subsurface inflows including local rainfall (greater in wet years)
- Treated wastewater from Orange County Water District recharged into the basin
- Flows across the Orange/Los Angeles groundwater basins

The Orange County groundwater basin is not adjudicated and based on DWR's official departmental bulletins, California's Groundwater Bulletin 118 Updated 2003 and Bulletin 160, The California Water Plan Update 2005, 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 (GMP) summarizes the accumulated overdraft and water level elevations within the basin. OCWD estimates that as of August 31, 2005, the accumulated overdraft was approximately 225,000 AF.[15]

[14]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
[15] Orange County Water District staff estimates.

Based on OCWD's 2004 GMP, 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.[16] With an accumulated overdraft of 200,000 AF, the basin is considered 99.5 percent full with 40 million acre-feet (MAF) of groundwater in storage. The entire 40 MAF of groundwater, however, is not accessible due to salt water intrusion issues. The pumping must be offset with recharge to maintain the optimal overdraft condition and prevent seawater from migrating inland. During a typical year, pursuant to OCWD's basin management plan, the amount of groundwater available out of storage is essentially the same as the amount of water that can be indirectly or directly recharged to the basin.

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 APUD to provide its groundwater production to OCWD on a monthly basis, routine monthly measurement of groundwater levels, water quality monitoring, and assessment of sea water intrusion.

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 the optimum producer's groundwater production (basin yield) by their total potable 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 (RA) 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.[17] Producers may pump above the BPP to 100 percent of their needs by paying the BEA. The BEA is the additional fee paid on any water pumped above the BPP, making the cost of that water approximately equal to the cost of imported water. Such flexibility in producing over the BPP guarantees the APUD and other water utilities in Orange County the ability to provide water to their customers during periods of varying water availability.

[16] Orange County Water District, Groundwater Management Plan, March 2004.
[17] While the BPP may increase to 75% in future years, a more conservative BPP factor of 70% based on the OCWD Long Term Facilities Plan is used in this UWMP for determining future groundwater supply availability

When Metropolitan has an abundance of water, they may choose to activate their Surplus Water (In-Lieu) Program, where imported water is purchased at a lower cost by the APUD in-lieu of pumping groundwater. In-lieu water is counted towards APUD's groundwater pumping percentage.

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, incidental recharge, results from the recharge of precipitation and other water sources, such as irrigation, throughout the region. OCWD estimates that an average of 60,000 AFY is incidentally recharged to the basin.

Artificial recharge occurs at 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 2.2-4.

Table 2.2-4
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, GMP, 2004

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

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 at the Talbert Barrier flows inland and is therefore considered

replenishment water. The Alamitos Barrier received approximately 5,000 AFY of injected water 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. The maximum amount of recharge, if replenishment water supplies were in abundance, is limited by facility capacity and accumulated overdraft conditions of the basin.

APUD Wells

The APUD owns and operates a network of groundwater wells to supply water to their customers. Table 2.2-5 summarizes the amount of groundwater pumped by the APUD for the last five years from the basin and the percentage of total water supply.

Table 2.2-5
Historic Amount of Groundwater Pumped and Comparison with Overall System Production as a Percent of Total Water Supply
(AFY)

Basin Name	2000	2001	2002	2003	2004	2005
Orange County Groundwater Basin	52,915	60,049	62,900	50,852	51,831	43,642
Imported Water	27,153	16,560	17,237	23,943	25,066	28,030
Total Supply	**80,068**	**76,609**	**80,137**	**74,795**	**76,897**	**71,672**
Percent of Total Water Supply	**66.1%**	**78.4%**	**78.5%**	**68.0%**	**67.4%**	**60.9%**

Notes:
1. Totals are based on a water 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. The total water usage data was obtained from APUD's monthly water revenue reports. Data reflects total historical production and not customer demands or sales. The difference between production and sales reflects changes in reservoir or storage levels as well as unaccounted-for losses.
2. In-lieu supplies included in the above imported water quantities.

Table 2.2-6 shows the amount of water that is projected to be pumped by the APUD in the next 25 years. It is anticipated that groundwater conditions will improve and the BPP will rise to about 70 percent through the planning period.

Table 2.2-6
Projected Groundwater Pumping[1]
(AFY)

Basin Name	2010	2015	2020	2025	2030
Orange County Groundwater Basin	57,850	60,000	60,890	61,240	61,300
Percent of Total Water Supply Into the System	70%	70%	70%	70%	70%

Note: 1. Projections are for normal weather years.
2. Data based on Section 4, Table 4.2-4 and Section 5, Table 5.1-1.

The above groundwater pumping projections assume that the Mountain Park development will be annexed into OCWD. The determination of annexation is currently in progress. If the annexation does not occur, APUD will essentially serve Mountain Park demands with 100% imported water. This will result in an ultimate decrease of approximately 1,500 AF of groundwater production and reduce APUD's groundwater pumping percentage by about 2%.

SECTION 3
WATER QUALITY

3.1 WATER QUALITY OF EXISTING SOURCES

As required by the California Safe Drinking Water Act, which was reauthorized in 1996, the APUD 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, APUD monitors regulated and unregulated compounds in its water supply and in years past, the water delivered to the APUD meets the standards required by the state and federal regulatory agencies.[18] As mentioned earlier, the APUD's sources of water currently include imported water supplies and groundwater.

IMPORTED WATER

The APUD receives imported, treated water from Metropolitan, which receives raw water from Northern California through the SWP and CRA. 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 APUD.

The APUD also receives imported, untreated water from Metropolitan, delivered to the APUD's WCR, through Metropolitan Connection A-08, via the Santiago Lateral of the Lower Feeder System. This water is treated at the LWTP. The LWTP utilizes a conventional treatment process that includes coagulation and flocculation, sedimentation, deep bed monomedia (anthracite coal) filtration and ozone disinfection. The new facility also includes a water system operation center and a fully equipped water quality laboratory.

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 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.[19] 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 substances that are not regulated but have captured scientific and/or public interest.

[18] City of Anaheim 2004 Water Quality Report.
[19] Metropolitan's website, www.mwdh2o.com/mwdh2o/pages/yourwater/2005_report/protect_02.html

Metropolitan has tested for chemicals such as perchlorate, methyl tertiary butyl ether (MTBE), and chromium VI among others.
In Metropolitan's Integrated Water 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 water supplies available to the APUD. Metropolitan's 2005 UWMP Update includes the following examples:

- 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 CRA has the highest level of salinity of all Metropolitan's sources of supply, averaging 650 milligrams per liter (mg/L) during normal water years.[20] 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 EPA.

In contrast, water from the SWP is significantly lower in TDS, 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

[20] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft.

Metropolitan's Salinity Management Action Plan. The state of California has a recommended secondary MCL of 500 – 1,000 mg/L. 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 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 believed to inhibit the thyroid's ability to process iodide. 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 ion exchange, 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 compounds that can form disinfection byproducts (DBPs). 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 DBPs 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. Metropolitan's board, therefore, authorized the use of ozone as the primary disinfectant at all five Metropolitan treatment plants in July 2003 to minimize impacts from reduced deliveries of Colorado River water. 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 DBPs regulations. Metropolitan 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 DHS has adopted a primary maximum contaminant level (MCL) of 13 micrograms per liter (ug/L) for MTBE and a secondary MCL of 5 ug/L. 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 picocuries per liter (pCi/L) whereas the California drinking water standard is 20 pCi/L.[21]

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. Metropolitan manages this potential reaction by monitoring their system to ensure the water supplies meet or exceed the standards set by the State of California. The notification level for NDMA is 10 ug/L. Metropolitan currently samples quarterly for NDMA at their treatment facilities and at specific locations throughout their service area. Metropolitan focuses on areas of the system where there is a long retention time for water because these areas are where the concern for a reaction between monochloramine and organic nitrogen precursors is the greatest. Metropolitan will be expanding the number of samples taken in 2006 to better represent the system.

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 Topock, Arizona. In February 2005, Chromium VI was detected at a concentration of 354 ug/L.[22] 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.[23] This exchange project was discussed earlier as a mean to convey higher quality water to Metropolitan.

[21] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft.
[22] Arizona Department of Health Services, Topock Groundwater Study Evaluation of Chromium in Groundwater Wells, September 7, 2005.
[23] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft.

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 TDS 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.[24]

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.[25]

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 APUD's wells. Wells are sampled for regulated and unregulated chemicals at the required monitoring frequency.

[24] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft.
[25] Orange County Water District, *Groundwater Management Plan,* March 2004.

The OCWD operates an extensive groundwater quality management program that allows them to address current issues and develop strategies to anticipate and resolve future issues. OCWD's 2004 GMP has a section devoted solely to groundwater quality management. The groundwater quality issues facing OCWD and the APUD 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 nitrates, attaining the Regional Water Quality Control Board's (RWQCB) 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. OCWD nitrate projects include the Garden Grove Nitrate Removal Project and the Tustin Main Street Treatment Plant.

Total Dissolved Solids (TDS)

Another water quality concern is TDS. OCWD has been proactive to combat the increase in salinity within the basin; however, many wells within OCWD exceed the water quality objective. The TDS recommended secondary MCL for TDS ranges from 500 – 1,000 mg/L. TDS concentration in the groundwater pumped from the basin ranges from 223 to over 600 mg/l and averages 461 mg/l.[26] The average TDS concentration of groundwater pumped by the APUD is 570 mg/l, which is well under the upper limit of the secondary MCL.

The TDS levels within the recharge waters are higher than the average TDS concentrations within the groundwater. As a result, TDS concentrations within the groundwater continue 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 will implement the Groundwater Replenishment System (GWRS).[27] The GWRS will produce waters with an estimated TDS of 65 mg/L.[28]

One of the major challenges for OCWD is the contamination of groundwater by saltwater intrusion. OCWD has therefore implemented two seawater intrusion barriers: the Talbert Barrier and the Alamitos Barrier. The coastal seawater monitoring program focuses on

[26] 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.
[28] DWR, SWRCB, DHS 2002 Recycled Water Task Force Economics Work Group Draft White Paper, November 18, 2002.

the effectiveness of the barriers and the following parameters are monitored: water level elevations, chloride, TDS, electrical conductivity, and bromide. Each of these parameters allow OCWD to track the extent and movement of saline waters throughout the basin.

Volatile Organic Compounds (VOC)

OCWD has an aggressive volatile organic compound (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)

Drinking water wells within OCWD are tested for 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.[29] The U.S. EPA currently classifies MTBE as a possible human carcinogen.

There are hundreds of 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.[30] 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 near surface contaminants such as MTBE.

N-nitrosodimethylamine (NDMA)

In 2000, OCWD discovered NDMA, a known carcinogen, in the injection water used to prevent seawater intrusion at the Talbert Barrier. OCWD adjusted the treatment system to include ultraviolet light and has since eliminated NDMA from the injection water.

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 APUD's wells have been tested for NDMA and have not exceeded the notification level.

[29] 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.
[30] Orange County Water District, *Groundwater Management Plan,* March 2004

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 widespread use and their possible impact on human health when exposed 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

Colored groundwater is encountered over a broad region of Orange County and is estimated to total over 1 MAF. 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. The OCWD 2004 GMP 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 other programs that address water quality concerns of the groundwater basin. Some of these 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 goal of the source water assessment is to provide public information and increase public awareness on the vulnerability of wells to potential contamination and encourage voluntary local source water protection activities.[31]
- Surface Water Monitoring – OCWD conducts routine monitoring of the Santa Ana River and other surface waterways in the upper watershed. OCWD completed 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 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.

[31] Orange County Water District, Groundwater Management Plan, 2004.

- 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 groundwater producers

3.2 EFFECTS OF WATER QUALITY 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 APUD's water. Similar to Metropolitan and OCWD, the APUD prepared Source Water Assessments for each of the APUD's water sources (completed in December 2002) including the areas around each well and WCR (which provides water to the LWTP) to determine if there were any potential contaminating activities present. Like any urban area, APUD's groundwater is considered to be vulnerable to contamination from business such as dry cleaners, gas stations, and various industrial activities.[32] If contamination is detected in a well, its usage is decreased or if the contamination is considered significant, the well is taken out of service.

In order to prevent contamination of groundwater, APUD has voluntarily undertaken the following programs in addition to supporting those programs implemented by OCWD:

1) The well destruction program was developed to help remove old abandoned wells left over from the City's agricultural era. These wells can act as conduits that allow near-surface contamination to migrate into deeper groundwater aquifers. Well destruction involves pulling out the pump, filling the well casing with grout, capping the well, and restoring the surface to a useable condition.

2) A Groundwater Protection Zone was established to bring attention to the fact that the eastern portion of the City is a critically important groundwater recharge area. The majority of groundwater recharged for the entire basin occurs in this relatively small portion of the City. The area is delineated by the Santa Ana River to the south, Imperial Highway to the east, Orangethorpe Ave on the north and the 57 Freeway on the west. APUD is developing education materials describing the importance of preventing pollution within this area.

[32] City of Anaheim 2004 Water Quality Report.

These material swill be provided to residents and businesses in the area during site inspections and other contacts with APUD staff.

3) APUD continues to clean up an abandoned gasoline station in the west part of the City utilizing State funding. The site was abandoned by the property owner and as a result the SWRCB has agreed to reimburse APUD for all costs to cleanup the site. The cleanup will help protect one of our high production wells located about one half mile from the site.

4) APUD specific programs tailored for water quality include flushing the system, implementation of the backflow program, system wide disinfection compliance, and water quality sampling at APUD's state certified lab. APUD also utilizes their wells based on water quality. Those wells with a better water quality are given a higher priority for use.

Although APUD has implemented water quality programs to prevent contamination, APUD recognizes the threat of contamination on its water supplies especially from VOCs and perchlorate. In March 2004, the Office of Environmental Health Hazard Assessment issued a public health goal for perchlorate of 6 ug/L. To date, however, DHS has not set a regulatory drinking water standard. Perchlorate has been found in the basin within the APUD's service area, however, all of APUD's source waters are at, or below, the public health goal. APUD has detected perchlorate above the laboratory detection limit of 4 ug/L in six wells. Two of those wells have been taken out of service and in two others, the perchlorate levels have fallen below the detection limit. The APUD will continue to monitor the perchlorate levels in its wells and the development of the MCL to ensure that their water meets all standards.[33]

APUD continues to sample its water supplies for potential contamination and will implement necessary mitigation measures to prevent any loss of supply. APUD has been fortunate to have exceptionally good groundwater resources in the past and does not anticipate any changes in supply due to water quality because of the continued efforts of APUD, Metropolitan, and OCWD.

[33] City of Anaheim 2004 Water Quality Report.

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SECTION 4
WATER RELIABILITY PLANNING

4.1 RELIABILITY OF WATER SUPPLIES FOR THE CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT

APUD and all 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 Fiscal Year 2004/05, APUD produced approximately 63 percent of its water supply from local groundwater, managed by the OCWD, and 37 percent from imported water from Metropolitan. The amount of groundwater pumped during the 2005 Fiscal Year was less then historical trends because of the 66 percent BPP (now set at 64 percent for Fiscal Year 2005/06). Historically, APUD has physically pumped less than the BPP due to participation in the In-Lieu Program (e.g., during the four prior fiscal years, groundwater production averaged about 73 percent[34] with imported water making up the 27 percent balance); however, imported water taken in-lieu of groundwater pumping is counted as groundwater and, therefore, shows up as pumped groundwater in the annual statistics.[35]

Although APUD is not a member agency of MWDOC, a regional water wholesaler in Orange County, APUD 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 alternative water supply 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, OCWD's LTFP (Draft October 2005), OCWD 2020 Master Plan Report, and the OCWD 2004 GMP. The optimum water supply strategy should 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

[34] City records; refer to Table 2.2-5
[35] Refer to Table 2.2-5

The reliability of APUD's water supply is currently dependent on the reliability of both imported and groundwater water supplies, which are managed and delivered by Metropolitan and OCWD, 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 APUD 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 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.[36]

Colorado River Aqueduct (CRA)

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 MAF basic annual apportionment of Colorado River water plus any available surplus. To keep California at 4.4 MAF, Metropolitan reduces its level of diversions in years when no surplus is available.

Pursuant to the 1964 U.S. Supreme Court decree, Metropolitan's dependable supply of Colorado River water was limited to 550,000 AFY assuming no surplus or unused Arizona and Nevada entitlement was available and California agricultural agencies use all of their contractual entitlement. Metropolitan also possesses a priority for an additional 662,000 AFY depending upon availability of surplus water. Water under this priority, referred to as priority 5, can come from:

- Water unused by the California holders of priorities 1 through 3
- Water conserved by the water conservation program with Imperial Irrigation District (IID)
- Water saved by the Palo Verde fallowing and forbearance program
- When the U.S. Secretary of the Interior determines that surplus water is available or apportioned water to Arizona and Nevada are not used

Surplus water under priority 5 is expected to decrease in the future as water demands increase in Arizona, Nevada, and California. Metropolitan, however, continues to

[36] Metropolitan Water District of Southern California, Draft Regional UWMP, September 2005

develop programs that will provide surplus water as discussed in Section 4.4.2. In an average year, the amount of surplus water available from these programs, above Metropolitan's dependable water supply of 550,000 AFY, ranges from 348,700 AFY in 2010 to 432,700 AFY in 2030.[37]

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.

To implement these plans, a number of agreements have been executed. One such agreement, the Quantification Settlement Agreement (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. The QSA was authorized in October 2003 and defined Colorado River water deliveries to the four California agencies as well as facilitated transfers from agricultural agencies to urban users. The QSA is a critical component of the California's Colorado River Water Use Plan.

Metropolitan's 2003 IRP 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.[38] The State Water Project Delivery Reliability Report provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns.

On an annual basis, each of the 29 SWP contractors, including 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[39], currently at 1,911,500 AFY. The full Table A amount is defined as the maximum amount of imported water to be delivered and is specified in the contract between the DWR and the contractor. A contractor may chose to request an amount of SWP water that is less than their full Table A amount and for that year the amount requested becomes the contractor's Table A amount. Since Metropolitan's request is typically its full Table A

[37] Table A3-7 in the Metropolitan Water District of Southern California, Draft Regional Urban Water Management Plan, September 2005.
[38] Department of Water Resources, State Water Project Delivery Reliability Report. 2002.
[39] Two types of deliveries are assumed for the SWP contractors: Table A and Article 21. Table A Amount is the contractual amount of allocated SWP supply; it is scheduled and uninterruptible. Article 21 allows SWP contractors to receive additional water deliveries only under specific conditions. [Department of Water Resources, State Water Project Delivery Reliability Report, 2002.]

amount, Metropolitan's Table A amount is 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. Table 4.1.1-1 lists the historical SWP deliveries to Metropolitan and the delivery's percentage compared to the full Table A amount.

Table 4.1.1-1
SWP Deliveries to Metropolitan[1]
(MAF)

Year	SWP Delivery	% of Full Table A Amount
1981	826,951	43%
1982	856,996	45%
1983	385,308	20%
1984	501,682	26%
1985	740,410	39%
1986	756,142	40%
1987	769,603	40%
1988	957,276	50%
1989	1,215,139	64%
1990	1,457,676	76%
1991	624,861	33%
1992	746,991	39%
1993	663,390	35%
1994	845,305	44%
1995	451,305	24%
1996	642,871	34%
1997	724,393	38%
1998	521,255	27%
1999	790,538	41%
2000	1,442,615	75%
2001	1,119,408	59%
2002	1,413,745	74%
2003	1,560,569	82%
2004	1,792,246	94%

[1] Source: Metropolitan's September 2005 Draft Regional UWMP
[2] Metropolitan's full Table A amount is 1,911,500 AFY

Typically, around December of each year, DWR provides the contractors with their first estimate of allocation for the following year. For example, on November 23, 2005 DWR announced a 55 percent initial allocation of contractor's Table A Amounts for the year 2006. 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 were 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 27, 2005 and the notice projected SWP would meet 90 percent of most contractor's Table A Amounts.

DWR is preparing an update to the SWP Reliability Report issued in 2003 and expects it to be complete by the end of 2005. On November 18, 2005, DWR released the draft of the 2005 SWP Delivery Reliability Report for public review and comment. The draft Reliability Report updates the reliability report finalized in 2003 with the inclusion of two updated studies. The updated studies, 4 and 5, contain the most current information for assumed demands of SWP contractors. 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. These amounts are shown in Table 4.1.1-2 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.

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 4.1.1-2 shows the results, which demonstrate that SWP deliveries, on average, can meet 75 percent of the maximum Table A Amount.

Table 4.1.1-2
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: DWR, 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: Blueprint for Water Reliability

Metropolitan released their "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 CRA 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 to Metropolitan's distribution system.

The report details that Metropolitan's regional water demand projections are 6 percent to 16 percent *higher*, depending on which 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."[40] 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). 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.[41]

In addition to Metropolitan's Blueprint for Water Reliability report, Metropolitan's September 2005 Draft Regional UWMP demand and supply analysis projects regional surpluses ranging from 5 to 35 percent in all years and drought scenarios through 2030.[42]

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 meet this percent of water supply, Metropolitan continues to develop new and innovative projects and programs to ensure reliability. For example, Metropolitan continues to develop the following projects and programs, which are further described in section 4.4:

- seawater desalination projects
- increased CII conservation efforts
- water quality improvements by decreasing salinity in supplies from the SWP and the Colorado River
- additional underground storage and retrieval facilities and programs
- adoption of principles for establishing cooperative programs
- endorsement of legislation that would further water reliability for the region

[40] Metropolitan Water District of Southern California. Report on Metropolitan Water Supplies, A Blueprint for Water Reliability, p. 9. March 25, 2003.
[41] Metropolitan Water District of Southern California. Report on Metropolitan Water Supplies, A Blueprint for Water Reliability, p. 24-25. March 25, 2003.
[42] Tables II-7, 8 and 9. Metropolitan Water District of Southern California, Draft Regional Urban Water Management Plan, September 2005.

Integrated Water Resources Plan (IRP)

To address Metropolitan's reliability challenges, Metropolitan and its member agencies developed an 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 water conservation activities that meet the region's desired reliability goal in a cost-effective and environmentally sound manner. The 1996 IRP guided the development and implementation of revised Metropolitan water management programs through the year 2005.

The 2003 IRP Update was approved 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 2003 IRP 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 includes the Local Resources Program (LRP) and the Seawater Desalination Program as a means to increase reliability of local supplies. 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 AF of local supply in 2002.[43]

The 2003 IRP Update states that Metropolitan's regional LRP target is 500,000 AF by 2020. Although, in FY 2002 recycling and groundwater recovery programs narrowly missed their target, the region is expected to meet its 2010 and 2020 IRP 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 projects by offering financial incentives through the LRP to its member agencies. These anticipated water supply benefits are incorporated into the forecasts of demand on Metropolitan.

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 APUD although the APUD is not a member agency.

[43] Metropolitan Water District of Southern California. Integrated Water Resources Plan, 2003 Update. May 2004.

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.[44] MWDOC's water management goals and objectives include working together with Orange County water agencies, including the APUD 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 enhance regional water reliability.

Programs and projects directly managed by MWDOC include exchanges and transfers, participation with the conservation 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.[45]

Integrated Regional Water Management (IRWM) 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 (SOCWRS)

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, which is nearly 100 percent reliant on imported water, implementing measures recommended in the study will provide regional benefits for all of Orange County's water supply, and thus benefit the APUD, specifically during drought or emergency periods.

[44] [On-Line]. Municipal Water District of Orange County. Available: http://www.mwdoc.com. 2002.
[45] MWDOC. Regional Urban Water Management Plan. Draft 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.[46] 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 raw 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.

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.[47] OCWD has invested in seawater intrusion control (injection barriers), recharge facilities, laboratories, and basin monitoring to effectively manage the basin.

OCWD Long Term Facilities Plan (LTFP)

OCWD is preparing the LTFP to evaluate potential basin and water quality enhancement projects that may be implemented in the 20-year planning period. 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
- Establish the basin's future maximum (target) annual production amount and correspondingly how much new recharge capacity would be required
- Estimate impacts to potential future RA rates and long-term BPPs

A Program Environmental Impact Report (EIR), 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 expansions by the City of Anaheim and Irvine Ranch Water District. In the Program EIR, 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 GMP and Recharge Development Study. The LTFP includes a master list of developed and proposed projects.

[46] OCWD Groundwater Management Plan, 2004.
[47] 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.

The various projects are grouped into five categories: 1) recharge facilities, 2) water source facilities, 3) basin management facilities, 4) water quality management facilities, and 5) operational improvements facilities. Each project is evaluated using criteria such as technical feasibility, cost, institutional support, functional feasibility, and environmental compliance. The LTFP will include 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 Groundwater Management Plan (GMP)

OCWD finalized its GMP in March 2004. The latest GMP updated earlier versions prepared in 1989 and 1990. The GMP complies with SB 1938, passed in 2002, which includes a list of items to be included in a GMP. The GMP's objectives include 1) protecting and enhancing groundwater quality, and 2) cost-effectively protecting and increasing the basin's sustainable yield.[48] Various programs, policies, goals, and projects are defined in the GMP to assist OCWD staff meet these objectives. The potential projects described in the GMP are discussed in further detail in the LTFP. The GMP describes the following:

- the background and purpose of the GMP
- the hydrogeology of the basin
- the range of activities and management programs, including groundwater monitoring, groundwater quality management, production management, recharge water supply, and improvement projects
- the historical and future water demands and integrated demand/supply management strategies
- the financial management programs
- the recommendations for continued proactive basin management

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 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.

[48] Orange County Water District, Groundwater Management Plan, 2004.

Orange County Sanitation District (OCSD)

Wastewater from the APUD'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.[49] 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 MG of wastewater.[50] Effluent from Reclamation Plant No. 1 is either routed to the ocean disposal system or is sent to the OCWD facility, Green Acres Project (GAP), for advanced treatment and recycling. The GAP supplies recycled water to various municipal users in Orange County and offsets the demand for potable water supplies.

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.[51] 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 allowing for additional groundwater production in the coastal zone.

Santa Ana Watershed Project Authority (SAWPA)

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 Basin.

The watershed 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 the following:

[49] Orange County Sanitation District Facts and Key Statistics. www.ocsd.com. January 2005
[50] MWDOC 2005 Regional Urban Water Management Plan
[51] Orange County Water District, Draft Long-Term Facilities Plan Review Draft, August 2005.

- legislators on ensuring there are useful laws on water resources, with funding sources to ensure that necessary projects can be completed,
- planners to ensure that there is enough water in the future
- regulators to ensure that the water is safe and clean
- 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. The SARI line is designed to convey 30 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 Desalter concentrate and industrial wastewater. Domestic wastewater is also received on a temporary basis. The Arlington Desalter located in the City of Riverside removes salt from water extracted from the highly saline Arlington Groundwater Basin and delivers the treated water to OCWD for percolation into Orange County's groundwater basin.

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. The Study is intended to evaluate the benefits of a brine-only pipeline 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, SAWPA developed the Southern California Integrated Watershed Program as a series of projects to achieve SAWPA's goal of making the watershed drought-proof (no imported water during drought years). The intent is to complete this program within 10 years, providing that sufficient funding is acquired. Funding has historically come from State propositions. The current funding potential is from Proposition 50, through the IRWM Program jointly managed by the State Water Resources Control Board (SWRCB) and the DWR.

Regional Water Quality Control Board (RWQCB) – Santa Ana Region 8

Background

The 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 (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.[52]

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

In 1975, the Santa Ana RWQCB adopted the original 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 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, 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.[53]

Key Regional Issues

Water quality degradation due to high concentrations of nitrogen and 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 SAWPA 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.[54]

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

[53] Santa Ana Regional Water Quality Control Board. Region 8 Water Quality Control Plan (Santa Ana River Basin). January 1995.
[54] Santa Ana Regional Water Quality Control Board. Watershed Management Initiative. Revised May 2004.

parties. As stated above, the RWQCB has been working with SAWPA concerning water 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 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 COMPARISON

Metropolitan Water District Supplies and Demands

Since APUD is currently dependent on 36 percent of its total water supply from Metropolitan, the reliability of Metropolitan's system impacts APUD and will therefore be discussed in this section. In its September 2005 Draft Regional UWMP, Metropolitan identified 1977 as the single driest year since 1922 and the period from 1990 to 1992 as the multiple driest years over that same period. These years were selected 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 and potential water transfers as well as a number of supplies under development.

In its draft Regional UWMP, 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 three-year multiple dry year scenario.[55] However, in all cases, the projected regional increase in demands by member agencies are offset by available surpluses in the Metropolitan supply.

[55] MWD's September 2005 Final Draft Regional UWMP only projects an increase in multiple demands for Year 3 of a three year dry period. By extension, this projected increase will be assumed to apply also to Years 1 and 2 of a three year dry period.

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 Years[56]
(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 Metropolitan's September 2005 Final Draft RUWMP supply/demand projections.

[56] Metropolitan Water District of Southern California, Draft Regional UWMP, September 2005.

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 and assuming continuing conservation efforts) over its entire service area between 2005 and 2030 (4,115,700 AFY to 4,914,000 AFY)[57] compared with a 20.9 percent increase in population over the same period of (18,233,700 to 22,053,200)[58]. In other words, Metropolitan's projected increase in demand roughly parallels its projected increase in population.

[57] Table A.1-5. Metropolitan Water District of Southern California, Draft Regional UWMP, September 2005.
[58] Table A.1-2. Metropolitan Water District of Southern California, Draft Regional UWMP, September 2005.

Table 4.2-2
Metropolitan Regional Imported Water Supply Reliability Projections for Average and Multiple Dry Years[59]
(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 Metropolitan's 1.25 MAF allotment to Colorado River Water; data obtained from Metropolitan's September 2005 Final Draft Regional UWMP supply/demand projections.
[2] Metropolitan only projects demands for year 3 of a multiple dry year period.

[59] Metropolitan Water District of Southern California, Draft Regional UWMP, 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 though 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 SWP 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 APUD's demands in single and multiple dry years.

Despite Anaheim's recent slow growth in water demand, the number of dwelling units in the City is expected to increase by approximately 27 percent over the next 25 years, while water demand is projected to increase by 12.6 percent.[60] The smaller rate of increase in water demand is a reflection on anticipated conservation savings.

Table 4.2-3 presents compares the projected 12.6 percent growth with the growth in population. The growth factors reflected in this table will be applied in table 4.2-4 to calculate future normal year water demands based on a 2000/2004 average APUD demand of 73,209 AF (based on customer sales (demands) and not on total production). The 2005 water demand data has been excluded from the 2000/04 average due to the unusually heavy rainfall which occurred during 2005 (2005 was the wettest year in Southern California since 1883, which means data from 2005 is not representative of a long term norm; the 69,277 AF demand in 2005 was 5.4 percent lower than the average demand over the 2000/2004 period).

Table 4.2-3
Projected Growth in Water Demand as Compared with Projected Service Area Population

Projection	2005	2010	2015	2020	2025	2030
Anaheim Projected Increase in Demand Compared with Recent Year's Normalized Demand[1]	Base Year	6.3	10.2	11.8	12.5	12.6
Service Area Population	346,932	373,852	390,764	397,774	400,529	400,990
Population Increase in Percentage compared to 2005	Base Year	7.8	12.6	14.7	15.4	15.6

[1] Projected increase in demand is based on an analysis of data provided by City. Demand percentages for future years have been compared with a normalized 2005 demand (average demand over the period 2000-2004 of 73,209 AF) assumed to be 100% of normal (actual 2005 demand has not been used because it was unusually low due to the record rainfall which occurred (wettest year since 1883)).

[60] Analysis completed based on data furnished by Tracy Sato, City of Anaheim Planning Department

Table 4.2-4
City of Anaheim
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]	30,780	30,890	33,030	31,250	29,410
Local (Groundwater)[3]	57,850	60,000	60,890	61,240	61,300
Total Supply	**88,630**	**90,890**	**93,920**	**92,490**	**90,710**
% of Normal Year[4]	100.0	100.0	100.0	100.0	100.0
Demand (Sales)					
Imported[2]	23,530	24,400	24,760	24,900	24,920
Local (Groundwater)[3]	54,890	56,930	57,770	58,100	58,160
Total Demand[5]	**78,420**	**81,330**	**82,530**	**83,000**	**83,080**
% of Recent Year's Normalized Demand (73,209 AF) [6]	107.1	111.1	112.7	113.4	113.5
Supply/ Demand Difference	**10,210**	**9,560**	**11,390**	**9,490**	**7,630**
Difference as % of Supply	**11.5**	**10.5**	**12.1**	**10.3**	**8.4**
Difference as % of Demand	**13.0**	**11.8**	**13.8**	**11.4**	**9.2**

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

[2] Imported water supply = (imported water demand) x (Metropolitan 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%. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

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

[5] Total water demand for 2010 = (average demand for the period 2000-2004 (73,209 AFY) x (demand escalation factors in Table 4.2-3, Row A); note that year 2005 data is not included in the average demand calculation because the heavy rainfall resulted in an unusually low demand.

[6] 73,209 AF is APUD's average annual demand over the period 2000 through 2004 and is more representative than the actual 2005 demand (69,277 AF), which was unusually low due to the heavy rainfall which occurred in the City in 2005 (wettest year since 1883).

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Table 4.2-5
City of Anaheim
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	113.0	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]	29,150	32,160	33,250	31,270	29,730
Local (Groundwater)[4]	61,030	63,300	64,240	64,610	64,670
Total Supply	**90,180**	**95,460**	**97,490**	**95,880**	**94,400**
Normal Year Supply[5]	88,630	90,890	93,920	92,490	90,710
% of Normal Year	101.7	105.0	103.8	103.7	104.1
Demand (Sales)					
Imported[3]	24,820	25,740	26,120	26,270	26,290
Local (Groundwater)[4]	57,910	60,060	60,950	61,300	61,360
Total Demand[6]	**82,730**	**85,800**	**87,070**	**87,570**	**87,650**
Normal Year Demand[5]	78,420	81,330	82,530	83,000	83,080
% of normal year demand	105.5	105.5	105.5	105.5	105.5
% of Recent Year's Normalized Demand (73,209 AF)	113.0	117.2	118.9	119.6	119.7
Supply/ Demand Difference	**7,450**	**9,660**	**10,420**	**8,310**	**6,750**
Difference as % of Supply	**8.3**	**10.1**	**10.7**	**8.7**	**7.2**
Difference as % of Demand	**9.0**	**11.3**	**12.0**	**9.5**	**7.7**

[1] From Table 4.2-1, Row J
[2] From Table 4.2-1, Row K (includes Metropolitan surplus supplies)
[3] Available Imported supply is estimated to equal Metropolitan's September 2005 Final Draft Regional UWMP projected available supplies including surplus supplies = (normal year import) x (Metropolitan 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%). Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.
[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70% (except for years 2006 and 2007 when it is 64%); groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.
[5] Normal year supplies and demands and taken from Table 4.2-4
[6] 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).

Table 4.2-6
City of Anaheim
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]	36,420	36,240	32,510	31,370	30,230
Local (Groundwater)[3]	50,400	51,030	60,280	59,290	61,030
Total Supply	**86,820**	**87,270**	**92,790**	**90,660**	**91,260**
Normal Year Supply[4]	86,820	87,270	87,730	88,180	88,630
% of Normal Year	100.0	100.0	105.8	102.8	103.0
Demand (Sales)					
MWD Projected Multiple Dry Year Demand as % of Normal Year[5]			116.5	116.5	116.5
Imported[2]	26,900	27,230	24,510	24,110	24,820
Local (Groundwater)[3]	47,820	48,420	57,190	56,250	57,910
Total Demand	**74,720**	**75,650**	**81,700**	**80,360**	**82,730**
Normal Year Demand[6]	74,720	75,650	76,570	77,500	78,420
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Recent Year's Normalized Demand (73,209 AF)	102.1	103.3	111.6	109.8	113.0
Supply/ Demand Difference	**12,100**	**11,620**	**11,090**	**10,300**	**8,530**
Difference as % of Supply	**13.9**	**13.3**	**12.0**	**11.4**	**9.3**
Difference as % of Demand	**16.2**	**15.4**	**13.6**	**12.8**	**10.3**

[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. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

[4] Interpolated from Table 4.2-5.

[5] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan 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%.

[6] Interpolated from Table 4.2-4.

Table 4.2-7
City of Anaheim
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]	30,800	30,810	32,940	32,970	32,990
Local (Groundwater)[3]	58,280	58,720	63,100	61,770	63,300
Total Supply	**89,080**	**89,530**	**96,040**	**94,740**	**96,290**
Normal Year Supply[4]	89,080	89,530	89,990	90,440	90,890
% of Normal Year	100.0	100.0	106.7	104.8	105.9
Demand (Sales)					
MWD Projected Multiple Dry Year Demand as % of Normal Year[5]			116.4	116.4	116.4
Imported[2]	23,700	23,870	25,660	25,120	25,740
Local (Groundwater)[3]	55,300	55,710	59,870	58,610	60,060
Total Demand	**79,000**	**79,580**	**85,530**	**83,730**	**85,800**
Normal Year Demand[6]	79,000	79,580	80,160	80,740	81,330
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Recent Year's Normalized Demand (73,209 AF)	107.9	108.7	116.8	114.4	117.2
Supply/ Demand Difference	**10,080**	**9,950**	**10,510**	**11,010**	**10,490**
Difference as % of Supply	**11.3**	**11.1**	**10.9**	**11.6**	**10.9**
Difference as % of Demand	**12.8**	**12.5**	**12.3**	**13.1**	**12.2**

[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. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

[4] Interpolated from Table 4.2-5.

[5] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan 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 116.4%.

[6] Interpolated from Table 4.2-4.

Table 4.2-8
City of Anaheim
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]	31,320	31,740	33,240	33,680	34,120
Local (Groundwater)[3]	60,180	60,360	64,600	62,950	64,240
Total Supply	**91,500**	**92,100**	**97,840**	**96,630**	**98,360**
Normal Year Supply[4]	91,500	92,100	92,710	93,310	93,920
% of Normal Year	100.0	100.0	105.5	103.6	104.7
Demand (Sales)					
MWD Projected Multiple Dry Year Demand as % of Normal Year[5]			116.5	116.5	116.5
Imported[2]	24,470	24,540	26,260	25,600	26,120
Local (Groundwater)[3]	57,100	57,270	61,290	59,730	60,950
Total Demand	**81,570**	**81,810**	**87,550**	**85,330**	**87,070**
Normal Year Demand[6]	81,570	81,810	82,050	82,290	82,530
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Recent Year's Normalized Demand (73,209 AF)	111.4	111.7	119.6	116.6	118.9
Supply/ Demand Difference	**9,930**	**10,290**	**10,290**	**11,300**	**11,290**
Difference as % of Supply	**10.9**	**11.2**	**10.5**	**11.7**	**11.5**
Difference as % of Demand	**12.2**	**12.6**	**11.8**	**13.2**	**13.0**

[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. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

[4] Interpolated from Table 4.2-5.

[5] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan 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%.

[6] Interpolated from Table 4.2-4.

Table 4.2-9
City of Anaheim
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]	32,680	32,330	32,730	32,360	32,000
Local (Groundwater)[3]	60,950	61,020	65,190	63,440	64,610
Total Supply	**93,630**	**93,350**	**97,920**	**95,800**	**96,610**
Normal Year Supply[4]	93,630	93,350	93,060	92,780	92,490
% of Normal Year	100.0	100.0	105.2	103.3	104.5
Demand (Sales)					
MWD Projected Multiple Dry Year Demand as % of Normal Year[5]			116.0	116.0	116.0
Imported[2]	24,790	24,820	26,510	25,790	26,270
Local (Groundwater)[3]	57,830	57,900	61,850	60,190	61,300
Total Demand	**82,620**	**82,720**	**88,360**	**85,980**	**87,570**
Normal Year Demand[6]	82,620	82,720	82,810	82,910	83,000
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Recent Year's Normalized Demand (73,209 AF)	112.9	113.0	120.7	117.4	119.6
Supply/ Demand Difference	**11,010**	**10,630**	**9,560**	**9,820**	**9,040**
Difference as % of Supply	**11.8**	**11.4**	**9.8**	**10.3**	**9.4**
Difference as % of Demand	**13.3**	**12.9**	**10.8**	**11.4**	**10.3**

[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. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

[4] Interpolated from Table 4.2-5.

[5] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan 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 116.0%.

[6] Interpolated from Table 4.2-4.

Table 4.2-10
City of Anaheim
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]	30,880	30,520	30,870	30,490	30,120
Local (Groundwater)[3]	61,250	61,260	65,380	63,550	64,670
Total Supply	**92,130**	**91,780**	**96,250**	**94,040**	**94,790**
Normal Year Supply[4]	92,130	91,780	91,420	91,070	90,710
% of Normal Year	100.0	100.0	105.3	103.3	104.5
Demand (Sales)					
MWD Projected Multiple Dry Year Demand as % of Normal Year[5]			115.0	115.0	115.0
Imported[2]	24,910	24,910	26,580	25,840	26,290
Local (Groundwater)[3]	58,110	58,120	62,030	60,300	61,360
Total Demand	**83,020**	**83,030**	**88,610**	**86,140**	**87,650**
Normal Year Demand[6]	83,020	83,030	83,050	83,070	83,080
% of Normal Year	100.0	100.0	106.7	103.7	105.5
% of Recent Year's Normalized Demand (73,209 AF)	113.4	113.4	121.0	117.7	119.7
Supply/ Demand Difference	**9,110**	**8,750**	**7,640**	**7,900**	**7,140**
Difference as % of Supply	**9.9**	**9.5**	**7.9**	**8.4**	**7.5**
Difference as % of Demand	**11.0**	**10.5**	**8.6**	**9.2**	**8.1**

[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. Assumes annexation of Mountain Park development into OCWD as described in Section 2.2. This quantity does not include unaccounted for water.

[3] Groundwater demand is estimated to comprise 70% of the total demand based on a BPP of 70%; groundwater supply is estimated to equal 70% of groundwater production (or groundwater distribution) where total groundwater distribution = (groundwater demand)x(1.054) where the 1.054 factor represents the result of applying the 5.12% average unallocated loss of the total production or distribution amount over the past 10 years; APUD currently has the capacity to pump up to 78-80% of total demand and can pump more than the assumed 70% BPP by paying an additional BEA to OCWD. This quantity does not include unaccounted for water.

[4] Interpolated from Table 4.2-5.

[5] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan 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 115.0%.

[6] Interpolated from Table 4.2-4.

4.3 VULNERABILITY OF SUPPLY FOR 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 maximum daily temperature is 67 degrees Fahrenheit in January to 89 degrees Fahrenheit in July. Annual precipitation averages 14 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 DWR. These rivers flow into the San Francisco Bay Delta and are the source of water for the SWP. 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. Flows in the Colorado River are also impacted by climatic changes. From 2000 to 2004, the average annual flows from the Colorado River Basin have been the lowest experienced since 1906. Because the SWP is Metropolitan's largest and most variable supply, Metropolitan utilize the hydrologic conditions of the SWP for its drought analyses and determination of dry years.

It's likely that APUD is vulnerable to water shortages from higher than normal water demands due to extensive droughts. While the data in Tables 4.2-5 through 4.2-10 identify water availability during single and multiple dry year scenarios, response to a future drought may require Metropolitan's implementation of the water use efficiency mandates of its Water Surplus and Drought Management (WSDM) Plan, along with APUD's implementation of the appropriate water shortage plan of the City's Ordinance No. 5204. 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 Anaheim Public Utilities Department Reliability Projects

APUD continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff ensures the water is safe and the supply will meet present and future needs in an environmentally and economically responsible manner. APUD coordinates its long-term and water shortage planning with Metropolitan and OCWD. The reliability of APUD's water supply is dependent on the reliability of both groundwater and imported water supplies, managed by OCWD and MWD, respectively. APUD's long-term plans to ensure a reliable water supply include, but are not limited to, the following:

- Reduction of water demand through aggressive water use efficiency programs, with a goal to reduce demand by 15 percent by 2020
- Groundwater production capacity and distribution ability to meet or exceed projected BPPs
- Cooperation with OCWD to maximize conservation activities throughout Orange County
- Increase groundwater recharge capabilities

APUD projects water demand to increase approximately 4 percent each five years during the 25-year planning period. Additional water use efficiency measures described in Section 6 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. The projects that have been identified by APUD to improve APUD's water supply reliability and enhance the operations of APUD's facilities include replacement of water meters, valves and pipelines, security improvements, and improvement projects on water supply wells.

APUD also plans to add five new wells and replace four wells by June 2010. The four replacement wells will replace existing (and recently destroyed) shallow and deteriorating wells. The new and replacement wells will increase APUD's overall groundwater production capacity, which will add to the reliability of the system through: (1) increasing pumping during summer months (to assist in meeting peak demands and reducing summer MWD imports); (2) providing a contingency for wells that are temporarily out of service; and (3) providing availability during droughts, emergencies, or for increased participation in regional groundwater pumping programs and/or requests. However, APUD is still financially regulated by the BPP and therefore annual pumping above BPP is not expected.

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 project will store up to 66,000 AF of imported water during wet periods and will be able to extract up to 22,000 AF of water during dry periods from 8 strategically sited wells. The wells will be used to pump in excess of the existing pumping demand when called for by Metropolitan. APUD was selected to participate in this program and its well is currently in construction. The additional wells will reduce the region's dependence on imported water during dry periods and provide greater reliability.

4.4.2 Regional Agency Reliability Projects and Programs

Since the APUD obtains imported water from Metropolitan which obtains its water from the SWP and the Colorado River, the projects implemented by Metropolitan to secure their water supplies have a direct effect on the reliability of APUD water supplies. In addition, OCWD's planned projects and programs for groundwater and recycled water also impact the APUD.

Metropolitan Water District of Southern California Reliability Projects

Metropolitan is implementing alternative water supply 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
- Desalination
- Storage and groundwater management programs within the Southern California region
- Storage programs related to the SWP 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 is 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 provided in Table 4.4.2-1.

Table 4.4.2-1
Metropolitan Integrated Resource Plan Update Resources Status

Target	Programs and Status
• **Conservation**	**Current** - Conservation Credits Program - Residential; Non-residential Landscape Water Use Efficiency;, Commercial, Industrial, and Institutional Programs - Grant Programs **In Development or Identified** - Innovative Conservation Program

Target	Programs and Status
• **Recycling** • **Groundwater Recovery** • **Desalination**	**Current** - LRP Program **In Development or Identified** - Additional LRP Requests for Proposals - Seawater Desalination Program - Innovative Supply Program
• **In Region Dry-Year Surface Water Storage**	**Current** - Diamond Valley Reservoir, Lake Mathews, Lake Skinner - SWP Terminal Reservoirs (Monterey Agreement)
• **In Region Groundwater Conjunctive Use**	**Current** - North Las Posas (Eastern Ventura County) - Cyclic Storage - Replenishment Deliveries - Proposition 13 Programs (short listed) **In Development or Identified** - Raymond Basin GSP - Proposition 13 Programs (wait listed) - Expanding existing programs - New groundwater storage programs
• **SWP**	**Current** - SWP Deliveries - San Luis Carryover Storage (Monterey Agreement) - SWP Call Back with DWCV Table A transfer **In Development or Identified** - Sacramento Valley Water Management Agreement - CALFED Delta Improvement Program (Phase 8 Agreement)
• **CRA**	**Current** - Base Apportionment - IID/Metropolitan Conservation Program - Coachella and All American Canal Lining Programs - Palo Verde Irrigation District Land Management Program **In Development or Identified** - Lower Coachella Storage Program - Hayfield Storage Program - Chuckwalla Storage Program - Storage in Lake Mead
• **CVP/SWP Storage and Transfers** • **Spot Transfers and Options**	**Current** - Arvin Edison Program - Semitropic Program - San Bernardino Valley MWD Program - Kern Delta Program **In Development or Identified** - 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 per their signatory responsibilities to 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.[61] 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.

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 LRP: 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 LRP. One of the selected projects was the GWRS. The GWRS 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 in the amount of 620,000 AF and the need for groundwater storage in the amount of 300,000. Approximately 400,000 AF in the Diamond Valley Lake is dedicated for dry-year storage; the reservoir hold 800,000 AF. Metropolitan has developed a number of local programs to increase storage in the groundwater basins. The programs include:

[61] Metropolitan Water District of Southern California, Regional UWMP, Draft September 2005

- 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 4.4.1.
- 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 (SWP) 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 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.
- 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 to 18,000 AF depending on the water year.

Colorado River Aqueduct (CRA) Target

Metropolitan also receives imported water from the CRA. Metropolitan, IID and Coachella Valley Water District executed the 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 CRA. 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.
- IID/Metropolitan Conservation Program – The program originally provided funding from Metropolitan to implement water efficiency improvements within IID. Metropolitan in tern 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 CVP 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

As stated earlier, the actions of MWDOC have a regional benefit to the APUD although the APUD is not a member agency. MWDOC's water management goals and objectives include working together with Orange County water agencies, including the APUD when

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

Sufficient water storage programs will help to ensure adequate water supplies into 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 Urban Water Management Plan 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:

- Purchasing groundwater from San Bernardino Valley Municipal Water District (SBVMWD). SBVMWD's groundwater table is very high, making excess supply available for pumping to the Santa Ana River for OCWD's use.
- Investigating the purchase of non-SWP water supplies via SBVMWD's capacity in the SWP system.
- Contracting with Northern California companies/agencies to purchase water.
- Purchasing wheeled water supplies through Metropolitan.
- Proposing and constructing facilities to capture greater amounts of Santa Ana River storm flows such as recharge basins.
- Working 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

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. OCSD in conjunction with OCWD is constructing the GWRS and associated facilities, which began 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.[62] 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 OR EXCHANGE OPPORTUNITIES

APUD maintains eight connections to the Metropolitan system and 17 emergency inter-city connections with surrounding communities. APUD's eight Metropolitan connections have a combined capacity of over 76,000 gallons per minute (GPM) or 170 cfs.

APUD is currently exploring an opportunity to partner with the City of Santa Ana and MWDOC to transfer approximately 10,000 AF of water from Northern California by 2006/07. The three agencies are continuing negotiations with the South Feather Water and Power Agency for a 10,000 AF water transfer for a two year period. Deliveries would be made the months of October through December.

APUD 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 GMP.

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 APUD projects for desalination of seawater, given that APUD is located at a distance from the ocean. Additionally, there are no identified projects for impaired groundwater, since APUD has been fortunate to have exceptionally good groundwater resources in the past and does not anticipate any changes because of the continued efforts of APUD, OCWD and Metropolitan. However, from a regional perspective, desalination projects within the region indirectly benefit APUD.

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.[63] The task force was comprised of 27 organizations and in October 2003 provided a list of recommendations related to the following issues: general, energy, environment, planning, and permitting. The list of

[62] 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
[63] DWR, California Water Plan Update 2005, Volume 2 – Resource Management Strategies

recommendations can be found at DWR's water use efficiency website, www.owue.water.ca.gov/recycle/index.cfm.

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.

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 sweater to the local distribution system.[64] 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.

[64] Metropolitan Water District of Southern California, 2005 Regional Urban Water Management Plan

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 O*cean 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 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.

Benefits to Orange County Groundwater Basin

The implementation of an ocean water desalination plant can benefit the basin. The benefits include reducing groundwater pumping levels in coastal OCWD and assisting in refilling the groundwater basin. The desalination plant 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. Metropolitan rates include a portion reserved for desalination projects. Member agencies of Metropolitan that pump groundwater from the basin would benefit from a desalination plant.

Proposed Projects for Desalination

In Orange County, there are three proposed ocean desalination projects that could serve MWDOC, including one specifically that may benefit the City. The proposed projects are 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.[65]

[65] 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 sector for APUD. A 21.9 percent increase in water demand through 2030 is anticipated for APUD's service area due to projected growth. As noted in Section 4.2, this increase is measured against the average demand of 73,209 AFY for the Fiscal Years 2001 through 2004 (Fiscal Year 2004/05 was discarded from the analysis in light of the low demands due to heavy rainfall earlier in the year). The projected water use by sector shown in Table 5.1-1 reflects the water demand projections from Table 4.2-4 in Section 4.2.

Table 5.1-1
Past, Current and Projected Water Use by Sector
AFY

Water Use Sector	1999/00[1]	2004/05[1]	2009/10	2014/15	2019/20	2024/25	2029/30
Single Family Residential[2]	27,700	26,200	37,000	39,000	40,000	40,250	40,270
Multi Family Residential[2]	16,700	14,800	20,000	21,000	21,230	21,500	21,600
Commercial & Industrial[2]	31,400	28,500	21,420	21,330	21,300	21,250	21,210
Subtotal	**75,800**	**69,500**	**78,420**	**81,330**	**82,530**	**83,000**	**83,080**
Unaccounted for System Losses[3]	4,400	1,800	4,020	4,160	4,230	4,250	4,250
Total Water Use	**80,200**	**71,300**	**82,440**	**85,490**	**86,760**	**87,250**	**87,330**

[1] Data for 1999/00 and 2004/05 based on existing City records; all figures for 1999/00 and 2004/05 are rounded to the nearest 100 AF; subtotals for other years are extracted from Table 4.2-4 and rounded to the nearest 10 AF. Water use in 2004/05 was unusually low due to heavy rainfall during 2005 (wettest year since 1883).

[2] Past data included about 7,000 AFY for residential irrigation for greenbelts, homeowner's association, etc., under the commercial totals; that usage has been shifted to single family residential for future projections to more accurately reflect true residential usage. Breakdown by sector for future years is interpolated based on December 2005 Water Demand Analysis prepared for City by Psomas. That analysis reflected current single family residential, multi-family residential and commercial/industrial demands of 47.8%, 22.7%, and 29.5% of total demand (excluding unallocated losses) and build-out percentages of 48.5%, 26.0% and 25.5%, respectively. The breakdown by sector for 2009/10 through 2024/25 is an approximation based on an interpolation between current and 2029/30 projections

[3] Unaccounted-for losses for 1999/00 and 2004/05 based on existing City records; estimates for unaccounted-for losses for 2009/10 through 2029/30 are based on 5.12% (of total water usage).

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:

- The City Fire Department performs hydrant testing to monitor the level of fire protection available throughout the City. APUD 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.
- Water potentially lost from system leaks, main breaks, flushing, well starts/stops, i.e. from pipes, valves, pumps, and other water system appurtenances.

Table 5.1-2 shows the number of water service customers by sector between 2000 and 2005, and projections of customers through 2030. The number of service connections is anticipated to increase by about 19 percent through 2030 with a projected 15.6 increase in population.

Table 5.1-2
Number of Water Service Connections by Sector

Water Use Sector	2000/01	2004/05	2009/10	2014/15	2019/20	2024/25	2029/30
Single Family Residential	48,811	49,382	53,250	55,550	56,350	56,650	56,700
Multi Family Residential	4,258	4,240	4,550	4,650	4,850	4,950	5,000
General Service	6,428	6,606	6,300	6,250	6,200	6,150	6,100
Other	1,600	1,655	1,700	1,750	1,800	1,850	1,900
Total Connections	61,097	61,883	65,800	68,200	69,200	69,600	69,700

Source: 2000/01 and 2004/05 based on actual historical data. Future projections are interpolated based on data extracted from Table 5.1-1; General Service and Other connections (which include fire line and temporary services) are projected to remain constant based on minimal projected increase in demand. Growth in single family residential and multi-family residential is projected to follow the same trend as the projected increase in growth in demand as reflected in Table 4.2-3.

SECTION 6
WATER DEMAND MANAGEMENT MEASURES

6.1 INTRODUCTION

The City of Anaheim recognizes water use efficiency as an integral component of current and future water supply 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. As a signatory to the MOU, the City of Anaheim actively implements the BMPs, which are proven water conservation measures, through policies, programs, rules, regulations or ordinances, or the use of devices, equipment and facilities that provide a significant reduction in water demand.

6.2 DETERMINATION OF DMM IMPLEMENTATION

The 14 Demand Management Measures (DMM) listed in Section 10631 of the Water Code are consistent with the 14 BMPs. 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 APUD in coordination with Metropolitan Conservation Credit Program.

As signatory to the MOU, APUD is responsible for completing and submitting BMP Activity Reports to the CUWCC every two years for each year prior. APUD's BMP Activity Report is a comprehensive document that shows implementation of each BMP and provides a determination of implementation of measures that were planned for 2005 in the City's 2000 UWMP. APUD has maintained complete compliance with all the BMPs to date, as shown in the Annual Reports for 2001, 2002, 2003, and 2004, the Coverage Report, and BMP Activity Reports provided in Appendix E.

6.3 BEST MANAGEMENT PRACTICES

The CUWCC has established BMPs (consistent with the 14 DMMs) described in the MOU. As signatory to the MOU, APUD has made the State-mandated BMPs for water conservation the cornerstone of its conservation programs and a key element in the overall regional water resource management strategy.

BMP programs implemented by APUD, and demonstrated in Appendix E, include the following:

- BMP 1 – Water Survey Programs for Single-Family Residential and Multifamily Residential Customers. Free residential indoor and outdoor water use surveys are offered through the APUD's Home Utility Checkup Program.
- BMP 2 – Residential Plumbing Retrofit. Approximately 75 percent of single-family and multifamily households have been retrofitted with low-flow showerheads. Low-flow device installations, including showerheads, toilet-displacement devices, faucet aerators, and toilet flappers are tracked. These installations are completed through the APUD's Home Utility Checkup Program.
- BMP 3 – System Water Audits, Leak Detection, and Repair. APUD's pre-screening audit has determined that over 90 percent of total supply into the system (imported water and pumped groundwater) is typically captured in sales.
- BMP 4 – Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections. The City requires individual metering for all new connections and bills by volume-of-use. All existing connections are metered.
- BMP 5 – Large Landscape Conservation Programs and Incentives. APUD implemented a marketing/targeting strategy for landscape surveys through its participation in the Orange County Landscape Performance Certification Program operated by MWDOC contractor. Other actions include landscape irrigation training and landscape water use efficiency information to new customers and customers changing services. The City also utilizes water-efficient landscaping with dedicated irrigation metering at municipal facilities, and conducts an annual series of four Home Gardener's Water Conservation Workshops for residential customers. Customers also can check-out tapes of the workshops to watch at their convenience. Customers can also find extensive landscape information at Family of Southern California Water Agencies' Web site, www.bewaterwise.com.
- BMP 6 – High-Efficiency Clothes Washing Machine Financial Incentive Programs. APUD offers rebates for high-efficiency washing machines (HEWs) to both its residential and commercial customers. Residential rebates are offered through its Home Incentives Program and commercial rebates through the regionwide commercial Save Water - Save A Buck Program.
- BMP 7 – Public Information Programs. APUD maintains an active public information program to promote and educate customers about water conservation. A public outreach booth is provided to several community events throughout the

year. Each May the City Council, by proclamation, declares May as Water Awareness Month in Anaheim. This campaign provides large posters that are displayed at City Hall East and West, and at the City's libraries and at community centers throughout Anaheim. Water Awareness ads are placed in the City's local newspapers and APUD also participates in Metropolitan's regionwide media campaign. A booth is provided to the local Farmer's Market during May to promote Water Awareness Month. An annual Water Conservation Contest is held with all of Anaheim's public and private elementary schools invited to participate. The 18 winners are honored during a pre-game (Angel's baseball) ceremony on the field at Angel Stadium.

- BMP 8 – School Education Programs. The City contracts with MWDOC to offer its elementary schools grade-specific, assembly-style presentations that teach children about the water cycle, the importance and value of water, and the personal responsibility each one of us has to protect this vital resource. Since 1998, a total of 50,446 Anaheim students have participated.
- BMP 9 – Conservation Programs for Commercial, Industrial and Institutional Accounts. The City has several programs available to its Commercial, Industrial, and Institutional (CII) customers. These programs include the Save Water – Save A Buck Program, a regionwide program that provides rebates for water-saving retrofits including toilets, urinals, clothes washers, cooling tower conductivity controllers, water brooms and weather-based irrigation controllers. APUD also offers water-use surveys to all CII customers through its Water Use Survey Program and financial incentives to both small and large CII customers that install permanent water saving projects, equipment or measures through its Industrial Process Improvement and Commercial Water Incentives programs. Other programs available to APUD's CII Customers include its Hotel/Motel Linen Card Program, SmarTimer Irrigation Controller Rebate Program, and the regionwide Rinse & Save Program.
- BMP 10 – Wholesale Agency Assistance Program. APUD purchases a portion of its water supply from Metropolitan, the largest wholesale water agency in Southern California. Therefore, Metropolitan is responsible for the implementation and reporting requirements of this BMP.
- BMP 11 – Conservation Pricing. The City has a "uniform" rate structure where the rate per unit of water is constant regardless of the quantity used. During a drought, the City Council may activate the City's Water Shortage Ordinance No. 5204 and the Water Shortage Plan to be implemented. Each Water Shortage Plan outlines the violations and penalties that can result from non-compliance to the water saving measures. In addition, rates may be adjusted to encourage conservation and to account for decreased revenue that results from decreased water consumption during droughts.

- BMP 12 – Conservation Coordinator. APUD has a full-time Conservation Coordinator who is responsible for implementing the BMPs. This is accomplished by establishing water-efficiency programs for the APUD's residential and commercial customers. Some programs may require close coordination with local wholesale and retail water suppliers, and special districts.
- BMP 13 – Water Waste Prohibition. Under Ordinance No. 5204, the City has a water waste prohibition ordinance in effect within the Department's water service area.
- BMP 14 – Residential ULFT Replacement Programs. Currently, APUD offers single-family and multifamily residential water customers a $50 rebate for each new qualifying ULFT. These toilets must use 1.6 gallons per flush or less and must replace older, high-volume toilets. There is a limit of three per household. Since FY 1992/93, APUD's residential ULFT rebate programs are responsible for a total of 54,382 replaced in Anaheim homes.

The Water Services Division of the Public Utilities Department utilizes a water demand and conservation forecasting model to quantify the level of ongoing and forecasted conservation within its water service area. The model uses weather, population, and water demand data to estimate the APUD's water conservation savings for each month.

As of June 30, 2005, APUD staff used the model to calculate a total conservation savings of nearly 300,000 AF since 1993 (base year). This corresponds to approximately 11 percent water savings since 1993. It should be noted that the conservation savings is purely an estimate and is highly dependent on calibration assumptions used in deriving the model.

SECTION 7
WATER SHORTAGE CONTINGENCY PLAN

7.1 INTRODUCTION

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

To safeguard the region from a loss of water supply due to natural or man-made disasters, Metropolitan and its member agencies have made, and are continuing to make substantial investments in emergency storage and interconnections with adjacent water purveyors. Metropolitan's emergency plan assumes that demands will be reduced 25 percent from the 2020 baseline demand forecast through water conservation, while the local supplies will be largely undisrupted. With few exceptions, Metropolitan asserts it can deliver emergency supply from its Diamond Valley Lake Reservoir throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major earthquake. Metropolitan's Water Surplus and Drought Management (WSDM) Plan will guide management of available supplies and resources during an emergency.

In addition, APUD has the ability to meet its demands, during less than catastrophic shortages, through increased groundwater pumping and/or implementation of water use efficiency programs, including Water Shortage Plan implementation. Increased groundwater pumping is the most significant factor in APUD's water shortage plan. It is anticipated that in a severe drought, OCWD will increase the BPP to allow for additional groundwater production, which APUD's well facilities will accommodate. Even if the BPP was not increased, APUD would maximize its groundwater production capabilities.

7.2 URBAN WATER SHORTAGE CONTINGENCY ANALYSIS

7.2.1 Water Shortage Plan Stages of Action

During a water shortage period[66], APUD has the ability to meet its demands through increased groundwater pumping and implementation of water use efficiency programs, including implementation of Water Shortage Plan(s) under Ordinance No. 5204 (1991).

[66] Water Shortage is defined, in Ordinance No. 4204, as a condition in which the existing or projected water supply available to the City is not anticipated to meet the ordinary requirements of the Public Utilities Department. This condition may be the result of factors including but limited to voluntary or mandatory curtailment of Anaheim's water allocation from Metropolitan, emergency conditions, and/or failure of the City's or its supplier's water distribution system.

Increased groundwater pumping would serve as a critical component of the shortage strategy through groundwater supplied from the Orange County Groundwater Basin. The remaining demands would be met through implementation of Ordinance No. 5204, which consists of three Water Shortage Plans that can be implemented during declared water shortages.

APUD will recommend to the City Council which Water Shortage Plan is necessary to implement, based on the severity of the water shortage. However, the City Council has the authority to withdraw from the plan and may implement another plan at any time during the water shortage. Termination of the plan will occur when the water shortage is no longer present or after five years, unless renewed by City Council.

APUD is responsible for monitoring and evaluating the projected supply and customer water demand.

- Under Water Shortage Plan I, APUD may recommend to the City Council the implementation of a drought surcharge or other rate revisions to encourage conservation efforts, purchase additional water supplies, and pay for other costs associated with the water shortage may be implemented. Customers are encouraged to voluntarily reduce water use through water conservation measures (included in Section 7.5 below).
- Under Water Shortage Plan II, APUD may recommend to the City Council the implementation of a drought surcharge or other rate revisions, purchasing additional supplies of water, and pay for costs to the Department associated with the Water Shortage. Specified water uses (see Section 7.5) are prohibited. Commercial and industrial customers using 25,000 hundred cubic feet (HCF) of water annually may be required to submit a water conservation plan.
- Under Water Shortage Plan III, City Council-approved Department recommendations specified in Plan II continue. Specified water uses continue to be prohibited. In addition, the City, by City Council resolution, has the ability to specify a "base allotment" for a given customer and prohibit water use above a specified percentage of the customer's base.[67]

APUD shall determine the extent of the conservation required through implementation and/or termination of particular water conservation plans in order for the City to plan for and supply water to its customers, including consumption reduction up to 50 percent of total water supply (imported and groundwater). Table 7.2.1-1 shows the water use reduction stages and goals used as a guideline for recommending the appropriate Water Shortage Plan and water conservation target.

[67] Base is typically defined as the amount of water used by a customer for the corresponding billing period in the previous year. The base can also be assigned and adjusted pursuant to Section 10.18.020.010 of Ordinance No., 5204.

In addition, as a Metropolitan member agency, APUD will follow Metropolitan's adopted WSDM Plan. The WSDM Plan guides the management of regional water supplies to achieve the reliability goals of Metropolitan's IRP.

Table 7.2.1-1
Water Use Reduction Stages and Goals

Total Shortage Condition[1]	Water Shortage Plan	Type of Use Reduction Program
Up to 10%	I	Voluntary
10% to 15%	II	Mandatory
15% to 50%	III	Mandatory

[1] A reduction in total water supplies that could result from a decreased Metropolitan import supply and/or local groundwater production.

Demand Hardening

In 1992, the City implemented an aggressive water use efficiency program. A significant concern associated with successful long-term water use efficiency programs is a customer's diminished ability to further conserve water, otherwise referred to as "demand hardening." Currently, APUD believes that some demand hardening may exist in its water service area, primarily in the residential sector where a significant number of ULFT and low-flow showerhead replacements have been distributed. APUD will continue to implement existing BMPs and plans to expand its conservation efforts for CII accounts and large landscape programs, where greatest potential for water savings exist. Therefore, due to the City's relative demand hardening, APUD understands that water shortage responses need to be made early to prevent severe economic and environmental impacts.

APUD will also work in congruence with the regional drought contingency plans, including those developed by OCWD, MWDOC, and Metropolitan. Metropolitan recognizes the effects of demand hardening and has incorporated appropriate adjustments to supply shortage allocations for member agencies with active water use efficiency programs.

7.2.2 Metropolitan 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 shortages 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 available for use in dry years as possible.
- 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, SWP, 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. Annually, Metropolitan considers 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 IAWP 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 percent 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 as presented within Metropolitan's 2005 UWMP, Metropolitan expects to achieve 100 percent reliability through 2030.

Reliability Modeling of the WSDM Plan

In 1991, Metropolitan used a technique known as "sequentially indexed Monte Carlo simulation," and conducted 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. Metropolitan applied a similar model for the 2005 Urban Water Management Plan and it showed water reliability through the planning period to 2030.

Allocation of Supply for Municipal & Industrial 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.

APUD and Metropolitan implement and support programs to achieve the goals of the IRP and the WSDM Plan and to make every effort to avoid allocation of water supplies in times of shortage.

7.2.3 OCWD Drought Contingency

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 utilize 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, APUD may request increased imported water along with additional implementation of water use efficiency measures by customers to meet demand. The OCWD 2020 Master Plan Report, Chapter 14 – Basin Management Issues, further describes OCWD activities that may affect the City during a declared drought.

OCWD's LTFP contains updated information on Drought Supply Plans. The Plan states that the GMP for the Orange County Groundwater Basin contains a recommendation to evaluate projects to respond to and recover from droughts. Although a particular drought management portfolio has not been developed in the LTFP, the following projects could be considered for drought recovery: 1) Colored Water Development – Utilize the colored water aquifer during a drought; and 2) Ocean Water Desalination – Develop the Huntington Beach Ocean Water Desalination Project only for drought supply. The GWRS has the benefit of increased groundwater basin reliability and is not subjected to reductions during drought. Therefore, the GWRS is also a drought management project.

7.2.4 Health and Safety Requirements

Prohibited uses of water in accordance with Ordinance No. 5204, Section 10.18.100, are not applicable to that use of water determined by APUD to be necessary for public health and/or safety or for essential governmental services such as fire, police, and emergency services. Furthermore, Ordinance No. 5204 does not require APUD to curtail the supply of water to any customer when, in the discretion of APUD, such water is required by that customer to maintain an adequate level of public health and safety.

In addition, a customer may file an application for relief from water use limitations and APUD will consider adjustments to water use caused by emergency, health, or safety hazards, in determining whether to grant relief.

To emphasize, the primary goal of APUD'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 7.2.4-1 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 7.2.4-1
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	5 min. x 2.5 gpm	12.5
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 (gpcd)		68.0		48.0		40.0
CCF per capita per year		33.2		23.4		19.5

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 APUD's water service area require that the water resources available be put to maximum beneficial use to the extent to which they are capable. Wasteful or unreasonable use of water should be prevented. 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 projects 100 percent reliability for full-service demands through the year 2030.[68] 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.

Table 7.3-1
APUD's Three Year Estimated Minimum Water Supply
(Based on Driest 3-Year Historic Sequence)
(AFY)

Source	Base Year	Multiple Dry Years[2]		
	2006	2006	2007	2008
Imported Water	36,420	33,350	32,410	32,980
Groundwater[1]	50,400	59,290	57,620	58,620
Total	**86,820**	**92,640**	**90,030**	**91,600**

[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; City has the capacity to pump approximately 78-80% of its demand and can therefore pump more than 64% if necessary by paying the BEA to OCWD. Total supply projections based on multiple year demand factors of 106.7%, 103.7% and 105.5% for 2006, 2007, and 2008, respectively

7.4 CATASTROPHIC SUPPLY INTERRUPTION PLAN

Water Shortage Emergency Response

For catastrophic water supply interruptions, the City's Emergency Response Plan (ERP) outlines water shortage emergency response responsibilities. The Plan describes the role and functions of APUD within the City's Emergency Management Organization, and includes a Disaster Response Plan (DRP), which is continually updated.

APUD's DRP identifies the immediate actions that it will take to respond, in coordination with the City's ERP, to a declared water shortage. The City's ERP describes the organizational and operational policies and procedures required to meet the needs of sufficient water for firefighting operations, safe drinking water, and provide a system for organizing and prioritizing water repairs during natural disasters, technical incidents, and other emergencies. It includes information on interconnections linking the City's water

[68] Metropolitan Water District of Southern California, Regional UWMP, September 2005 Draft.

system with neighboring water purveyors that may be available as a source during emergencies. It also cites authorities and specifies the public and private organizations responsible for providing water service.

APUD will operate under normal operating procedures unless a situation is beyond APUD's control. This includes implementation of any Metropolitan allocation plan, or OCWD's shortage contingency plans. If the situation is beyond APUD's scope of normal activity, the Water Emergency Operations Center (WEOC) may be activated to better manage the situation. If the situation warrants, the City Emergency Operations Center (EOC) may be activated at which time a water representative will be sent to the EOC to coordinate water emergency response with other City department's emergency response actions.

In the event the EOC is activated, the City Policy Group will establish recovery priorities. An EOC *Action Plan* will be developed in the EOC that sets a plan in place for a specific period of time to carry out the policies dictated by the *Policy Group*. The WEOC will use the EOC *Action Plan* in determining its course of action. Coordination between the WEOC and the EOC will be done by the Water Operations Manager (located in the WEOC) and the representative located in the EOC under the direction of the *Public Works Chief* (located in the EOC).

If the situation is beyond APUD and the City's control, additional assistance will be sought through coordination with the Water Emergency Response Organization of Orange County (WEROC) and Metropolitan's Member Agency Response System (MARS)[69] to facilitate an organized and effective mutual aid response to the emergency. Additionally, water shortage disaster response in Orange County has been and will continue to be coordinated with the Governor's Office of Emergency Services – Orange County Operational Area. Water shortage disaster response is incorporated into the County Disaster Plan.

Water Emergency Response Organization of Orange County (WEROC)

The City participates in the Water Emergency Response Organization of Orange County (WEROC). WEROC performs coordination of information and mutual-aid requests among Orange County water agencies, and conducts disaster training exercises for the Orange County water community and 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. The collective efforts of these agencies resulted in the formation of the countywide WEROC, which is unique in its ability to

[69] 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.

provide a single point of contact for representation of water agencies in Orange County during a disaster. WEROC utilizes both its Orange County radio system and the MARS to facilitate mutual aid in Orange County accessing the assistance of the Orange County water community and Metropolitan's member agencies.

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

7.5 PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS

The City may implement several measures to curtail water consumption during times of supply shortages, as outlined in Ordinance No. 5204, Chapter 10.18 (Appendix F). Specific water shortage plans (I, II or III) are implemented depending on the severity of the shortage. Table 7.5-1 shows the voluntary water use reduction measures in Plan I and mandatory measures in Plans II and III.

Table 7.5-1
Water Use Reduction Measures

Water Use Prohibitions/Reduction Measures	Mandatory Plan When in Effect
Drought Surcharge/Penalty on Members/Rate revision (if Department recommends to City Council)	I, II & III
Hosing or washing sidewalks, driveways, or other paved surfaces	II & III
Filling/refilling decorative fountains, lakes, etc., unless recycled water is used	II & III
Serving drinking water to customers without consent	II & III
Neglecting to repair a leak	II & III
Allow water to runoff landscaped areas	II & III
Allow water to runoff while washing vehicles	II & III
Landscape watering more than 3 times per week, except when recycled water is used	II & III

Water Use Prohibitions/Reduction Measures	Mandatory Plan When in Effect
Landscape watering between the hours of 10:00 a.m. and 5:00 p.m.	II & III
Refilling a swimming pool emptied after the Water Shortage Period	II & III
Submission of water conservation plan by commercial and industrial customers using 25,000 Billing Units per year; quarterly reports	II & III
Prohibit water use in excess of a specified percentage of a Customer's Base (if approved by City Council Resolution)	III

The City will follow the guidelines of the allocation plan and respond to the penalty implemented by Metropolitan by imposing its own penalty to its member agencies that exceed their water allocation, as appropriate, to enforce consumption reduction up to 50% of APUD's total water supply. The City would correspondingly impose excessive use penalties from a schedule of penalties recommended by the General Manager and approved the City Council if the provisions of Water Shortage Plan II and III are violated.

Penalties and Charges

In the event that the Water Shortage Plan II is violated, the City reserves the right to impose penalties on customers described below in addition to the financial incentives. Penalties will be imposed through a tiered system as follows:

(1) First Violation. APUD will issue a written notice of the fact of a first violation to the customer.
(2) Second Violation. $25 fine
(3) Third Violation. $50 fine
(4) Fourth Violation. $75 fine along with installation of a flow-restricting device where it will remain for no less than 48 hours at the customer's premises.
(5) Fifth and Subsequent Violations. APUD will have the right to reduce the amount of water provided to the customer, including termination of service.

7.6 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME IMPACTS

To ameliorate any financial loss due to the water shortage, the City has established a Water Rate Stabilization Fund. The Water Rate Stabilization Fund is a revenue balancing account set up to receive those funds that may be generated by a drought surcharge, rate revisions, and/or by water waste penalties. A drought penalty or rate revision is suggested for both Water Shortage Plan I and Water Shortage Plan II. These funds may be implemented to encourage water conservation efforts, purchase additional supplies of water, and/or pay for costs associated with the water shortage. The Water Rate Stabilization Fund may also be used to stabilize rates following the City Council's finding that a water shortage no longer exists. Overall, the City has prepared stringent

measures, as outlined in the Water Shortage Plan, to effectively mitigate revenue impacts due in the event of a catastrophic water shortage or drought.

"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. This study is of interest to the City of Anaheim in the importance to respond immediately to a water shortage condition.

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 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 region 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 study demonstrates the importance to the City's water reliability and water shortage contingency plan in 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 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 DRAFT RESOLUTION

The City adopted Ordinance No. 5204 on February 26, 1991, which includes three Water Shortage Plans that may be executed during water shortages. The purpose of the Ordinance is to provide procedures with voluntary and mandatory provisions to minimize the effect of a water shortage to the APUD's service area. A Draft Resolution to be enacted by City Council during times of shortage is included in Appendix G.

Prior to and during implementation of the Ordinance and Resolution, the City would likely meet water shortage demands by increasing groundwater pumping and implementing water use efficiency programs. In addition, the responsibility for monitoring and evaluating the projected supply and customer water demand is held by the City.

7. 8 MECHANISMS TO DETERMINE ACTUAL REDUCTIONS IN WATER USE

APUD supply and demand data are recorded and reviewed daily. Month-end water meter readings are also collected and compiled into Monthly and Fiscal Year to Data Water System Reports. Data will be monitored and compared from week to week, and used to measure the effectiveness of any water shortage contingency stage that may be implemented.

As stages of water shortage are declared by Metropolitan or within the Orange County region, APUD will follow Metropolitan's WSDM Plan and other regional guidelines. APUD will implement the appropriate Shortage Plan and continue to monitor water supply demand levels. Under Water Shortage Plans II and III, the water conservation plan that is required to be submitted to the City from each commercial and industrial customer using 25,000 Billing Units per year or more, will be analyzed for potential conservation savings. Subsequently, quarterly reports completed by these customers will be required to ensure progress.

At the WSDM Plan Shortage Stage 5, Metropolitan may call for extraordinary conservation. During this stage, Metropolitan's Drought Program Officer will coordinate public information activities directly with the City and monitor the effectiveness of ongoing conservation programs. Monthly reporting on estimated conservation water savings will be provided.

APUD staff will also participate in regular member agency meetings with OCWD to monitor groundwater and discuss monthly water allocations. This will enable APUD to be aware of groundwater conditions on a timely basis, and when combined with response to import water conditions, will result in the appropriate drought contingency actions by APUD staff.

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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 region's reliance on imported water. As technological improvements continue to reduce treatment costs, 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 region's high likelihood of drought. As treatment technology continues to improve, demand for recycled water will also increase.

8.2 COORDINATION OF RECYCLED WATER IN CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT SERVICE AREA

Currently, APUD does not utilize or serve directly applied recycled water to any of its customers or for municipal purposes. However, APUD produces a majority of its water supply from the basin. OCWD utilizes recycled water generated from OCSD treatment facilities to protect the basin through seawater intrusion barriers. Beginning in 2007, OCWD will also be using OCSD-recycled water at the groundwater recharge basins (refer to OCWD/OCSD Groundwater Replenishment System (GWRS) below). APUD supports these efforts through OCWD's rate structure and indirectly benefits from the regional use of recycled water. The regional projects are discussed later in this section.

8.3 WASTEWATER COLLECTION AND TREATMENT IN ANAHEIM PUBLIC UTILITIES DEPARTMENT SERVICE AREA

Wastewater from APUD's water service area is collected and treated by OCSD. The City operates and maintains the localized sewer system of over 500 miles of pipelines that feed into OCSD's trunk system from the City. OCSD 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 sewage 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 secondarily treated 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 Plants 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; Years 2025 and 2030 were assumed to be the same as 2020.

Current capacity for Reclamation Plant No. 1 is 218 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.[70] 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 from APUD's service area 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 APUD Service Area

Year	Unit Flow Coefficient (gpcd)[1]	Total Amount (AFY)
2000	104	38,800
2005	106	41,190
2010	109	45,640
2015	112	49,020
2020	115	51,235
2025	115	51,590
2030	115	51,650

[1] The OCSD Interim Strategic Plan Update, September 2002.

8.4 REGIONAL RECYCLED WATER

Since APUD depends on groundwater for at up to 64 percent of its total water supply, APUD 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 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.[71] 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 (secondary treatment) year round for OCWD's GAP (flocculation and dual media filtration followed by chlorination), 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.

[70] MWDOC 2005 Regional Urban Water Management Plan.
[71] OCWD, 2003-2004 Engineer's Report, February 2005.

Water Factory 21

Although currently offline due to the construction of the GWRS, Water Factory 21 had been used by OCWD since 1976 to produced 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 USBR and seven southern California water agencies, including Metropolitan, conducted 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 findings of the SCCWRRS Phase II Final Report (July 2002), a regional water recycling system that spans the entire study area is not practical or feasible; however, subregional systems warrant further evaluation. The Orange County Region has been identified as one of the four geographical regions, and was examined for a regional water recycling system for short-term (2010) and long-term (2040) applications. Results of the analysis identified a regional recycling strategy that consists of the most cost-effective regional and single-agency projects, as well as the development of an implementation process that includes the establishment of a regional coalition of local and regional agencies.[72]

OCWD/OCSD Groundwater Replenishment System (GWRS)

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.[73] Timing of future phases will be determined based on the need for additional water (e.g. implementation of OCWD's LTFP).

[72] SCCWRSS Phase II Final Report, July 2002. Identifies the collaborative study agencies as the USBR, DWR, 2 cities, 10 special districts, the County of Orange, Santa Ana Watershed Project Authority, South Orange County Reclamation Authority, and Marine Corps Base Camp Pendleton.
[73] Orange County Water District, Long Term Facilities Plan, Draft October 2005.

Potential uses for recycled water in Orange County include landscape irrigation and groundwater basin recharge. To supplement regional water recycling projects such as the GAP and to provide high quality water for injection into the basin, the GWRS, jointly sponsored by OCWD and OCSD, is being implemented.

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 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. Recycled water through the GWRS will be introduced into the groundwater recharge basins beginning in 2007. Groundwater recharge will continue to increase from 2007 to 2030 as additional phases of the GWRS are constructed. Groundwater recharge will surpass landscape irrigation as the greatest consumer of recycled water in Orange County. The treated water will also be injected into the ground to create an expanded seawater intrusion barrier. In 2004, recycled water use for seawater intrusion barriers was 4,000 AF.

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.

8.5 2000 PROJECTED AND POTENTIAL USES OF RECYCLED WATER

Since APUD's 2000 UWMP was published, the amount of recycled water supplied to APUD has not changed. APUD did not project the use of recycled water by 2005, and is not currently using recycled water within APUD's service area. While APUD recognizes the potential uses of recycled water in its community, such as landscape irrigation, parks, industrial and other uses, the OCWD does not have the recycled water infrastructure to support the use of recycled water. APUD, however, supports, encourages and contributes to the continued development of recycled water and potential uses throughout the region through the GWRS.

APUD conducted a Water Reclamation Feasibility Study in February 1991 to analyze the effects of the 1987 through 1991 drought. Anaheim contacted OCSD and OCWD concerning the possibility of using recycled water within its service area. A Water Reclamation Steering Committee was formed by APUD to interview and collect information from numerous water agencies throughout Southern California that had experience in developing and implementing water reclamation systems. The committee also analyzed the potential use of recycled water in Anaheim, including alternate routings and cost analysis of distribution systems. The committee concluded that a recycled water treatment and distribution system in Anaheim was not economically feasible. The committee did recommend continued work with OCWD and OCSD in regional recycled water projects, including groundwater recharge and direct uses.

APUD plans to re-visit the potential sources and uses of recycled water in its service area by conducting a new recycled water feasibility study prior to the 2010 UWMP update. Potential end uses may include landscape irrigation and industrial processes.

8.6 ENCOURAGING RECYCLED WATER USE

Based on the results of APUD's 1991 Water Reclamation Feasibility Study, a formal Recycled Water Optimization Plan has not been completed. The City, however, currently implements programs that require separate irrigation services to promote the future use of recycled water for landscape irrigation. The City required separate irrigation services for several large development areas including The Anaheim Resort Specific Plan, the Disneyland Resort Specific Plan, and The Platinum Triangle Master Land Use Plan.

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 APUD 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 Anaheim students with grade-specific programs that include information on recycled water.

Between September 2004 and June 2005, school education presentations were made at 14 schools reaching over 6,900 students. There are already more than 4,600 students signed up for the program between September 2005 and June 2006.

Financial Incentives

The implementation of recycled water projects involves a substantial upfront capital investment for planning studies, environmental EIRs, 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 provide 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 13 Water Bond, and Metropolitan LRP. 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.

8.7 OPTIMIZING RECYCLED WATER USE

Because the City is not using recycled water at this time, it is not practicable to provide a recycled water optimization plan. The City has positioned itself to receive recycled water if it becomes available to serve some of the large development areas. The City continues to evaluate recycled water opportunities within its service area.

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 are very expensive to pursue.

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

In addition to completing a new feasibility study for recycled water, APUD will continue to conduct cost/benefit analyses for recycled various 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.

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APPENDIX A

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT OF 1983 AS AMENDED

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.

APPENDIX B

DWR 2005 URBAN WATER MANAGEMENT PLAN
"REVIEW FOR COMPLETENESS" FORM

2005 Urban Water Management Plan "Review for Completeness" Form

For DWR Review Staff Use

Coordination with Appropriate Agencies — **(Water Code § 10620 (d)(1)(2**

Yes

[X] Participated in area, regional, watershed or basin wide plan — Sec 1, p.1-2 Reference & Pa

Name of plan 2005 UWMP — Lead Agency City of Anaheim — Sec 1, p.1-2 Reference & Pa

[X] Describe the coordination of the plan preparation and anticipated benefits. — Sec 1, p.1-2 Reference & Pa

Table 1
Coordination with Appropriate Agencies

Check at least one box on each row	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Sent Copy of Final Plan
APUD	X	X	X	X	X	X	X
City Planning Department	X	X		X	X	X	X
City Clerk				X		X	
City Attorney			X			X	
Metropolitan				X	X	X	X
MWDOC				X	X	X	X
OCWD				X	X	X	X
OCSD				X	X	X	X
Public Library					X	X	X
Interested General Public			X		X	X	Available

Describe resource maximization / import minimization plan — **(Water Code §10620 (f))**

[X] Describe how water management tools / options maximize resources & minimize need to import water — Sec 2, p.2-3 Reference & Pa

Plan Updated in Years Ending in Five and Zero — **(Water Code § 10621(a))**

[X] Date updated and adopted plan received *to be entered by State* (enter date) — Sec 1, p.1-2 Reference & Pa

City and County Notification and Participation — **(Water Code § 10621(b))**

[X] Notify any city or county within service area of UWMP of plan review & revision — Sec 1, p.1-2 Reference & Pa

[X] Consult and obtain comments from cities and counties within service area — Sec 1, p.1-2 Reference & Pa

Service Area Information — **Water Code § 10631 (a))**

[X] Include current and projected population — Sec 1, p.1-9 Reference & Pa

[X] Population projections were based on data from state, regional or local agency — Sec 1, p.1-9 Reference & Pa

Table 2 Population - Current and Projected							
	2000	2005	2010	2015	2020	2025	2030 - opt
Service Area Population	333,100	346,932	373,852	390,764	397,774	400,529	400,990

X	Describe climate characteristics that affect water management	Sec 1, p. 1-4	Reference & Pa
X	Describe other demographic factors affecting water management	Sec 1, p. 1-4	Reference & Pa

Table 3 Climate						
	January	February	March	April	May	June
Standard Average ETo	1.86	2.24	3.41	4.8	5.58	6.3
Average Rainfall	3.36	2.73	2.33	1.07	0.26	0.04
Average Temperature	67.4	69.7	70.6	73.9	76.6	81.6

Table 3 (continued) Climate							
	July	August	September	October	November	December	Annual
Average ETo	6.51	6.20	4.80	3.72	2.40	1.86	**49.68**
Average Rainfall	0.01	0.13	0.27	0.23	1.66	1.8	**13.89**
Average Temperature	88.8	89.2	87.4	81.4	74.5	69.2	**77.53**

Water Sources **(Water Code § 10631 (b))**

X	Identify existing and planned water supply sour	Sec 2, p.2-1	Reference & Pa
X	Provide current water supply quantities	Sec 2, p.2-2	Reference & Pa
X	Provide planned water supply quantities	Sec 2, p.2-2	Reference & Pa

Table 4 Current and Planned Water Supplies - AFY						
Water Supply Sources	2005	2010	2015	2020	2025	2030 - opt
Water purchased from:						
Orange County Groundwater Basin - Groundwater	43,410	30,780	30,890	33,030	31,250	29,410
Metropolitan Water District of Southern California - Imported (TREATED)	25,867	57,850	60,000	60,890	61,240	61,300
Total	**69,277**	**88,630**	**90,890**	**93,920**	**92,490**	**90,710**

If Groundwater identified as existing or planned source		(Water Code §10631 (b)(1-4))	
	Has management plan		Reference & Pa
	Attached management plan (b)(1)		Reference & Pa
X	Description of basin(s) (b)(2)	Sec 2, p.2-6	Reference & Pa
	Basin is adjudicated		Reference & Pa
	If adjudicated, attached order or decree (b)(2)		Reference & Pa
	Quantified amount of legal pumping right (b)(2)		Reference & Pa

Table 5
Groundwater Pumping Rights - AF Year

Basin Name	Pumping Right - AFY
Orange County Ground Water Basin	Managed Basin
Total	0

X	DWR identified, or projected to be, in overdraft (b)(2)	Sec 2, p.2-6	Reference & Pa
X	Plan to eliminate overdraft (b)(2)	Sec 2, p.2-6	Reference & Pa
X	Analysis of location, amount & sufficiency, last five years (b)(3)	Sec 2, p.2-9	Reference & Pa
X	Analysis of location & amount projected, 20 years (b)(4)	Sec 2, p.2-9	Reference & Pa

Table 6
Amount of Groundwater pumped - AFY

Basin Name (s)	2000	2001	2002	2003	2004	2005
Orange County Ground Water Basin	52,915	60,049	62,900	50,852	51,831	43,642
Imported Water Usage	27,153	16,560	17,237	23,943	25,066	28,030
Total Water Usage	80,068	76,609	80,137	74,795	76,897	71,672
% of Total Water Supply	66.1%	78.4%	78.5%	68.0%	67.4%	60.9%

Table 7
Amount of Groundwater projected to be pumped - AFY

Basin Name(s)	2010	2015	2020	2025	2030 - opt
Orange County Ground Water Basin	57,850	60,000	60,890	61,240	61,300
% of Total Water Supply	70.0%	70.0%	70.0%	70.0%	70.0%

Reliability of Supply (Water Code §10631 (c) (1-3)

[X] Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage — Sec 4,4-1,26 — Reference & Pa

Table 8
Supply Reliability - AF Year

			Multiple Dry Water Years		
Average / Normal Water Year	Single Dry Water Year	Year 1	Year 2	Year 3	Year 4
	2010	2007	2008	2009	2010
	90,180	87,270	92,790	90,660	91,260
Average Year	86,820	87,270	87,730	88,180	88,630
% of Normal	103.9%	100.0%	105.8%	102.8%	103.0%

Table 9
Basis of Water Year Data

Water Year Type	Year	Source name	Source name	
Average Water Year	2000-2004 Avg	Anaheim		Sec 4, p.4-19 Reference & Page Number
Single-Dry Water Year	1977	MWD of SC		Sec 4, p.4-14 Reference & Page Number
Multiple-Dry Water Years	1990-92	MWD of SC		Sec 4, p.4-14 Reference & Page Number

Water Sources Not Available on a Consistent Basis (Water Code §10631 (c))

[X] Describe the reliability of the water supply due to seasonal or climatic shortages — Sec 4, p.4-28 — Reference & Pa

[X] Describe the vulnerability of the water supply to seasonal or climatic shortages — Sec 4, p.4-28 — Reference & Pa

[X] No unreliable sources — Sec 4, p.4-28 — Reference & Pa

Table 10
Factors resulting in inconsistency of supply

Name of supply	Legal	Environ-mental	Water Quality	Climatic

[ ] Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs — Reference & Pa

[X] No inconsistent sources — Sec 4, p.4-28 — Reference & Pa

Transfer or Exchange Opportunities **(Water Code §10631 (d))**

X	Describe short term and long term exchange or transfer opportunities	Sec 4, p.4-37	Reference & Pa
	No transfer opportunities		Reference & Pa

Table11
Transfer and Exchange Opportunities - AF Year

Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
South Feather Water and Power Agency - Partner with City of Santa Ana and MWDOC	Transfer	X	10,000 AF		
Total			0		0

Water Use Provisions **(Water Code §10631 (e)(1)(2)**

X	Quantify past water use by sector	Sec 5, p.5-1	Reference & Pa
X	Quantify current water use by sector	Sec 5, p.5-1	Reference & Pa
X	Project future water use by sector	Sec 5, p.5-1	Reference & Pa

TABLE 12 - Past, Current and Projected Water Deliveries

	2000/01		2004/05		2009/10		2014/15	
	metered		metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single family	48,811	27,700	49,382	26,200	53,250	37,000	55,550	39,000
Multi-family	4,258	16,700	4,240	14,800	4,550	20,000	4,650	21,000
Commercial/Industrial	6,428	31,400	6,606	28,500	6,300	21,420	6,250	21,330
Other	1,600	0	1,655	0	1,700	0	1,750	0
Total	61,097	75,800	61,883	69,500	65,800	78,420	68,200	81,330

TABLE12 (continued) - Past, Current and Projected Water Deliveries

	2019/20		2024/25		2029/30	
	metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Single family	56,350	40,000	56,650	40,250	56,700	40,270
Multi-family	4,850	21,230	4,950	21,500	5,000	21,600
Commercial/Industrial	6,200	21,300	6,150	21,250	6,100	21,210
Other	1,800	0	1,850	0	1,900	0
Total	69,200	82,530	69,600	83,000	69,700	83,080

[ ]	Identify and quantify sales to other agencies		Reference & Pa
[X]	No sales to other agencies	Sec 5, p.5-1	Reference & Pa

Table 13
Sales to Other Agencies - AF Year

Water Distributed	2000/01	2004/05	2009/10	2014/15	2019/20	2024/25	2029/30
name of agency	0	0	0	0	0	0	0
name of agency							
name of agency							
Total	0	0	0	0	0	0	0

[X]	Identify and quantify additional water uses	Sec 5, p.5-1	Reference & Pa

Table 14
Additional Water Uses and Losses - AF Year

Water Use	2000/01	2004/05	2009/10	2014/15	2019/20	2024/25	2029/30
Total	0	0	0	0	0	0	0

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

Table 15
Total Water Use - AF Year

Water Use	2000/01	2004/05	2009/10	2014/15	2019/20	2024/25	2029/30
Total of Tables 12, 13, 14	75,800	69,500	78,420	81,330	82,530	83,000	83,080

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))**

[X]	No non-implemented / not scheduled DMMs	Sec 6, p.6-1	Reference & Pa
[ ]	Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors)		Reference & Pa
[ ]	Cost-Benefit analysis includes total benefits and total costs		Reference & Pa
[ ]	Identifies funding available for Projects with higher per-unit-cost than DMMs		Reference & Pa
[ ]	Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners		Reference & Pa

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 ($)**

Planned Water Supply Projects and Programs **(Water Code §10631 (h))**

[ ]	No future water supply projects or programs	
[X]	Detailed description of expected future supply projects & programs	Sec 4, p.4-28 Reference & Pa
[X]	Timeline for each proposed project	Sec 4,p.4-28+ Reference & Pa
[ ]	Quantification of each projects normal yield (AFY)	Reference & Pa
[ ]	Quantification of each projects single dry-year yield (AFY)	Reference & Pa
[ ]	Quantification of each projects multiple dry-year yield (AFY)	Reference & Pa

Table 17 Future Water Supply Projects								
Project Name	**Projected Start Date**		**Projected Completion Date**	**Normal-year AF to agency**	**Single-dry year yield AF**		**Multiple-Dry-Year 1 AF**	**Multiple-Dry-Year 2 AF**

Opportunities for development of desalinated water **(Water Code §10631 (i))**

[X]	Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply	Sec 4, p.4-39 Reference & Pa
[ ]	No opportunities for development of desalinated water	Reference & Pa

Table 18 Opportunities for desalinated water	
Sources of Water	**Check if yes**
Ocean Water (by Metropolitan)	X
Brackish ocean water	
Brackish groundwater	

District is a CUWCC signatory **(Water Code § 10631 (j))**

Urban suppliers that are California Urban Water Conservation Council members 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). The supplier's CUWCC Best Management Practices Report should be attached to the UWMP.

X	Agency is a CUWCC member	Sec 6, p.6-1	Reference & Pa
X	2003-04 annual updates are attached to plan	Sec 6, p.6-1	Reference & Pa
X	Both annual updates are considered completed by CUWCC website	Sec 6, p.6-1	Reference & Pa

If Supplier receives or projects receiving water from a wholesale supplier **(Water Code §10631 (k))**

Yes

X	Agency receives, or projects receiving, wholesale water	Sec 4, p.4-21	Reference & Pa
X	Agency provided written demand projections to wholesaler, 20 years	Sec 4, p.4-21	Reference & Pa

Table 19
Agency demand projections provided to wholesale suppliers - AFY

Wholesaler	2005	2010	2015	2020	2025	2030
Metropolitan WD of So Calif		23,530	24,400	24,760	24,900	24,920
(name 2)						
(name 3)						

X Wholesaler provided written water availability projections, by source, to agency, 20 years — Sec 4, p.4-21 Reference & Pa

(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
Metropolitan WD of So Calif	30,780	30,890	33,030	31,250	29,410
(source 2)					
(source 3)					

X Reliability of wholesale supply provided in writing by wholesale agency — Sec 4, p.4-16,18 Reference & Pa

(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

	Multiple Dry Water Years				
Wholesaler sources	**Single Dry**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Metropolitan WD of So Calif					
2010	106.5%			98.2%	
2015	116.7%			106.8%	
2020	113.1%			103.3%	
2025	111.9%			102.4%	
2030	111.9%			102.4%	

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))**	
X	Provide stages of action	Sec 7, p.7-1	Reference & Pa
X	Provide the water supply conditions for each stage	Sec 7, p.7-2	Reference & Pa
X	Includes plan for 50 percent supply shortage	Sec 7, p.7-4	Reference & Pa

Table 23 Water Supply Shortage Stages and Conditions RATIONING STAGES		
Stage No.	**Water Supply Conditions**	**% Shortage**
APUD		
Shortage Plan I	Recommends drought surcharge to encourage conservation, purchase additional water supplies.	Up to 10%
Shortage Plan II	Recommends drought surcharge to encourage conservation, purchase additional water supplies, specific water uses are prohibited, commercial water conservation plans required.	10% to 15%
Shortage Plan III	Plan II recommendations continue, specified water uses continue to be prohibited, abililty to specify "base allotment" and prohibit water use above a specified percentage of the base.	15% to 50%
Metropolitan		
Shortage	Metropolitan meets full-service demands and partially meets interruptible	
Severe Shortage	Metropolitan meets full-service demands by using stored water, transfers and extraordinary conservation. Curtail Ag Water Program deliveries.	
Extreme Shortage	Metropolitan must allocate available supply to full-service customers.	

Three-Year Minimum Water Supply **(Water Code §10632 (b))**

X	Identifies driest 3-year period	Sec 4, p.4-15 Reference & Pa
X	Minimum water supply available by source for the next three years	Sec 7, p.7-9 Reference & Pa

Table 24
Three-Year Estimated Minimum Water Supply - AF Year

source**		Base Year	Multiple Dry Years		
		2006	2006	2007	2008
Imported Water		36,420	33,350	32,410	32,980
Groundwater		50,400	59,290	57,620	58,620
Total		86,820	92,640	90,030	91,600

*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))**

X	Provided catastrophic supply interruption plan	Sec 7, p.7-8 Reference & Pa

Table 25
Preparation Actions for a Catastrophe

Possible Catastrophe	Check if Discussed
Regional power outage	X
Earthquake	X

Prohibitions **(Water Code § 10632 (d))**

X	List the mandatory prohibitions against specific water use practices during water shortages	Sec 7, p.7-11 Reference & Pa

Table 26 Mandatory Prohibitions	
Examples of Prohibitions/Reduction Measures	**Stage When Prohibition Becomes Mandatory**
Drought Surcharge/Penalty on Members/Rate revision	I, II, & III
Hosing or washing sidewalks, driveways, or other paved surfaces	II & III
Filling/refilling decorative fountains, lakes, etc. unless recycled water is used	II & III
Serving drinking water to customers without consent	II & III
Neglecting to repair a leak	II & III
Allow water to runoff landscaped areas	II & III
Allow water to runoff while washing vehicles	II & III
Landscape watering more than 3 times per week, except when recycled water is used	II & III
Landscape watering between the hours of 10:00 am and 5:00 pm	II & III
Refilling a swimming pool emptied after a Water Shortage Period	II & III
Submission of water conservation plan by commercial and industrial customers using 25,000 Billing Units per year; quarterly reports	II & III
Prohibit water use in excess of a specified percentage of a Customer's Base	II & III

Consumption Reduction Methods **(Water Code § 10632 (e))**

[X] 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. 7-2 Reference & Pa

Table 27 Consumption Reduction Methods			
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Water Conservation Target Level (%)**	**Projected Reduction (%)**
Voluntary	I	TBD	Up to 10%
Mandatory	II	TBD	10% to 15%
Mandatory	III	TBD	15% to 50%

Penalties **(Water Code § 10632 (f))**

X	List excessive use penalties or charges for excessive use	Sec 7, p.7-12	Reference & Pa

Table 28
Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Written notice to customer	First Violation
$25 Fine	Second Violation
$50 Fine	Third Violation
$75 Fine along with installation of flow-restricting device for less than 48 hours	Fourth Violation
Reduce amount of water to customer, including termination of service	Fifth and Subsequent Violations

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

X	Describe how actions and conditions impact revenues	Sec 7, p.7-12	Reference & Pa
X	Describe how actions and conditions impact expenditures	Sec 7, p.7-12	Reference & Pa
X	Describe measures to overcome the revenue and expenditure impacts	Sec 7, p.7-12	Reference & Pa

Table 29
Proposed measures to overcome revenue impacts

Names of measures	Check if Discussed
Rate adjustment	X
Development of reserves	

Table 30 Proposed measures to overcome expenditure impacts	
Names of measures	**Check if Discussed**
Water Conservation Fund	X

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

[X] Attach a copy of the draft water shortage contingency resolution or ordinance. Sec 7, p. 7-14 Reference & Pa

Reduction Measuring Mechanism **(Water Code § 10632 (i))**

[X] Provided mechanisms for determining actual reductions Sec 7, p. 7-14 Reference & Pa

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
Member agency meetings with OCWD	Groundwater conditions

Recycling Plan Agency Coordination **Water Code § 10633**

[X] Describe the coordination of the recycling plan preparation information to the extent available Sec 8, p.8-1 Reference & Pa

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

Wastewater System Description **(Water Code § 10633 (a))**

X	Describe the wastewater collection and treatment systems in the supplier's service area	Sec 8, p.8-1	Reference & Pa
	Quantify the volume of wastewater collected and treated	Sec 8, p.8-3	Reference & Pa

Table 33
Wastewater Collection and Treatment - AF Year

Type of Wastewater	2000	2005	2010	2015	2020	2025	2030 - opt
Wastewater collected & treated in service area	38,800	41,190	45,640	49,020	51,235	51,950	51,560
Volume that meets recycled water standard							

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

X	Describes methods of wastewater disposal	Sec 8, p.8-3	Reference & Pa
X	Describe the current type, place and use of recycled water ***(regional)***	Sec 8, p.8-5	Reference & Pa
X	None	Sec 8, p.8-5	Reference & Pa
	Describe and quantify potential uses of recycled water		Reference & Pa

Table 34
Disposal of wastewater (non-recycled) AF Year

Method of disposal	Treatment Level	2005	2010	2015	2020	2025
Discharged to Ocean	Advance Primary and Secondary	249,678	197,055	217,209	200,414	200,414
Name of method						
Name of method						
Name of method						
	Total	249,678	197,055	217,209	200,414	200,414

Table 35
Recycled Water Uses - Actual and Potential (AFY)

User type	Treatment Level	2005	2010	2015	2020	2025
Agriculture						
Landscape						
Wildlife Habitat						
Wetlands						
Industrial						
Groundwater Recharge						
Other (user type)						
Other (user type)						
	Total	0	0	0	0	0

X	Determination of technical and economic feasibility of serving the potential uses	Sec 8, p.8-5	Reference & Pa

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

[X] Projected use of recycled water, 20 years — Sec 8, p.8-5 — Reference & Pa

Table 36
Projected Future Use of Recycled Water in Service Area - AF Year

	2010	2015	2020	2025	2030 - opt
Projected use of Recycled Water	0	0	0	0	0
	Conducting Feasibility Study; may adjust in future				

[X] Compare UWMP 2000 projections with UWMP 2005 actual (§ 10633 (e)) — Sec 8, p.8-5 — Reference & Pa

[X] None — Sec 8, p.8-5 — Reference & Pa

Table 37
Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY

User type	2000 Projection for 2005	2005 actual use
Agriculture		
Landscape		
Wildlife Habitat		
Wetlands		
Industrial		
Groundwater Recharge		
Other (user type)		
Other (user type)		
Total	0	0

Plan to Optimize Use of Recycled Water (Water Code § 10633 (f))

[X] Describe actions that might be taken to encourage recycled water uses — Sec 8, p.8-6 — Reference & Pa

[ ] Describe projected results of these actions in terms of acre-feet of recycled water used per year — Reference & Pa

Table 38
Methods to Encourage Recycled Water Use

Actions	AF of use projected to result from this action				
	2010	2015	2020	2025	2030 - opt
Public Education					
Total	0	0	0	0	0

[X] 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.8-6 — Reference & Pa

Water quality impacts on availability of supply **(Water Code §10634)**

[X] Discusses water quality impacts (by source) upon water management strategies and supply reliability — Sec 3, p.3-10 Reference & Pa

[X] 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))**

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

Sec 4, p.4-21 Reference & Pa

Table 40
Projected Normal Water Supply - AF Year

(from table 4)	2010	2015	2020	2025	2030 - opt
Supply	88,630	90,890	93,920	92,490	90,710
% 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	78,420	81,330	82,530	83,000	83,080
% of Recent Year's Normalized Demand	107.1%	111.1%	112.7%	113.4%	113.5%

Table 42
Projected Supply and Demand Comparison - AF Year

	2010	2015	2020	2025	2030 - opt
Supply totals	88,630	90,890	93,920	92,490	90,710
Demand totals	78,420	81,330	82,530	83,000	83,080
Difference	10,210	9,560	11,390	9,490	7,630
Difference as % of Supply	11.5%	10.5%	12.1%	10.3%	8.4%
Difference as % of Demand	13.0%	11.8%	13.8%	11.4%	9.2%

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

[X] 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.4-22 Reference & Pa

Table 43
Projected single dry year Water Supply - AF Year

	2010	2015	2020	2025	2030 - opt
Supply	90,180	95,460	97,490	95,880	94,400
% of projected normal	101.7%	105.0%	103.8%	103.7%	104.1%

Table 44
Projected single dry year Water Demand - AF Year

	2010	2015	2020	2025	2030 - opt
Demand	82,730	85,800	87,070	87,570	87,650
% 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	90,180	95,460	97,490	95,880	94,400
Demand totals	82,730	85,800	87,070	87,570	87,650
Difference	7,450	9,660	10,420	8,310	6,750
Difference as % of Supply	8.3%	10.1%	10.7%	8.7%	7.2%
Difference as % of Demand	9.0%	11.3%	12.0%	9.5%	7.7%

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

[X] 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,4-23 Reference & Pa

Table 46
Projected supply during multiple dry year period ending in 2010 - AF Year

	2006	2007	2008	2009	2010
Supply	86,820	87,270	92,790	90,660	91,260
% of projected normal	100.0%	100.0%	105.8%	102.8%	103.0%

Table 47
d multiple dry year period ending in 2010 - AFY

	2006	2007	2008	2009	2010
Demand	74,720	75,650	81,700	80,360	82,730
% 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	86,820	87,270	92,790	90,660	91,260
Demand totals	74,720	75,650	81,700	80,360	82,730
Difference	12,100	11,620	11,090	10,300	8,530
Difference as % of Supply	13.9%	13.3%	12.0%	11.4%	9.3%
Difference as % of Demand	16.2%	15.4%	13.6%	12.8%	10.3%

[X] 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.4-24 Reference & Pa

Table 49 Projected supply during multiple dry year period ending in 2015 - AF Year					
	2011	2012	2013	2014	2015
Supply	89,080	89,530	96,040	94,740	96,290
% of projected normal	100.0%	100.0%	106.7%	104.8%	105.9%

Table 50 Projected demand multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Demand	79,000	79,580	85,530	83,730	85,800
% 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	89,080	89,530	96,040	94,740	96,290
Demand totals	79,000	79,580	85,530	83,730	85,800
Difference	10,080	9,950	10,510	11,010	10,490
Difference as % of Supply	11.3%	11.1%	10.9%	11.6%	10.9%
Difference as % of Demand	12.8%	12.5%	12.3%	13.1%	12.2%

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years

Sec 4, p.4-25 Reference & Pa

Table 52 Projected supply during multiple dry year period ending in 2020 - AF Year					
	2016	2017	2018	2019	2020
Supply	91,500	92,100	97,840	96,630	98,360
% 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	81,570	81,810	87,550	85,330	87,070
% 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	91,500	92,100	97,840	96,630	98,360
Demand totals	81,570	81,810	87,550	85,330	87,070
Difference	9,930	10,290	10,290	11,300	11,290
Difference as % of Supply	10.9%	11.2%	10.5%	11.7%	11.5%
Difference as % of Demand	12.2%	12.6%	11.8%	13.2%	13.0%

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years

Sec 4, p.4-26 Reference & Pa

Table 55 Projected supply during multiple dry year period ending in 2025 - AF Year					
	2021	2022	2023	2024	2025
Supply	96,630	93,350	97,920	95,800	96,610
% of projected normal	100.0%	100.0%	105.2%	103.2%	104.4%

Table 56 Projected demand multiple dry year period ending in 2025 - AFY					
	2021	2022	2023	2024	2025
Demand	82,620	82,720	88,360	85,980	87,570
% 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	96,630	93,350	97,920	95,800	96,610
Demand totals	82,620	82,720	88,360	85,980	87,570
Difference	14,010	10,630	9,560	9,820	9,040
Difference as % of Supply	14.5%	11.4%	9.8%	10.3%	9.4%
Difference as % of Demand	17.0%	12.9%	10.8%	11.4%	10.3%

Provision of Water Service Reliability section to cities/counties within service area			**(Water Code § 10635(b))**	
X	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 & Pa
Does the Plan Include Public Participation and Plan Adoption			**(Water Code § 10642)**	
X	Attach a copy of adoption resolution	Sec 1, p.1-2	Appendix C	Reference & Pa
X	Encourage involvement of social, cultural & economic community groups		Sec 1, p.1-2	Reference & Pa
X	Plan available for public inspection		Sec 1, p.1-2	Reference & Pa
X	Provide proof of public hearing	Sec 1, p.1-2	Appendix C	Reference & Pa
X	Provided meeting notice to local governments			Reference & Pa
Review of implementation of 2000 UWMP			**(Water Code § 10643)**	
X	Reviewed implementation plan and schedule of 2000 UWMP		Sec 6, p.6-1	Reference & Pa
X	Implemented in accordance with the schedule set forth in plan		Sec 6, p.6-1	Reference & Pa
	2000 UWMP not required			Reference & Pa
Provision of 2005 UWMP to local governments			**(Water Code § 10644 (a))**	
X	Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption		Sec 1, p.1-2	Reference & Pa
Does the plan or correspondence accompanying it show where it is available for public review			**(Water Code § 10645)**	
X	Does UWMP or correspondence accompanying it show where it is available for public review		Back Cover	Reference & Pa

APPENDIX C

NOTICE OF PUBLIC HEARING and
RESOLUTION FOR PLAN ADOPTION

AFFIDAVIT OF PUBLICATION

STATE OF CALIFORNIA,)
) ss.
County of Orange)

I am a citizen of the United States and a resident of the County aforesaid; 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 **Anaheim Bulletin**, a newspaper that has been adjudged to be a newspaper of general circulation by the Superior Court of the County of Orange, State of California, on December 28, 1951, Case No. A-21021 in and for the City of Anaheim, County of Orange, State of California; that the notice, of which the annexed is a true 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:

November 10, 17, 24, 2005

"I certify (or declare) under the penalty of perjury under the laws of the State of California that the foregoing is true and correct":

Executed at Santa Ana, Orange County, California, on

Date: November 24, 2005

Signature

Anaheim Bulletin
625 N. Grand Ave.
Santa Ana, CA 92701
(714) 796-2209

PROOF OF PUBLICATION

This space is for the County Clerk's Filing Stamp

Proof of Publication of

CITY OF ANAHEIM
PUBLIC UTILITIES BOARD
PUBLIC HEARING ON THE PROPOSED
2005 URBAN WATER MANAGEMENT PLAN
THURSDAY, DECEMBER 1, 2005

NOTICE IS HEREBY GIVEN that the Anaheim Public Utilities Board will hold a public hearing in the 11th Floor Conference Room of City Hall West, 201 S. Anaheim Boulevard, on Thursday, December 1, 2005, at 5:00 p.m., or as soon thereafter as this matter can be heard, on Anaheim's Proposed 2005 Urban Water Management Plan in accordance with Section 10642 of the Urban Water Management Planning Act. The purpose of the hearing will be to solicit public comment prior to adoption of the plan by the Anaheim City Council.

ALL INTERESTED PERSONS are invited to attend said hearing and express opinions on the above-described matter.

Copies of the Draft 2005 Urban Water Management Plan will be available beginning November 17, 2005, for public inspection at the following locations: Anaheim Central Public Library (500 W. Broadway); Anaheim Canyon Hills Branch Library (400 Scout Trail); Anaheim Euclid Branch Library (1340 S. Euclid); Anaheim Haskett Branch Library (2650 W. Broadway); Anaheim Sunkist Branch Library (901 S. Sunkist); office of Anaheim's City Clerk (Room #217 at 200 S. Anaheim Boulevard); and the Water Engineering Division office (Room #801 at 201 S. Anaheim Boulevard).

Further information and/or copies of the Draft 2005 Urban Water Management Plan may be obtained by calling Rick Shimaku, Anaheim Public Utilities, at (714) 765-4181.

Publish: Anaheim Bulletin
November 10, 17, 24, 2005
25-786

6869632

RESOLUTION NO. 2005R- 237

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANAHEIM TO ADOPT THE 2005 URBAN WATER MANAGEMENT PLAN

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

WHEREAS the City of Anaheim is an urban supplier of water providing water to a population over 300,000, and

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

WHEREAS the Plan must be adopted by City Council on or before December 31, 2005, after public review and hearing, and a resolution conforming adoption of the plan must be filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS the City has therefore, prepared and circulated for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held on December 1, 2005, and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Anaheim as follows:

The 2005 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk; the Public Utilities General Manager is hereby authorized and directed to file the 2005 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date;

THE FOREGOING RESOLUTION is approved and adopted by the City Council of the City of Anaheim this 20th day of December, 2005.

MAYOR OF THE CITY OF ANAHEIM

ATTEST:

CITY CLERK OF THE CITY OF ANAHEIM

ROLLCALL:

Yes: Mayor Pringle, Council Members Sidhu, Hernandez, Galloway, Chavez

None: None

Absent: None

Abstain:None

60041.1

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APPENDIX D

REFERENCES

City of Anaheim

2005 Urban Water Management Plan

REFERENCES

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APPENDIX E

CUWCC – CITY OF ANAHEIM CONSERVATION BMP ACTIVITY REPORTS (Annual Reports) for 2001 – 2002 and 2003 – 2004, and COVERAGE REPORTS

Water Supply & Reuse

Reporting Unit:
City of Anaheim, PUD

Year:
2004

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Metropolitan Water District of Southern California	25066	Imported
Orange County Water District	51499	Groundwater

Total AF: 76565

Accounts & Water Use

Reporting Unit Name:
City of Anaheim, PUD

Submitted to CUWCC
03/08/2005

Year:
2004

A. Service Area Population Information:

1. Total service area population 348146

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	49237	27497	0	0
2. Multi-Family	4244	16149	0	0
3. Commercial	4115	18868	0	0
4. Industrial	740	2578	0	0
5. Institutional	1726	7307	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1642	889	0	0
9. Unaccounted	NA	0	NA	0
Total	61704	73288	0	0
	Metered		**Unmetered**	

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

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

A. Implementation

1. Based on your signed MOU date, 10/10/1991, your Agency STRATEGY DUE DATE is:	10/09/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	49237	4244
2. Number of surveys completed:	724	1133
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)	yes	yes
9. Measure total irrigable area (Recommended but not required for surveys)	yes	yes
10. Which measurement method is typically used (Recommended but not required for surveys)		Pacing
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?	yes	yes
a. If yes, in what form are surveys tracked?		database

b. Describe how your agency tracks this information.
Program data is tracked in an access database by program consultant.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	77500	102500
2. Actual Expenditures	83639	

D. "At Least As Effective As"

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

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."
The APUD offers its customers the option of an on-line residential survey. This survey provides a final report just like the one provided through the on-site survey. This year there were 37 on-line internet surveys completed.

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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: 75%

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: 75%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

   The 75% saturation levels are based on the July 2002 Orange County Saturation Survey conducted by the Municipal Water District or Orange County (MWDOC) and the Metropolitan Water District of Southern California. Although the study falls slightly short of the 75% levels by a small amount, it is fair to say that by the time the study was actually completed, the 75% saturation levels would have been achieved through natural replacement.

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? 7/1/1990

   b. Describe your targeting/ marketing strategy.
   Low-flow devices are distributed and/or installed through the Home Utility Checkup program and marketed in Anaheim's new newsletter bill insert and in numerous ads in local publications as well as at several public outreach events held throughout the year.

Low-Flow Devices Distributed/ Installed	**SF Accounts**	**MF Units**
2. Number of low-flow showerheads distributed:	697	1046
3. Number of toilet-displacement devices distributed:	89	134
4. Number of toilet flappers distributed:	25	38
5. Number of faucet aerators distributed:	1353	2030

6. Does your agency track the distribution and cost of low-flow devices? yes

a. If YES, in what format are low-flow devices tracked? Database

b. If yes, describe your tracking and distribution system :
Low-flow devices installed through the Home Utility Checkup Program. All program data is tracked by our program consultant in an access database.

C. Low-Flow Device Distribution 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

Expenditures for the low-flow devices are included in the budget under the Home Utility Checkup program in BMP #1.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	73276
b. Determine other system verifiable uses (AF)	0
c. Determine total supply into the system (AF)	76900
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.95
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.	749
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

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.	0
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	0
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?	yes
a. If YES, when did your agency begin implementing this strategy?	2/14/2000
b. Description of marketing / targeting strategy: Marketing/Targeting is included as part of Anaheim's participation in the Orange County Landscape Performance Certification Program operated by the Municipal Water District of Orange County.	
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	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
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	41358	38500
2. Actual Expenditures	11883	

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

The number of irrigation meters is unknown, but is greater than 0 because they are required for all landscaped areas over 2,500 sq. ft.

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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 whom the energy/waste water utility provider is.
   The APUD is a municipal utility offering both energy and water service to Anaheim businesses and residents. During this reporting year APUD offered a $200 rebate to customers that purchased a new high-efficiency washer to replace their existing old washer. Both the water and electric utility fund this program in Anaheim, which is called the Home Incentives Program. It also offers rebates for many other home appliances and conservation measures. The MWD supports our program by providing a portion of the rebate funding.

2. Does your agency offer rebates for high-efficiency washers? yes
3. What is the level of the rebate? 200
4. Number of rebates awarded. 905

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	44000	120000
2. Actual Expenditures	72755	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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.
Anaheim staffs a public outreach booth at many neighborhood and community events held in Anaheim throughout the year. Program information and conservation literature is available at each event and program flyers for all of APUD's programs and services are displayed in all Anaheim libraries, in the lobbies of City Hall East & West and in Anaheim community centers throughout the city. Give-away items include low-flow showerheads, hose nozzles, water bottles, moisture meters etc. Children receive conservation coloring books and other conservation related items. The Department also holds its annual Water Awareness Month campaign in May, which includes a proclamation declaring May as Water Awareness Month. Events held during May to promote water awareness include an annual Water Conservation Poster Contest for grades 1 - 6, free toilet distributions, Home Gardeners Workshops, participation in the Orange County annual Children's Water Education Festival, and a special water awareness booth at each Farmer's Market in front of City Hall during May. Ads about Water Awareness Month, each offering a new water conservation tip, are placed in the local newspaper and large posters that have tip cards listing our programs and also water conservation tips, are displayed in City Hall lobbies and other strategic locations throughout the city.

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	yes	18
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	5
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	9
g. Speaker's Bureau	yes	0
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	26500	26500
2. Actual Expenditures	22439	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	47	3243	0
Grades 4th-6th	yes	33	2388	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? 9/1/1998

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	13000	25000
2. Actual Expenditures	18300	

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

Anaheim Public Utilities contracts with the Municipal Water District of Orange County for its valuable water education program. All class materials meet the state standards and presentations are conducted by experienced educators. MWDOC holds numerous teacher workshops throughout the year, which Anaheim teachers have access to.

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	4115	740	1726
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	1	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	1	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	354	54300
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	100000	302	67226

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.	850
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	7652

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	100000	75000
2. Actual Expenditures	28660	

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

Under the heading of Agency CII Incentives, Item K, Number Awarded to Customers, there are 2 that represent customers that participated in APUD's Commercial Water Incentives Program. That program provides $1.25 per 1,000 gallons saved over a two-year period - up to a maximum of $25,000 - for water efficiency measures that demonstrate verifiable water savings. The other 300 represent customers that received direct install of pre-rinse spray valves through the Rinse & Save Program.

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

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.

Although Metropolitan Water District of Southern California's contractor is managing this program regionwide, Anaheim Public Utilities continues to aggressively market all of its programs. APUD has found that direct mail is the most effective method of advertising.

2. How does your agency advertise this program? Check all that apply.	Direct letter Bill insert Bill message 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.

Direct mail has proven to be the most effective method of advertising. Per dollar expended, the most effective would be the bill insert or customer newsletters that go out with the bills.

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 ?	6

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	4	0	0	0
b. Retail / Wholesale	0	0	0	0
c. Hotels	177	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	1	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 1

f. Permitting 1

g. Other. Please describe in B. 9. 1

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 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?

This program continues to gain momentum as our customers gain an increased awareness of the program and the devices that qualify for a rebate. APUD aggressively markets the program through ads and bill inserts.

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	695	2537
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	695	2537

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	20370
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	20370

D. Comments

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$25792000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

2. Commercial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$10076000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1395000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$4030000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

5. Irrigation

a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

6. Other

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1328000
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

All CII revenues are grouped together; therefore, the CII amounts are based on estimated percentages. The Orange County Sanitation District oversees sewer fees including Anaheim's. Anaheim's residential customers are billed a flat fee while all other customer classes are charged based on the number of water closets at the facility.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2004**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
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?	100%
b. Coordinator's Name	Cathy Templeton
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience and Number of Years	12 years managing water conservation programs for the City of Anaheim Public Utilities Department
e. Date Coordinator's position was created (mm/dd/yyyy)	7/1/1991
6. Number of conservation staff, including Conservation Coordinator.	2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	548134	619917
2. Actual Expenditures	468864	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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? — yes

   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 — yes

   b. Single-pass cooling systems for new connections — no

   c. Non-recirculating systems in all new conveyor or car wash systems — yes

   d. Non-recirculating systems in all new commercial laundry systems — yes

   e. Non-recirculating systems in all new decorative fountains — yes

   f. Other, please name — no

2. Describe measures that prohibit water uses listed above:
   Currently the City's water waste ordinance is voluntary. Mainly the ordinance encourages residents to use water carefully. Sweeping instead of hosing, serving drinking water on as requested basis in restaurants, eliminating water run-off, watering between specific hours etc.

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	267	71
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	2146	2391
Total	**2413**	**2462**

6. Describe your agency's ULFT program for single-family residences.
   APUD participates in the Orange County Toilet Program, which is managed by the Municipal Water District of Orange County's contractor. The program provides two options, free toilets or rebates.

7. Describe your agency's ULFT program for multi-family residences.
   Same as above for single-family.

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	16000	8000
2. Actual Expenditures	20757	

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 Anaheim, PUD

Year:
2003

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Metropolitan Water District of Southern California	23943	Imported
Orange County Water District	50527	Groundwater

Total AF: 74470

Accounts & Water Use

Reporting Unit Name:
City of Anaheim, PUD

Submitted to CUWCC
03/05/2005

Year:
2003

A. Service Area Population Information:

1. Total service area population 342540

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	48003	26886	0	0
2. Multi-Family	4261	15790	0	0
3. Commercial	4076	18113	0	0
4. Industrial	733	2508	0	0
5. Institutional	1711	7245	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1629	905	0	0
9. Unaccounted	NA	0	NA	0
Total	60413	71447	0	0
	Metered		**Unmetered**	

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

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

A. Implementation

1. Based on your signed MOU date, 10/10/1991, your Agency STRATEGY DUE DATE is:	10/09/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	48003	4261
2. Number of surveys completed:	797	799
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)	yes	yes
9. Measure total irrigable area (Recommended but not required for surveys)	yes	yes
10. Which measurement method is typically used (Recommended but not required for surveys)		Pacing
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?	yes	yes
a. If yes, in what form are surveys tracked?		database

b. Describe how your agency tracks this information.
Program data is tracked in an access database by program consultant.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	83870	77860
2. Actual Expenditures	74046	

D. "At Least As Effective As"

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

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."
The APUD offers its customers the option of an on-line residential survey. This survey provides a final report just like the one provided through the on-site survey. This year there were 49 on-line internet surveys completed.

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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? 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: 67%

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: 60%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

   The 75% saturation levels are based on the July 2002 Orange County Saturation Survey conducted by the Municipal Water District or Orange County (MWDOC) and the Metropolitan Water District of Southern California. Although the study falls slightly short of the 75% levels by a small amount, it is fair to say that by the time the study was actually completed, the 75% saturation levels would have been achieved through natural replacement.

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? 7/1/1990

   b. Describe your targeting/ marketing strategy.
   Low-flow devices are distributed and/or installed through the Home Utility Checkup program and marketed in Anaheim's new newsletter bill insert and in numerous ads in local publications as well as at several public outreach events held throughout the year.

Low-Flow Devices Distributed/ Installed	**SF Accounts**	**MF Units**
2. Number of low-flow showerheads distributed:	593	889
3. Number of toilet-displacement devices distributed:	176	265
4. Number of toilet flappers distributed:	24	37

5. Number of faucet aerators distributed:	556	835
6. Does your agency track the distribution and cost of low-flow devices?		yes
a. If YES, in what format are low-flow devices tracked?		Database

b. If yes, describe your tracking and distribution system :
Low-flow devices installed through the Home Utility Checkup Program. All program data is tracked by our program consultant in an access database.

C. Low-Flow Device Distribution 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

Expenditures for the low-flow devices are included in the budget under the Home Utility Checkup program in BMP #1.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	71436
b. Determine other system verifiable uses (AF)	0
c. Determine total supply into the system (AF)	74541
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.96
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.	744
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

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.	0
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	0
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?	yes
a. If YES, when did your agency begin implementing this strategy?	2/14/2000
b. Description of marketing / targeting strategy: Marketing/Targeting is included as part of Anaheim's participation in the Orange County Landscape Performance Certification Program operated by the Municipal Water District of Orange County.	
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	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
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	21250	41358
2. Actual Expenditures	15928	

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

The number of irrigation meters is unknown, but is greater than 0 because they are required for all landscaped areas over 2,500 sq. ft.

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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 whom the energy/waste water utility provider is.
   The APUD is a municipal utility offering both energy and water service to Anaheim businesses and residents. During this reporting year APUD offered a $200 rebate to customers that purchased a new high-efficiency washer to replace their existing old washer. Both the water and electric utility fund this program in Anaheim, which is called the Home Incentives Program. It also offers rebates for many other home appliances and conservation measures. The MWD supports our program by providing a portion of the rebate funding.

2. Does your agency offer rebates for high-efficiency washers? yes

3. What is the level of the rebate? 200

4. Number of rebates awarded. 772

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	35500	44000
2. Actual Expenditures	60312	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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.
Anaheim staffs a public outreach booth at many neighborhood and community events held in Anaheim throughout the year. Program information and conservation literature is available at each event and program flyers for all of APUD's programs and services are displayed in all Anaheim libraries, in the lobbies of City Hall East & West and in Anaheim community centers throughout the city. Give-away items include low-flow showerheads, hose nozzles, water bottles, moisture meters etc. Children receive conservation coloring books and other conservation related items. The Department also holds its annual Water Awareness Month campaign in May, which includes a proclamation declaring May as Water Awareness Month. Events held during May to promote water awareness include an annual Water Conservation Poster Contest for grades 1 - 6, free toilet distributions, Home Gardeners Workshops, participation in the Orange County annual Children's Water Education Festival, and a special water awareness booth at each Farmer's Market in front of City Hall during May. Ads about Water Awareness Month, each offering a new water conservation tip, are placed in the local newspaper and large posters that have tip cards listing our programs and also water conservation tips, are displayed in City Hall lobbies and other strategic locations throughout the city.

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	yes	18
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	25
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	16
g. Speaker's Bureau	yes	0
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	18400	26500
2. Actual Expenditures	31441	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	32	1901	0
Grades 4th-6th	yes	25	1763	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? 9/1/1998

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25000	13000
2. Actual Expenditures	11908	

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

Anaheim Public Utilities contracts with the Municipal Water District of Orange County for its valuable water education program. All class materials meet the state standards and presentations are conducted by experienced educators. MWDOC holds numerous teacher workshops throughout the year, which Anaheim teachers have access to.

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	4076	733	1711
b. Number of New Surveys Completed	2	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	75000	399	44370
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	100000	3	62500

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.	595
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	5314

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	200000	150000
2. Actual Expenditures	28660	

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

Anaheim Public Utilities also has an Industrial Process Change Program that targets large industrial water users. This program provides financial incentives for water process change projects that save a minimum of 10 acre-feet annually. There is currently one Anaheim industrial customer, Alstyle Apparel and Activewear participating in this program. Through FY 2002/04 Alstyle has saved 323 acre-feet of water and received incentive payments totaling $49,704. Through a three-way agreement with MWD, Anaheim is reimbursed the incentive payments by MWD. This program information is included in the data reported above.

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

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

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

Refer to the Metropolitan Water District of Southern California (MWD) regionwide program for details. MWD's contractor continues to manage this program for its participating member agencies.

2. How does your agency advertise this program? Check all that apply.	Direct letter Bill insert Newsletter Web page Newspapers Trade publications Other print media Trade shows and events

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

Refer to the Metropolitan Water District of Southern California (MWD) regionwide program for details. MWD's contractor continues to manage this program for its participating member agencies. APUD has found that direct mail is the most effective; however, the most effective per dollar expended would be bill inserts or newsletters.

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 ?	10

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	17	0	0	0
b. Retail / Wholesale	0	1	0	0
c. Hotels	270	0	0	0
d. Health	0	0	0	0
e. Industrial	2	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	1	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.

No follow-up

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 2

b. Inadequate payback 2

c. Inadequate ULFT performance 1

d. Lack of funding 5

e. American's with Disabilities Act 1

f. Permitting 1

g. Other. Please describe in B. 9. 1

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness.

Refer to the Metropolitan Water District of Southern California (MWD) regionwide program for details. MWD's contractor continues to manage this program for its participating member agencies.

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?

Refer to the Metropolitan Water District of Southern California (MWD) regionwide program for details. MWD's contractor continues to manage this program for its participating member agencies.

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	2000	2142
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	2000	2142

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	117400
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	117400

D. Comments

Anaheim Public Utilities markets and advertises this program and the staff time resulting from this effort is not reflected in item C 1-a above. The actual labor dollars are not available.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$24598000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

2. Commercial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$9388000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1300000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$3755000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

5. Irrigation

a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

6. Other

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1627000
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

All CII revenues are grouped together; therefore, the CII amounts are based on estimated percentages. The Orange County Sanitation District oversees sewer fees including Anaheim's. Anaheim's residential customers are billed a flat fee while all other customer classes are charged based on the number of water closets at the facility.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2003**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
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?	100%
b. Coordinator's Name	Cathy Templeton
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience and Number of Years	11 years managing water conservation programs for the City of Anaheim Public Utilities Department
e. Date Coordinator's position was created (mm/dd/yyyy)	7/1/1991
6. Number of conservation staff, including Conservation Coordinator.	2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	544801	548134
2. Actual Expenditures	370183	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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? — yes

   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 — yes
   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:
   Currently the City's water waste ordinance is voluntary. Mainly the ordinance encourages residents to use water carefully. Sweeping instead of hosing, serving drinking water on as requested basis in restaurants, eliminating water run-off, watering between specific hours etc.

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	488	83
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	6582	2554
Total	**7070**	**2637**

6. Describe your agency's ULFT program for single-family residences.
   APUD participates in the Orange County Toilet Program, which is managed by the Municipal Water District of Orange County's contractor. The program provides two options, free toilets or rebates.

7. Describe your agency's ULFT program for multi-family residences.
   Same as above for single-family.

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	13900	16000
2. Actual Expenditures	15410	

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 Anaheim, PUD

Year:
2002

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
MWD	17237	Imported
Wells	62516	Groundwater

Total AF: 79753

Accounts & Water Use

Reporting Unit Name:
City of Anaheim, PUD

Submitted to CUWCC
02/28/2003

Year:
2002

A. Service Area Population Information:

1. Total service area population 331000

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	48889	27595	0	0
2. Multi-Family	4262	16158	0	0
3. Commercial	4103	18665	0	0
4. Industrial	705	2387	0	0
5. Institutional	1664	7779	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1606	666	0	0
9. Unaccounted	NA	0	NA	0
Total	61229	73250	0	0

	Metered	Unmetered

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

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

A. Implementation

1. Based on your signed MOU date, 10/10/1991, your Agency STRATEGY DUE DATE is:	10/09/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	48889	51236
2. Number of surveys completed:	1052	966
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)	yes	yes
9. Measure total irrigable area (Recommended but not required for surveys)	yes	yes
10. Which measurement method is typically used (Recommended but not required for surveys)		Pacing
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?	yes	yes

a. If yes, in what form are surveys tracked? database

b. Describe how your agency tracks this information.
Program data is tracked in an access database by program consultant.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	85300	85300
2. Actual Expenditures	99759	

D. "At Least As Effective As"

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

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."
The Public Utilities Department is now offering on-line residential surveys that provide a final report just like the one provided through the on-site survey. This year there were 113 on-line internet surveys completed.

E. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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: 75%

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: 75%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

   These are preliminary results based on the Municipal Water District of Orange County's saturation survey that is currently underway.

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? 7/1/1990

   b. Describe your targeting/ marketing strategy.
   Low-flow devices are distributed and/or installed through the Home Utility Checkup program and marketed in Anaheim's bill insert "Innovations."

Low-Flow Devices Distributed/ Installed	**SF Accounts**	**MF Units**
2. Number of low-flow showerheads distributed:	1128	923
3. Number of toilet-displacement devices distributed:	398	326
4. Number of toilet flappers distributed:	34	10
5. Number of faucet aerators distributed:	2072	1697

6. Does your agency track the distribution and cost of low-flow devices? yes

   a. If YES, in what format are low-flow devices tracked? Database

   b. If yes, describe your tracking and distribution system :
   Low-flow devices installed through the Home Utility Checkup Program.

C. Low-Flow Device Distribution 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

Expenditures for the low-flow devices are included in the budget under the Home Utility Checkup program in BMP #1.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	73250
b. Determine other system verifiable uses (AF)	0
c. Determine total supply into the system (AF)	79554
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?	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.	0
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:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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.	0
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:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	0
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?	yes
a. If YES, when did your agency begin implementing this strategy?	2/14/2000
b. Description of marketing / targeting strategy: Marketing/Targeting is included as part of Anaheim's participation in the Orange County Landscape Performance Certification Program operated by the Municipal Water District of Orange County.	
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	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
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			
b. Loans			
c. Grants			

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

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	22380	21910
2. Actual Expenditures	6666	

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

The number of irrigation meters is unknown, but is greater than 0 because they are required for all landscaped areas over 2,500 sq. ft.

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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 whom the energy/waste water utility provider is.
   The City of Anaheim Public Utilities provides both energy and water to Anaheim's residents. Rebates during this reporting year varied from $100 to $200 depending on when the customer purchased their machine. Some customers received a special increased rebate resulting for the statewide energy crisis, which Anaheim named "Double the Rebate Summer Sale." Rebates paid at the $100 level were funded by the electric utility at $50 and the water utility at $15 with the Metropolitan Water District of Southern California providing $35 per rebate. The Double Rebates of $200 were funded by the electric utility at $150, water utility at $15 and by MWD at $35.

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. 599

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	32830	32680
2. Actual Expenditures	40673	

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

Number 3 above asks the level of the rebate. Rebates during this reporting period ranged from $100 to $200 depending if they were purchased during the special "Double the Rebate Summer Sale" or not. Those purchased during the special promotion received the higher $200 rebate.

BMP 07: Public Information Programs

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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.
Anaheim provides a public outreach booth to various community events and celebrations throughout the year. It has program literature available on all of its programs and services displayed in all libraries and in the lobbies of City Hall East & West. Give-away items include low-flow showerheads, hose nozzles, moisture meters etc. Children receive conservation coloring books and other conservation related items. The Department also holds its annual Water Awareness Month campaign in May, which includes a proclamation declaring May as Water Awareness Month, has its annual Water Conservation Poster Contest for grades 1 - 6, free toilet distributions, Home Gardeners Workshops, participates in the annual Children's Water Education Festival, and has a special water awareness booth at each Farmer's Market in front of City Hall during May.

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	yes	8
b. Public Service Announcement	yes	1
c. Bill Inserts / Newsletters / Brochures	yes	35
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	1
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	18400	18400
2. Actual Expenditures	26066	

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:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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	90	3952	0
Grades 4th-6th	yes	68	3429	0
Grades 7th-8th	yes	15	751	0
High School	yes	4	169	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 9/1/1998

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	26830	26000
2. Actual Expenditures	11605	

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

Anaheim Public Utilities contracts with the Municipal Water District of Orange County for its valuable water education program. All class materials meet the state standards and presentations are conducted by experienced educators. MWDOC holds numerous teacher workshops throughout the year, which Anaheim teachers have access to.

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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	2780	184	21490
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.	591
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	5314

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	104960	100360
2. Actual Expenditures	675	

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

Two new CII programs were developed during this FY - a Water-Use Survey Program for Business and a Commercial Water Incentives Program. These two new programs will be actively implemented in FY 2002/03.

BMP 09a: CII ULFT Water Savings

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.	Potential savings 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.

During this reporting period Anaheim's CII ULFT Program was turned over the Metropolitan Water District of Southern California's contractor to implement. They became responsible for all aspects of the program; however, Anaheim continued to advertise the program through ads and brochures etc.

2. How does your agency advertise this program? Check all that apply.	Direct letter Bill insert Newsletter Web page Newspapers Trade publications Other print media Trade shows and events

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

The direct mail is the most effective in our experience.

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.)	no
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?	No
3. What is the total number of customer accounts participating in the program during the last year ?	12

CII Subsector	Number of Toilets Replaced			
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a. Offices	1	0	0	0
b. Retail / Wholesale	2	0	0	0
c. Hotels	116	0	0	0
d. Health	0	0	0	0
e. Industrial	1	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	8	0	0	0
j. Other	1	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 2

b. Inadequate payback 1

c. Inadequate ULFT performance 2

d. Lack of funding 5

e. American's with Disabilities Act 2

f. Permitting 1

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.

The program is accepted by most customers. There are still those few that continue to have the mind-set that ULFTs don't perform as well as the old water guzzling toilets.

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?

Anaheim implemented its CII ULF Toilet Program in FY 1996/97 targeting Anaheim's large hotel/motel customer base needed to accommodate the many tourists that visit its many attractions each year. Prior to 1996/97 Anaheim has already retrofit numerous toilets in the institutional area including 1,094 in schools, 86 at city facilities, 140 at the Anaheim. The program was turned over to MWD's consultant and became part of their regionwide program.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	1000	0
b. Materials	0	0
c. Marketing & Advertising	2000	2101
d. Administration & Overhead	780	0
e. Outside Services	0	0
f. Total	3780	2101

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	0
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	0

D. Comments

MWD, the wholesale agency funds the entire program cost. The amount of the wholesale agency's contribution is not known to Anaheim. Anaheim is currently paying minimal fees to support advertising.

BMP 11: Conservation Pricing

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$24635000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
2. Commercial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$14506000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
3. Industrial	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
4. Institutional / Government	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
5. Irrigation	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

6. Other

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1591000
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

Commercial revenue includes industrial, Institutional/government, and Irrigation. The Orange County Sanitation District oversee sewer fees including Anaheim's. Anaheim's residential customers are billed a flat fee and all other customers are charged based on the number of water closets at their facility.

BMP 12: Conservation Coordinator

Reporting Unit:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
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?	100%
b. Coordinator's Name	Cathy Templeton
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience and Number of Years	10 years in position
e. Date Coordinator's position was created (mm/dd/yyyy)	7/1/1991
6. Number of conservation staff, including Conservation Coordinator.	2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	491938	544801
2. Actual Expenditures	102202	

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:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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:
   Anaheim ordinance is currently suspended. Residents are encouraged to use water efficiently through the many programs offered by the Utilities Department.

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

   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 yes
   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:
   Currently the City's water waste ordinance is voluntary. Mainly the ordinance encourages residents to use water carefully. Sweeping instead of hosing, serving drinking water on as requested basis in restaurants, eliminating water run-off, watering between specific hours etc.

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:	Submitted to CUWCC	Year:
City of Anaheim, PUD	**02/28/2003**	**2002**

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	476	400
3. Direct Install	35	0
4. CBO Distribution	0	0
5. Other	3854	1581
Total	**4365**	**1981**

6. Describe your agency's ULFT program for single-family residences.

Anaheim Public Utilities participates in the Orange County Toilet Program operated by the Municipal Water District of Orange County's contractor. The program provides two options, free toilets or rebates.

7. Describe your agency's ULFT program for multi-family residences.

Same as above for single-family.

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	14918	14080
2. Actual Expenditures	5559	

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 Anaheim, PUD

Year:
2001

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
MWD	16569	Imported
Wells	59757	Groundwater

Total AF: 76326

Accounts & Water Use

Reporting Unit Name:
City of Anaheim, PUD

Submitted to CUWCC
02/28/2003

Year:
2001

A. Service Area Population Information:

1. Total service area population 331000

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	48811	26786	0	0
2. Multi-Family	4258	16245	0	0
3. Commercial	4071	18708	0	0
4. Industrial	700	2737	0	0
5. Institutional	1657	7306	0	0
6. Dedicated Irrigation	0	0	0	0
7. Recycled Water	0	0	0	0
8. Other	1600	828	0	0
9. Unaccounted	NA	0	NA	0
Total	61097	72610	0	0

	Metered	Unmetered

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

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Implementation

1. Based on your signed MOU date, 10/10/1991, your Agency STRATEGY DUE DATE is:	10/09/1993
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	7/1/1990

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	48811	51078
2. Number of surveys completed:	858	677
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)	yes	yes
9. Measure total irrigable area (Recommended but not required for surveys)	yes	yes
10. Which measurement method is typically used (Recommended but not required for surveys)		Pacing
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?	yes	yes
a. If yes, in what form are surveys tracked?		database
b. Describe how your agency tracks this information. Track all program data in Access Database		

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	50580	85300
2. Actual Expenditures	53494	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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? 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: 75%

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: 75%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

   These are preliminary results based on the Municipal Water District of Orange County's saturation survey that is currently underway.

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? 7/1/1990

   b. Describe your targeting/ marketing strategy.
   Low-flow showerheads, toilet displacement devices, toilet flappers and faucet aerators are installed through Anaheim's Home Utility Checkup.

Low-Flow Devices Distributed/ Installed	**SF Accounts**	**MF Units**
2. Number of low-flow showerheads distributed:	480	393
3. Number of toilet-displacement devices distributed:	187	153
4. Number of toilet flappers distributed:	8	2
5. Number of faucet aerators distributed:	1389	1137

6. Does your agency track the distribution and cost of low-flow devices? yes

   a. If YES, in what format are low-flow devices tracked? Database

   b. If yes, describe your tracking and distribution system :
   Access Database keep by program contractor.

C. Low-Flow Device Distribution 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

The expenditures for plumbing devices are included in the cost of Anaheim's Home Utility Checkup Program in BMP 1.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	72610
b. Determine other system verifiable uses (AF)	0
c. Determine total supply into the system (AF)	76014
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.96
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.	725
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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.	0
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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	0
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?	yes
a. If YES, when did your agency begin implementing this strategy?	2/14/2000
b. Description of marketing / targeting strategy: Marketing/targeting is included as part of Anaheim's participation in the Orange County Landscape Performance Certification Program operated by the Municipal Water District of Orange County.	
2. Number of Surveys Offered.	1
3. Number of Surveys Completed.	1
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
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			
b. Loans			
c. Grants			

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

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	21005	22380
2. Actual Expenditures	7000	

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

The number of dedicated irrigation meter accounts is unknown, but is greater than 0 because they are required for CII landscaped areas over 2,500 sq. ft.

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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.
   The City of Anaheim Public Utilities provides both the water and energy services to its residents. Rebates are offered at $100 with the electric utility providing $50, the water utility $15 and funding from the Metropolitan Water District of Southern California providing $35.

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. 205

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	18230	32830
2. Actual Expenditures	23430	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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.
Anaheim provides a public outreach booth to various community events and celebrations throughout the year. It has program literature available on all of its programs and services displayed in all Anaheim libraries and community centers, and in the lobbies of City Hall East & West. Give-away items include low-flow showerheads, hose nozzles, moisture meters etc. Children receive conservation coloring books and other conservation related items. The Department also holds its annual Water Awareness Month campaign in May, which includes a proclamation declaring May as Water Awareness Month, has its annual Water Conservation Poster Contest for grades 1 - 6, free toilet distributions, Home Gardeners Workshops, participates in the annual Children's Water Education Festival, and has a special water awareness booth at each Farmer's Market in front of City Hall during May.

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	yes	26
b. Public Service Announcement	yes	1
c. Bill Inserts / Newsletters / Brochures	yes	14
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	1
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	12000	18400
2. Actual Expenditures	16074	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	124	3737	0
Grades 4th-6th	yes	90	3170	0
Grades 7th-8th	yes	19	1050	0
High School	yes	4	170	0

3. Did your Agency's materials meet state education framework requirements? yes

4. When did your Agency begin implementing this program? 9/1/1998

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	25400	26830
2. Actual Expenditures	15618	

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

Anaheim Public Utilities contracts with the Municipal Water District of Orange County for its valuable water education program. All class materials meet the state standards and presentations are conducted by experienced educators. MWDOC holds numerous teacher workshops throughout the year, which Anaheim teachers have access to.

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	no
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	no
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	no

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			
f. Evaluation of all water-using apparatus and processes			
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives			

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	50860	2195	131700
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.	469
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	4220

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	79360	104960
2. Actual Expenditures	76486	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

1. Did your agency implement a CII ULFT replacement program in the reporting year? If No, please explain why on Line B. 10.	Yes

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.

For Anaheim it was logical to target the large hotel/motel industry first. Although the savings potential per toilet is not the highest, the numbers achieved are great.

2. How does your agency advertise this program? Check all that apply.	Direct letter Bill insert Newsletter Web page Newspapers Trade publications Other print media Trade shows and events

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

The direct mail letters were the most effective of the different methods of advertising the program.

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 ?	12

CII Subsector	Number of Toilets Replaced				
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount	Type Not Specified
a. Offices	0	0	0	0	0
b. Retail / Wholesale	4	0	0	0	0
c. Hotels	2183	0	0	0	0
d. Health	0	0	0	0	0
e. Industrial	3	0	0	0	0
f. Schools: K to 12	1	0	0	0	0
g. Eating	0	0	0	0	0
h. Govern-ment	0	0	0	0	0
i. Churches	0	0	0	0	0
j. Other	0	0	0	0	0

5. Program design. Rebate or voucher

6. Does your agency use outside services to implement this program? No

a. If yes, check all that apply.

7. Participant tracking and follow-up. No follow-up

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 2

b. Inadequate payback 1

c. Inadequate ULFT performance 2

d. Lack of funding 5

e. American's with Disabilities Act 2

f. Permitting 1

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.

Generally we did not run into much resistance by our customers. In a few cases some customers stated that lack of funds was the reason they could not install new toilets.

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?

Anaheim implemented its CII ULF Toilet Program in FY 1996/97 targeting Anaheim's large hotel/motel customer base needed to accommodate the many tourists that visit its many attractions each year. Prior to 1996/97 Anaheim has already retrofit numerous toilets in the institutional area including 1,094 in schools, 86 at city facilities, 140 at the Anaheim Convention Center, and another misc. 1000+ at various locations throughout Anaheim. It was easy for Anaheim to offer these programs due to the availability of funding from the Metropolitan Water District of Southern California. This assisted Anaheim in keeping program costs down and reasonable.

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	**Actual Expenditure**
a. Labor	4000	972
b. Materials	0	0
c. Marketing & Advertising	3100	2369
d. Administration & Overhead	50260	131700
e. Outside Services	1000	0
f. Total	58360	135041

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	131700
b. State agency contribution	0
c. Federal agency contribution	0
d. Other contribution	0
e. Total	131700

D. Comments

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$23667000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

2. Commercial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$14193000
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

5. Irrigation

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

6. Other

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$1570000
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

Commercial revenue includes industrial, Institutional/government, and Irrigation. The Orange County Sanitation District oversee sewer fees including Anaheim's. Anaheim's residential customers are billed a flat fee and all other customers are charged based on the number of water closets at their facility.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**2001**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
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?	100%
b. Coordinator's Name	Cathy Templeton
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience and Number of Years	9 years in this position
e. Date Coordinator's position was created (mm/dd/yyyy)	7/1/1991
6. Number of conservation staff, including Conservation Coordinator.	2

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	432509	491938
2. Actual Expenditures	304427	

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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:
   Anaheim ordinance is currently suspended. Residents are encouraged to use water efficiently through the many programs offered by the Utilities Department.

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

   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 yes
   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:
   Currently the City's water waste ordinance is voluntary. Mainly the ordinance encourages residents to use water carefully. Sweeping instead of hosing, serving drinking water on as requested basis in restaurants, eliminating water run-off, watering between specific hours etc.

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:	BMP Form Status:	Year:
City of Anaheim, PUD	**100% Complete**	**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	466	105
3. Direct Install	45	0
4. CBO Distribution	0	0
5. Other	3744	769
Total	**4255**	**874**

6. Describe your agency's ULFT program for single-family residences.

Anaheim Public Utilities participates in the Orange County Toilet Program operated by the Municipal Water District of Orange County's contractor. The program provides two options, free toilets or rebates.

7. Describe your agency's ULFT program for multi-family residences.

Same as above for single-family.

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	10000	14918
2. Actual Expenditures	13841	

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 Anaheim, PUD

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed	
Agency indicated "at least as effective as" implementation during report period?	Yes

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 Anaheim, PUD to Implement Targeting/Marketing Program by:	1999	
	Single-Family	**Multi-Family**
Year City of Anaheim, PUD Reported Implementing Targeting/Marketing Program:	1990	1990
City of Anaheim, PUD Met Targeting/Marketing Coverage Requirement:	YES	YES

Test for Condition 2

			Single-Family	**Multi-Family**
Survey Program to Start by:	1998	Residential Survey Offers (%)	207.78%	18.61%
Reporting Period:	03-04	Survey Offers $\geq$ 20%	YES	NO

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2004:	4,869	4,627
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	2,311	839
Total + Credit	7,180	5,466
Residential Accounts in Base Year	46,799	45,712
City of Anaheim, PUD Survey Coverage as % of Base Year Residential Accounts	15.34%	11.96%
Coverage Requirement by Year 7 of Implementation per Exhibit 1	7.90%	7.90%
City of Anaheim, PUD on Schedule to Meet 10-Year Coverage Requirement	YES	YES

BMP 1 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:
City of Anaheim, PUD

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 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

		Single-Family		Multi-Family	
Report Year	Report Period	Reported Saturation	Saturation ≥ 75%?	Reported Saturation	Saturation ≥ 75%?
1999	99-00	75.00%	YES	75.00%	YES
2000	99-00	75.00%	YES	75.00%	YES
2001	01-02	75.00%	YES	75.00%	YES
2002	01-02	75.00%	YES	75.00%	YES
2003	03-04	75.00%	YES	75.00%	YES
2004	03-04	75.00%	YES	75.00%	YES

Test for Condition 2

Report Year	Report Period	City of Anaheim, PUD has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO

Test for Condition 3

Reporting Period: 03-04

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
46,550	1,290	2.8%	NO

1992 MF Accounts	Num. Showerheads Distributed to MF Accounts	Multi-Family Coverage Ratio	MF Coverage Ratio > 10%
48,155	1,935	4.0%	NO

BMP 2 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Anaheim, PUD

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 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

Report Year	Report Period	Pre-Screen Completed	Pre-Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00	YES	94.5%	No	NO
2000	99-00	YES	94.5%	No	NO
2001	01-02	YES	95.5%	No	NO
2002	01-02	YES	92.1%	No	NO
2003	03-04	YES	95.8%	No	NO
2004	03-04	YES	95.3%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
City of Anaheim, PUD

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 6 of Implementation per Exhibit 1	42.0%
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 Anaheim, PUD

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

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00	1				NA
2000	99-00	2				NA
2001	01-02	3				NA
2002	01-02	4				No
2003	03-04	5				No
2004	03-04	6				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	2
Credit for Surveys Completed Prior to Implementation of Reporting Database	9
Total + Credit	11
CII Accounts in Base Year	555
RU Survey Coverage as a % of Base Year CII Accounts	2.0%
Coverage Requirement by Year of Implementation per Exhibit 1	6.3%
RU on Schedule to Meet 10 Year Coverage Requirement	NO

Test for Condition 2b (mixed use budget or meter retrofit program)

Report Year	Report Period	BMP 5 Implementation Year	Agency has mix-use budget program	No. of mixed-use budgets
1999	99-00	1	NO	
2000	99-00	2	NO	
2001	01-02	3	NO	
2002	01-02	4	NO	
2003	03-04	5	NO	
2004	03-04	6	NO	

Report Year	Report Period	BMP 4 Implementation Year	No. of mixed use CII accounts	No. of mixed use CII accounts fitted with irrig. meters
1999	99-00	1		
2000	99-00	2		
2001	01-02	3		
2002	01-02	4		
2003	03-04	5		
2004	03-04	6		

Test for Condition 3

Report Year	Report Period	BMP 5 Implementation Year	RU offers financial incentives?	No. of Loans	Total Amt. Loans
1999	99-00	1	NO		
2000	99-00	2	NO		
2001	01-02	3	NO		
2002	01-02	4	NO		
2003	03-04	5	NO		
2004	03-04	6	NO		

Report Year	Report Period	No. of Grants	Total Amt. Grants	No. of rebates	Total Amt. Rebates
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 Anaheim, PUD

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

Year	Report Period	BMP 6 Implementation Year	Rebate Offered by ESP?	Rebate Offered by RU?	Rebate Amount
1999	99-00	1	NO	NO	
2000	99-00	2	YES	YES	100.00
2001	01-02	3	YES	YES	100.00
2002	01-02	4	YES	YES	100.00
2003	03-04	5	YES	YES	200.00
2004	03-04	6	YES	YES	200.00

Year	Report Period	BMP 6 Implementation Year	No. Rebates Awarded	Coverage Met?
1999	99-00	1		YES
2000	99-00	2	16	YES
2001	01-02	3	205	YES
2002	01-02	4	599	YES
2003	03-04	5	772	YES
2004	03-04	6	905	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 Anaheim, PUD

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 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit:
City of Anaheim, PUD

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 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:
City of Anaheim, PUD

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

Year	Report Period	BMP 9 Implementation Year	Ranked Com. Use	Ranked Ind. Use	Ranked Inst. Use
1999	99-00	1	NO	NO	NO
2000	99-00	2	NO	NO	NO
2001	01-02	3	NO	NO	NO
2002	01-02	4	YES	YES	YES
2003	03-04	5	YES	YES	YES
2004	03-04	6	YES	YES	YES

Test for Condition 2a

	Commercial	Industrial	Institutional
Total Completed Surveys Reported through 2004	2	0	20
Credit for Surveys Completed Prior to Implementation of Reporting Databases	201	16	50
Total + Credit	203	16	70
CII Accounts in Base Year	350	79	126
RU Survey Coverage as % of Base Year CII Accounts	58.0%	20.3%	55.6%
Coverage Requirement by Year 6 of Implementation per Exhibit 1	4.2%	4.2%	4.2%
RU on Schedule to Meet 10 Year Coverage Requirement	YES	YES	YES

Test for Condition 2a

Year	Report Period	BMP 9 Implementation Year	Performance Target Savings (AF/yr)	Performance Target Savings Coverage	Performance Target Savings Coverage Requirement	Coverage Requirement Met
1999	99-00	1	109	0.2%	0.5%	NO
2000	99-00	2	119	0.2%	1.0%	NO
2001	01-02	3	1,524	2.3%	1.7%	YES
2002	01-02	4	1,920	2.9%	2.4%	YES
2003	03-04	5	1,924	2.9%	3.3%	NO
2004	03-04	6	2,763	4.1%	4.2%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	289
BMP 9 Survey Coverage	52.1%
BMP 9 Performance Target Coverage	4.1%
BMP 9 Survey + Performance Target Coverage	56.2%
Combined Coverage Equals or Exceeds Coverage Requirement?	YES

BMP 9 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 11 Coverage: Conservation Pricing

Reporting Unit: **City of Anaheim, PUD**

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 long run marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Conserving WATER Rate Structure	RU Employed Conserving SEWER Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00	YES	YES	YES
2000	99-00	YES	YES	YES
2001	01-02	YES	YES	YES
2002	01-02	YES	YES	YES
2003	03-04	YES	YES	YES
2004	03-04	YES	YES	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit: **City of Anaheim, PUD**

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

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00	YES	2
2000	99-00	YES	2
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:
Water supplier is meeting coverage requirements for this BMP.

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit: **City of Anaheim, PUD**

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 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	Gutter Flooding	Single-Pass Cooling Systems	Single-Pass Car Wash	Single-Pass Laundry	Single-Pass Fountains	Other	RU has ordinance that meets coverage requirement
1999	YES	NO	NO	NO	NO	NO	NO
2000	YES	NO	NO	NO	NO	NO	NO
2001	YES	NO	NO	NO	NO	NO	NO
2002	YES	NO	NO	NO	NO	NO	NO
2003	YES	NO	NO	NO	NO	NO	NO
2004	YES	NO	YES	YES	YES	NO	NO

BMP 13 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Anaheim, PUD**

Reporting Period: **03-04**

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

Coverage Year	BMP 14 Data Submitted to CUWCC	Exemption Filed with CUWCC	ROR Ordinance in Effect	Exhibit 6 Coverage Req'mt (AF)	Toilet Replacement Program Water Savings* (AF)
1998	YES			113.06	2480.43
1999	YES	NO	NO	325.37	3172.26
2000	YES	NO	NO	624.50	4053.37
2001	YES	NO	NO	999.20	5053.88
2002	YES	NO	NO	1439.35	6225.37
2003	YES	NO	NO	1935.82	7664.17
2004	YES	NO	NO	2480.40	9228.03
2005	NO	NO	NO	3065.71	
2006	NO	NO	NO	3685.12	
2007	NO	NO	NO	4332.69	

*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 Anaheim, PUD

Reporting Period:
01-02

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? Yes

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 Anaheim, PUD to Implement Targeting/Marketing Program by:	1999	
	Single-Family	**Multi-Family**
Year City of Anaheim, PUD Reported Implementing Targeting/Marketing Program:	1990	1990
City of Anaheim, PUD Met Targeting/Marketing Coverage Requirement:	YES	YES

Test for Condition 2

			Single-Family	**Multi-Family**
Survey Program to Start by:	1998	Residential Survey Offers (%)	208.77%	223.82%
Reporting Period:	01-02	Survey Offers ≥ 20%	YES	YES

Test for Condition 3

	Completed Residential Surveys	
	Single Family	Multi-Family
Total Completed Surveys 1999 - 2002:	3,348	2,695
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	2,311	839
Total + Credit	5,659	3,534
Residential Accounts in Base Year	46,799	45,712
City of Anaheim, PUD Survey Coverage as % of Base Year Residential Accounts	12.09%	7.73%
Coverage Requirement by Year 5 of Implementation per Exhibit 1	4.90%	4.90%
City of Anaheim, PUD on Schedule to Meet 10-Year Coverage Requirement	YES	YES

BMP 1 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 02 Coverage: Residential Plumbing Retrofit

Reporting Unit:
City of Anaheim, PUD

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 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

		Single-Family		Multi-Family	
Report Year	Report Period	Reported Saturation	Saturation ≥ 75%?	Reported Saturation	Saturation ≥ 75%?
1999	99-00	75.00%	YES	75.00%	YES
2000	99-00	75.00%	YES	75.00%	YES
2001	01-02	75.00%	YES	75.00%	YES
2002	01-02	75.00%	YES	75.00%	YES
2003	03-04	75.00%	YES	75.00%	YES
2004	03-04	75.00%	YES	75.00%	YES

Test for Condition 2

Report Year	Report Period	City of Anaheim, PUD has ordinance requiring showerhead retrofit?
1999	99-00	NO
2000	99-00	NO
2001	01-02	NO
2002	01-02	NO
2003	03-04	NO
2004	03-04	NO

Test for Condition 3

Reporting Period: 01-02

1992 SF Accounts	Num. Showerheads Distributed to SF Accounts	Single-Family Coverage Ratio	SF Coverage Ratio > 10%
46,550	1,608	3.5%	NO

1992 MF Accounts	Num. Showerheads Distributed to MF Accounts	Multi-Family Coverage Ratio	MF Coverage Ratio > 10%
48,155	1,316	2.7%	NO

BMP 2 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
City of Anaheim, PUD

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 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

Report Year	Report Period	Pre-Screen Completed	Pre-Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00	YES	94.5%	No	NO
2000	99-00	YES	94.5%	No	NO
2001	01-02	YES	95.5%	No	NO
2002	01-02	YES	92.1%	No	NO
2003	03-04	YES	95.8%	No	NO
2004	03-04	YES	95.3%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:
City of Anaheim, PUD

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 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 Anaheim, PUD

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

Year	Report Period	BMP 5 Implementation Year	No. of Irrigation Meter Accounts	No. of Irrigation Accounts with Budgets	Budget Coverage Ratio	90% Coverage Met by Year 4
1999	99-00	1				NA
2000	99-00	2				NA
2001	01-02	3				NA
2002	01-02	4				No
2003	03-04	5				No
2004	03-04	6				No

Test for Condition 2a (survey offers)

Select Reporting Period:	01-02
Large Landscape Survey Offers as % of Mixed Use Meter CII Accounts	0.2%
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	9
Total + Credit	9
CII Accounts in Base Year	555
RU Survey Coverage as a % of Base Year CII Accounts	1.6%
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)

Report Year	Report Period	BMP 5 Implementation Year	Agency has mix-use budget program	No. of mixed-use budgets
1999	99-00	1	NO	
2000	99-00	2	NO	
2001	01-02	3	NO	
2002	01-02	4	NO	
2003	03-04	5	NO	
2004	03-04	6	NO	

Report Year	Report Period	BMP 4 Implementation Year	No. of mixed use CII accounts	No. of mixed use CII accounts fitted with irrig. meters
1999	99-00	1		
2000	99-00	2		
2001	01-02	3		
2002	01-02	4		
2003	03-04	5		
2004	03-04	6		

Test for Condition 3

Report Year	Report Period	BMP 5 Implementation Year	RU offers financial incentives?	No. of Loans	Total Amt. Loans
1999	99-00	1	NO		
2000	99-00	2	NO		
2001	01-02	3	NO		
2002	01-02	4	NO		
2003	03-04	5	NO		
2004	03-04	6	NO		

Report Year	Report Period	No. of Grants	Total Amt. Grants	No. of rebates	Total Amt. Rebates
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 Anaheim, PUD

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

Year	Report Period	BMP 6 Implementation Year	Rebate Offered by ESP?	Rebate Offered by RU?	Rebate Amount
1999	99-00	1	NO	NO	
2000	99-00	2	YES	YES	100.00
2001	01-02	3	YES	YES	100.00
2002	01-02	4	YES	YES	100.00
2003	03-04	5	YES	YES	200.00
2004	03-04	6	YES	YES	200.00

Year	Report Period	BMP 6 Implementation Year	No. Rebates Awarded	Coverage Met?
1999	99-00	1		YES
2000	99-00	2	16	YES
2001	01-02	3	205	YES
2002	01-02	4	599	YES
2003	03-04	5	772	YES
2004	03-04	6	905	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 Anaheim, PUD

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 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 7 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 08 Coverage: School Education Programs

Reporting Unit: **City of Anaheim, PUD**

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 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program?
1999	99-00	2	YES
2000	99-00	3	YES
2001	01-02	4	YES
2002	01-02	5	YES
2003	03-04	6	YES
2004	03-04	7	YES

BMP 8 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 09 Coverage: Conservation Programs for CII Accounts

Reporting Unit:
City of Anaheim, PUD

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

Year	Report Period	BMP 9 Implementation Year	Ranked Com. Use	Ranked Ind. Use	Ranked Inst. Use
1999	99-00	1	NO	NO	NO
2000	99-00	2	NO	NO	NO
2001	01-02	3	NO	NO	NO
2002	01-02	4	YES	YES	YES
2003	03-04	5	YES	YES	YES
2004	03-04	6	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	201	16	50
Total + Credit	201	16	50
CII Accounts in Base Year	350	79	126
RU Survey Coverage as % of Base Year CII Accounts	57.4%	20.3%	39.7%
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	YES	YES	YES

Test for Condition 2a

Year	Report Period	BMP 9 Implementation Year	Performance Target Savings (AF/yr)	Performance Target Savings Coverage	Performance Target Savings Coverage Requirement	Coverage Requirement Met
1999	99-00	1	109	0.2%	0.5%	NO
2000	99-00	2	119	0.2%	1.0%	NO
2001	01-02	3	1,524	2.3%	1.7%	YES
2002	01-02	4	1,920	2.9%	2.4%	YES
2003	03-04	5	1,924	2.9%	3.3%	NO
2004	03-04	6	2,763	4.1%	4.2%	NO

Test for Condition 2c

Total BMP 9 Surveys + Credit	267
BMP 9 Survey Coverage	48.1%
BMP 9 Performance Target Coverage	2.9%
BMP 9 Survey + Performance Target Coverage	51.0%
Combined Coverage Equals or Exceeds Coverage Requirement?	YES

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 Anaheim, PUD

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 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 long run marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Conserving WATER Rate Structure	RU Employed Conserving SEWER Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00	YES	YES	YES
2000	99-00	YES	YES	YES
2001	01-02	YES	YES	YES
2002	01-02	YES	YES	YES
2003	03-04	YES	YES	YES
2004	03-04	YES	YES	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit:
City of Anaheim, PUD

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

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00	YES	2
2000	99-00	YES	2
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:
Water supplier is meeting coverage requirements for this BMP.

BMP 13 Coverage: Water Waste Prohibition

Reporting Unit: **City of Anaheim, PUD**

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 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	Gutter Flooding	Single-Pass Cooling Systems	Single-Pass Car Wash	Single-Pass Laundry	Single-Pass Fountains	Other	RU has ordinance that meets coverage requirement
1999	YES	NO	NO	NO	NO	NO	NO
2000	YES	NO	NO	NO	NO	NO	NO
2001	YES	NO	NO	NO	NO	NO	NO
2002	YES	NO	NO	NO	NO	NO	NO
2003	YES	NO	NO	NO	NO	NO	NO
2004	YES	NO	YES	YES	YES	NO	NO

BMP 13 COVERAGE STATUS SUMMARY:
Water supplier has not met one or more coverage requirements for this BMP.

BMP 14 Coverage: Residential ULFT Replacement Programs

Reporting Unit: **City of Anaheim, PUD**

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

Coverage Year	BMP 14 Data Submitted to CUWCC	Exemption Filed with CUWCC	ROR Ordinance in Effect	Exhibit 6 Coverage Req'mt (AF)	Toilet Replacement Program Water Savings* (AF)
1998	YES			113.06	2480.43
1999	YES	NO	NO	325.37	3172.26
2000	YES	NO	NO	624.50	4053.37
2001	YES	NO	NO	999.20	5053.88
2002	YES	NO	NO	1439.35	6225.37
2003	YES	NO	NO	1935.82	7664.17
2004	YES	NO	NO	2480.40	9228.03
2005	NO	NO	NO	3065.71	
2006	NO	NO	NO	3685.12	
2007	NO	NO	NO	4332.69	

*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

MUNICIPAL CODE CHAPTER 10.18 – WATER SHORTAGE PROVISIONS (ORDINANCE NO. 5204 – WATER SHORTAGE PLANS I-III)
and
MUNICIPAL CODE CHAPTER 10.19 – LANDSCAPE WATER EFFICIENCY

Chapter 10.18
WATER SHORTAGE PROVISIONS

Sections:

10.18.010 POLICY AND PURPOSE.

It is declared that because of the conditions prevailing in the City of Anaheim, in other areas of the State of California and elsewhere from which the City obtains its water supplies, the general welfare requires that the water resources available to the City be put to the maximum beneficial use possible, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and the conservation of such water be exercised with a view to the reasonable

and beneficial use thereof in the interest of the people of the City for the public welfare. The purpose of this chapter is to provide Water Shortage procedures with voluntary and mandatory provisions to minimize the effect of a Water Shortage to the Customers of the City and, by means of this chapter, to adopt provisions that will significantly reduce the consumption of water over an extended period of time thereby extending the available water required for the Customers of the City while reducing the hardship on the City and the general public to the greatest extent possible. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.020 DEFINITIONS.

As used in this chapter:

.010 "Base" means the amount of water used on a Customer's premises during the corresponding billing period in a year preceding the year in which the Water Shortage Period commenced, as selected and established by the Department. Any Customer who was not a Customer on the premises for which the service was billed by the Department during the Base Period shall be assigned the same Base for such or similar premises as provided above; provided, however, the Department shall have the discretion to adjust such Base in the event such Customer's use of the premises is substantially different from the previous use thereof during the Base Period.

.020 "Base Period" means that period of time over which the Base is computed.

.030 "Billing Unit" means the unit amount of water used to apply water rates for the purposes of calculating commodity charges for Customer water usage and equals one hundred cubic feet or seven hundred forty-eight gallons of water.

.040 "City" means the City of Anaheim, California.

.050 "City Council" means the legislative body of the City.

.060 "Consumer" or "customer" means any person, persons, association, partnership, corporation, governmental agency or other entity supplied and billed for water service by the Department.

.070 "Department" means the Public Utilities Department of the City.

.080 "Drought Surcharge" means a rate surcharge designed to provide Base level service with consumption above such Base level service priced at an incrementally increasing cost per Billing Unit.

.090 "General Manager" means the General Manager of the Department or his or her designee.

.100 "Process Water" means water used to manufacture, alter, convert, clean, heat, or cool a product or the equipment for such purposes; water used for plant and equipment washing and for transporting raw materials and products; and water used to grow trees or plants for sale or installation.

.110 "Water Conservation Fund" means a revenue balancing account set up to receive those monies which may be generated by a Drought Surcharge or by penalties. These monies may be used to stabilize rates following the City Council's finding that a Water Shortage no longer exists.

.120 "Water Shortage" means a condition in which the existing or projected water supply available to the City is not anticipated to meet the ordinary water requirements of the Department. This condition may be the result of factors including but not limited to voluntary or mandatory curtailment of Anaheim's water allocation from the Metropolitan Water District of Southern California ("MWD"), emergency conditions, and/or failure of the City's or its supplier's water distribution systems.

.130 "Water Shortage Period" means the period beginning on the effective date of the City Council's resolution finding that a water shortage exists and ordering the implementation of a Water Shortage Plan as provided in this chapter and ending on the date of the City Council's finding that a Water Shortage no longer exists. (Ord. 5204 § 1 (part); February 26, 1991: Ord. 5855 §§ 14, 15; April 29,2003.)

10.18.030 AUTHORIZATION.

.010 The various officers, departments, commissions, and agencies of the City are authorized and directed to implement the applicable provisions of this chapter upon the effective date hereof.

.020 (Repealed by 5855, 4/29/03)

(Ord. 5204 § 1 (part); February 26, 1991.)

10.18.040 APPLICATION.

The provisions of this chapter shall apply to all Customers and property served water by the Department wherever situated, and shall also apply to all property and facilities owned, maintained, operated, or under the jurisdiction of the various officers, departments, commissions, and agencies of the City. The provisions of this chapter are in addition to, and not in lieu of, the provisions of Section 10.16.380 of this Code relating to curtailed supply of electricity or water. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.050 WATER SHORTAGE PLAN IMPLEMENTATION.

The Department shall monitor and evaluate the projected supply and demand for water by its Customers. In the event of a Water Shortage, the Department shall recommend to the City Council such Water Shortage Plan(s) as provided in this chapter which permit the Department to prudently plan for and supply water to its Customers. Upon finding that a Water Shortage exists, the City Council may, by resolution, order implementation of such Water Shortage Plan(s) as provided in this chapter which it deems appropriate to address that Water Shortage. At any time during the Water Shortage Period, the City Council may discontinue any plan or may implement another plan as provided in this chapter. Upon a finding by the City Council that the Water Shortage no longer exists, any Water Shortage Plan then in effect shall terminate. (Ord. 5204 § 1 (part); February 26, 1991: Ord. 5855 § 17; April 29, 2003.)

10.18.060 WATER SHORTAGE PLAN I.

Upon the adoption of a resolution by the City Council ordering the implementation of Water Shortage Plan I, the following provisions shall take effect:

.010 The Department may recommend to the City Council the implementation of, or amendment to, a Drought Surcharge or other rate revisions necessary to encourage water conservation efforts, purchase additional supplies of water, and pay for costs to the Department associated with the Water Shortage. If approved by the City Council at the time of ordering implementation of Water Shortage Plan I or at any time thereafter, such Drought Surcharge or rate revisions shall be adopted by resolution of the City Council and shall be prorated if adopted after the commencement of a full billing period.

.020 All persons and Customers of the Department shall be encouraged to reduce water usage on a voluntary basis by taking the following water conservation measures:

a. Refrain from hosing or washing sidewalks, walkways, driveways, parking areas or other paved surfaces;

b. Refrain from cleaning, filling, or maintaining levels in decorative fountains, ponds, lakes, and similar structures unless such structure is equipped with a water recycling system;

c. Refrain from serving drinking water, unless at the express request of a patron, in all restaurants, hotels, cafes, cafeterias, or other public places where food is sold, served, or offered for sale;

d. Promptly repair all leaks from indoor and outdoor plumbing fixtures, including but not limited to sprinkler systems;

e. Refrain from allowing water to run off landscaped areas into adjoining streets, sidewalks, parking lots, or alleys;

f. Refrain from allowing water to run off into adjoining streets, sidewalks, parking lots or alleys while washing vehicles;

g. Refrain from landscape watering more often than three times per week, except that there shall be no restriction on landscape watering utilizing reclaimed wastewater;

h. Refrain from landscape watering between the hours of ten a.m. and five p.m.;

i. Refrain from filling or refilling a swimming pool. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.070 WATER SHORTAGE PLAN II.

Upon the adoption of a resolution by the City Council or ordering the implementation of Water Shortage Plan II, the following provisions shall take effect:

.010 The Department may recommend to the City Council the implementation of, or amendment to, a Drought Surcharge or other rate revisions, to encourage conservation efforts, purchase additional supplies of water, and pay for costs to the Department associated with the Water Shortage. If approved by the City Council at the time of ordering implementation of Water Shortage Plan II or at any time thereafter, such Drought Surcharge or rate revisions shall be adopted by resolution of the City Council, and shall be prorated if adopted after the commencement of a full billing period.

.020 The following uses of water are prohibited and shall be unlawful during a Water Shortage Period in which the City Council has ordered implementation of Water Shortage Plan II:

a. No Customer shall use or allow the use of water from the Department to hose or wash sidewalks, walkways, driveways, parking areas or other paved surfaces on the Customer's premises;

b. No Customer shall use or allow the use of water from the Department to fill or maintain water levels of decorative fountains, ponds, lakes, and similar structures on the Customer's premises unless such structure is equipped with a water recycling system;

c. No restaurant, hotel, cafe, cafeteria, or other public place where food is sold, served, or offered for sale shall serve drinking water from the Department unless at the express request of a patron;

d. No Customer shall allow water from the Department to leak from any facility on the Customer's premises under the Customer's control or fail to affect a timely repair of any such leak;

e. No Customer shall cause or allow water from the Department to run off landscaped areas on the Customer's premises into adjoining streets, sidewalks, parking lots, or alleys due to incorrectly directed or maintained sprinklers or excessive watering;

f. No Customer shall use or allow the use of water from the Department for landscape watering on the Customer's premises more often than three times per week, except that there shall be no restriction on landscape watering utilizing reclaimed wastewater;

g. No Customer shall use or allow the use of water from the Department for landscape watering on the Customer's premises between the hours of ten a.m. and five p.m.;

h. No Customer shall use or allow the use of water from the Department to refill a swimming pool emptied after the commencement of a Water Shortage Period.

.030 At the written request of the General Manager, all commercial and industrial Customers using twenty-five thousand Billing Units per year or more shall submit a water conservation plan to the Department on a form and with a content approved by the Department. These Customers shall thereafter submit quarterly reports to the Department on the progress of their planned conservation efforts.

.040 After first determining by appropriate means that the Customer is absent from or unavailable at the premises, any designated employee of the City of Anaheim is authorized to enter upon the premises to abate water leaking on the exterior of a Customer's premises, running off landscaped areas on a Customer's premises into adjoining streets, sidewalks, parking lots or alleys, or landscape watering occurring during hours or on days prohibited pursuant to subsection 10.18.070.020(g). The Department shall, within twenty-four hours after such abatement occurs, mail notice of the action taken to the Customer at the address at which the Customer is normally billed by the Department. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.080 WATER SHORTAGE PLAN III.

In addition to those measures implemented as part of Water Shortage Plan II, the City Council may, by resolution, prohibit the use of water from the Department during any billing period for any purpose in an amount in excess of a specified percentage of a Customer's Base, such percentage and such Base Period to be specified in the same resolution. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.090 APPLICATION FOR RELIEF.

.010 A customer may file with the Department an application for relief from the water use limitations adopted by the City Council pursuant to Section 10.18.080 hereof. The Department shall have the power to take such steps as it deems reasonable and to set up such procedures as it considers necessary to resolve such applications for relief. In determining whether to grant relief and the nature of the relief to grant, the Department shall take into consideration all factors relevant to the Customer's water usage, including but not necessarily limited to the following (as applicable):

a. Whether any additional reduction in the Customer's water consumption will result in unemployment (commercial and industrial only);

b. Whether additional members have been added to the Customer's household (residential only);

c. Whether any additional landscaped property has been added to the Customer's premises subsequent to the Base Period but prior to the effective date of the resolution implementing Water Shortage Plan III;

d. Changes in vacancy factors in multi-family housing;

e. Increased number of employees in commercial, industrial, and governmental offices;

f. Increased production requiring increased Process Water;

g. Water uses during new construction;

h. Adjustments to water use caused by emergency, health, or safety hazards;

i. First filling of a permit-constructed swimming pool;

j. Water use necessary for reasons of family illness or health; and

k. Whether the Customer had, prior to the Water Shortage, taken measures to reduce the Customer's water consumption to the greatest extent possible.

.020 Relief shall be granted only on a showing by the Customer that the Customer has achieved the maximum practical reduction in water consumption, when all relevant factors are considered. No relief shall be granted to any Customer who, when requested by the Department, fails to provide the Department with information necessary for the Department to resolve the Customer's application for relief. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.100 EXCEPTIONS.

The prohibited uses of water from the Department provided in this chapter are not applicable to that use of water determined by the Department to be necessary for public health and safety, or for essential governmental services such as fire, police and emergency services. Nothing contained in this chapter shall be construed to require the Department to curtail the supply of water to any Customer when, in the discretion of the Department, such water is required by that Customer to maintain an adequate level of public health and safety. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.110 ADDITIONAL WATER SHORTAGE MEASURES.

The City Council may order implementation of other water conservation measures in addition to those set forth in Sections 10.18.060, 10.18.070 and 10.18.080. Such additional Water Shortage measures shall be implemented in the manner provided in this chapter under Section 10.18.050, Water Shortage Plan Implementation. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.120 PENALTIES.

.010 The City Council shall by resolution, pursuant to the recommendation of the General Manager, establish a schedule of penalties, up to and including termination of service, to be assessed for the violation of any of the provisions of Section 10.18.070, Water Shortage Plan II and Section 10.18.080, Water Shortage Plan III.

.020 The penalties imposed pursuant to subsection 10.18.120.010 may be collected by adding same to the Customer's water bill, in which case they shall be payable at the same time and in the same manner as such bills, or by such other method of collection and payment as established by the Department.

.030 The penalties applicable upon violation of additional Water Shortage measures implemented in accordance with Section 10.18.110, Additional Water Shortage Measures and the manner in which notice of such violation shall be given shall be set forth in the resolution ordering implementation of such additional water conservation measures. Said resolution shall also specify the applicability, if any, of Sections 10.18.140, Right to Hearing — Stay and 10.18.090, Application for Relief, to such violations. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.130 NOTICES OF VIOLATION.

.010 The Department shall give notice of violation to any Customer violating any of the provisions of Sections 10.18.070 and/or 10.18.080. Said notice shall contain, in addition to the facts of the violation, a statement of the penalties for each violation and a statement informing the Customer of his right to a hearing on the merits of the violation.

.020 If the penalty imposed for the violation does not result in a curtailment of water supplied, notice of violation shall be given by sending a copy through the regular mail to the address at which the Customer is normally billed by the Department.

.030 Notice of a violation for which a penalty resulting in the curtailment of water supply is imposed shall be given in the following manner:

a. By giving written notice thereof 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 said premises and sending a copy through the regular mail to the address at which the Customer is normally billed by the Department; 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 by the Department. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.140 RIGHT TO HEARING — STAY.

Any Customer receiving a notice of violation of any provisions of this chapter shall have a right to a hearing by the General Manager, or his/her designee, on the merits of the violation upon that Customer's written request to the Department. The Customer's written request for a hearing must be received by the Department within ten working days of the date of notification of the violation or the Customer's right to a hearing shall be deemed waived. The Customer shall be deemed notified of a violation upon personal delivery of the notice to the Customer or, if personal delivery is not given, the date on which the notice is placed in the regular mail, postage prepaid. The Customer's timely written request for a hearing shall automatically stay the imposition of any penalty until the General Manager, or his/her designee, renders a decision. No other further stay will be granted by the Department. The Department shall issue regulations to govern the contents of the request for hearing and the manner in which such hearings may be conducted. The decision of the General Manager, or his/her designee shall be final and conclusive. (Ord. 5204 § 1 (part); February 26, 1991)

10.18.150 RESERVATION OF RIGHTS.

The rights of the Department hereunder shall be cumulative to any other right of the Department to discontinue service. All monies collected pursuant to Section 10.18.120, Penalties shall be deposited in the Water Conservation Fund. (Ord. 5204 § 1 (part); February 26, 1991.)

10.18.160 WILLFUL MISREPRESENTATIONS.

Notwithstanding any other provision of law, and in addition thereto, and not in lieu thereof, any person or entity who willfully, misrepresents a material fact to the Department for the purpose of securing relief from the provisions of this chapter for any Customer shall be guilty of a misdemeanor. A violation of this section shall be punishable in the manner provided in Section 1.01.370. (Ord. 5204 § 1 (part); February 26, 1997: Ord. 5618 § 18; October 21, 1997.)

10.18.170 VIOLATIONS OF CHAPTER.

In addition to any penalty or remedy otherwise provided pursuant to this chapter or which may be otherwise available by law, and not by way of limitation, any violation of any provision of this chapter shall constitute a misdemeanor and shall be punishable as set forth in Section 1.01.370 of this Code. (Ord. 5204 § 1 (part); February 26, 1991.)

Chapter 10.19

LANDSCAPE WATER EFFICIENCY

Sections.

10.19.010 PURPOSE.

The purpose of this chapter is to promote efficient water use through landscape design appropriate to Anaheim's climate zone. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.020 APPLICABILITY.

.010 This chapter shall apply to the following projects:

.011 New and rehabilitated public, industrial, commercial and institutional landscaping;

.012 Commonly maintained, developer-installed landscaping in single-family and multifamily residential land uses;

.013 Privately owned landscapes that are under landscape rehabilitation.

.020 This chapter shall not apply to the following projects:

.021 Homeowner-installed landscapes on single-family lots;

.022 Cemeteries, school yards, parks, playgrounds, sports fields, theme parks and golf courses;

.023 Historical sites on the National Register of Historic Places;

.024 Ecological restoration land uses that do not require a permanent irrigation system;

.025 Mined-land reclamation land uses that do not require a permanent irrigation system;

.026 Any project with a landscaped area less than two thousand five hundred square feet;

.027 Landscapes using reclaimed or recycled water that is approved and appropriate for use;

.028 Water features that are an integral element of a business operation and are intended to generate revenue or educate the clientele of the business. Exempt water features shall be on a separate water meter from landscaped areas.

All exempt projects should follow efficient irrigation system design and management practices as described in this chapter and the City's "Landscape Water Efficiency Guidelines" as adopted by resolution of the City Council.

Portions of landscaped areas in public and private projects may require water in addition to the maximum applied water allowance. A statement shall be included with the landscape documentation package, designating areas to be used for such purposes and specifying any needed amount of additional water above the maximum applied water allowance. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.030 DEFINITIONS.

The terms in this chapter shall have the meaning set forth below:

.005 "Applicant" means the owner of property subject to the provisions of this chapter.

.010 "Application rate" means the depth of water applied to a given area, usually measured in inches per hour.

.020 "Applied water" means the portion of water supplied by the irrigation system to the landscape.

.030 "Certificate of substantial completion" refers to the form to be submitted by the applicant at the completion of the project. It certifies that all plants and irrigation were installed as specified by this chapter.

.040 "Common area" means those areas in a residential development maintained by either the developer or a homeowners' association.

.045 "Consumer" or "customer" means any owner, lessee, or renter of real property, using water supplied by the City through meters or by contract.

.048 "Department" means the Public Utilities Department of the City of Anaheim.

.050 "Ecological restoration" means a project where the site is intentionally altered to reestablish a defined, indigenous, historic ecosystem.

.060 "Established landscape" means the point in time at which plants in the landscape have developed roots into the soil adjacent to the root ball.

.070 "Establishment period" means the first eighteen months after installing the plant in the landscape.

.080 "ET adjustment factor" means a percentage factor that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average is the basis of the plant factor portion of this calculation. The City's Landscape Water Efficiency Guidelines further defines the ET adjustment factor.

.090 "Evapotranspiration" or "ET" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

.095 "Guidelines" means the "Landscape Water Efficiency Guidelines" adopted by resolution of the City Council.

.100 "Hydrozone" means a portion of the landscaped area having plants with similar water needs located in a similar microclimate that are served by a valve or set of valves. A hydrozone may be irrigated or nonirrigated.

.110 "Infiltration rate" means the rate of water entry/penetration into the soil expressed as a depth of water per unit of time (inches per hour).

.115 "Landscape documentation package" means documentation conforming to the requirements of Section 10.19.040.

.120 "Landscape irrigation audit" means a process to perform site inspections, evaluate irrigation systems and develop efficient irrigation schedules.

.130 "Landscape rehabilitation" means any re-landscaping project that entails alteration of the existing plant material (measured in square footage), landscape design or irrigation system of a project encompassing two thousand five hundred square feet or more.

.140 "Landscaped area" means the entire parcel less the building footprint, driveways, nonirrigated portions of parking lots, hardscapes such as decks and patios, and other non-porous areas. Water features are included in the calculation of the landscaped area. Areas dedicated to edible plants, such as orchards or vegetable gardens, are not included.

.150 "Maximum applied water allowance (MAWA)" means, for design purposes, the upper limit of annual applied water for the established landscaped area. It is based upon the area's reference evapotranspiration, the ET adjustment factor, and the size of the landscaped area.

.160 "Mined-land reclamation" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

.170 "Overspray" means the water which is delivered beyond the landscaped area, wetting pavement, walks, structures or other nonlandscaped areas.

.180 "Plant factor" means a factor that, when multiplied by reference evapotranspiration, estimates the amount of water used by plants. Refer to the Guidelines for plant factors relating to this chapter.

.190 "Project" means the scheme or area of scheduled landscape construction activity.

.200 "Recycled water," "reclaimed water," or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for nonpotable uses such as landscape irrigation and is not intended for human consumption.

.210 "Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is given in inches per day, month or year, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the maximum applied water allowances so that regional differences in climate can be accommodated. The City's ETo can be found in the reference evapotranspiration document provided by the Guidelines.

.220 "Run-off" means water which is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run-off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope.

.230 "Valve" means a device used to control the flow of water in the irrigation system.

.240 "Water conservation concept statement" is a one-page checklist and narrative of the project. (Ord. 5349 § 1 (part); January 12, 1993: Ord. 5855 § 18; April 29, 2003.)

10.19.040 REQUIREMENTS FOR LANDSCAPE DOCUMENTATION PACKAGES.

A copy of the landscape documentation package conforming to this chapter and the Guidelines shall be submitted to the City Planning Department's Building Division. If a building permit is not required, the landscape documentation package shall be submitted directly to the Public Utilities Department. No building permit shall be issued until the Public Utilities Department reviews and approves the landscape documentation package.

A copy of the approved landscape documentation package shall be provided by the applicant to the property owner or site manager along with the record/as-built drawings and any other information normally forwarded to the property owner or site manager.

A copy of the Certificate of Substantial Completion found in the Guidelines shall be submitted by the applicant to the City Planning Department and the Public Utilities Department prior to the

City's final approval. This certificate must be signed by the project contractor, landscape architect or related professional and the owner.

Each landscape documentation package shall include the following elements, which are explained in detail in the Guidelines. Landscape projects which are subject to this chapter shall be designed using a not-to-be-exceeded maximum applied water allowance (MAWA):

.010 "Water conservation concept statement" is a one-page checklist and narrative of the project. This statement ensures that all the pertinent data has been included in the landscape documentation package.

.020 "Maximum applied water allowance calculations" determine the maximum amount of water that can be applied to the project site. See definitions in Section III of the Guidelines.

.030 "Estimated total water use" means the annual total amount of water estimated to be needed to keep the plants in the landscaped area healthy. It is based upon such factors as the local evapotranspiration rate, the size of the landscaped area, the types of plants and the efficiency of the irrigation system.

.040 "Grading design plan" shall meet the guidelines established by the City and be drawn on project base sheets and shall indicate finished configurations and elevations, the landscaped area, including the height of graded slopes, drainage patterns, pad elevations and finish grades.

.050 "Agronomic soils analysis" are required for projects with a landscaped area greater than two thousand five hundred square feet, and/or landscaped slopes as defined in the City's "Grading, Excavations and Fills in Hillside Areas" code. This analysis shall consist of a basic soil chemistry analysis or horticultural suitability analysis from a laboratory qualified to perform landscape soils analysis.

.060 "Planting design plan" shall meet the guidelines established by the City and be drawn on project base sheets, including plant selections and groupings by hydrozones, any applicable details, and specifications.

.070 "Irrigation design plans" shall conform to Guidelines and be drawn on project base sheets, including specifications, details, calculations and schedules.

.080 "Certificate of substantial completion" shall be submitted by the applicant after the project is installed. This certification consists of audits that ensure the project has been installed as designed and specified. See the Guidelines. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.050 WATER USE MONITORING.

.010 All landscape water meters installed in conjunction with an approved landscape plan in compliance with this chapter shall be monitored by the City's Public Utilities Department on a periodic basis for comparison to the MAWA.

a. Water use shall be based on utility records of the water meter installed as the irrigation meter for each landscape.

b. The first eighteen months after planting shall be considered as the establishment period for the landscape plant materials.

c. Irrigation water use shall be compared to the maximum water allowance (MAWA) for that landscape no sooner than twelve months after completion of the eighteen-month establishment period.

.020 The Public Utilities Department shall determine whether the irrigation account water usage is lower than, equal to, or greater than the MAWA established for that landscape.

If the irrigation account water use is greater than the MAWA, the property owner shall have a landscape irrigation audit performed by a certified irrigation auditor and paid for by the property owner. A copy of the audit report shall be delivered to the Public Utilities Department within ninety days of receipt of notification of water use in excess of the MAWA. The applicant shall make the modifications and/or adjustments set forth in the audit report to the irrigation system within ninety days of the completion of the audit, and provide documentation satisfactory to the City that the modifications and/or adjustments have been completed in accordance with the audit report. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.060 PENALTIES.

.010 Notwithstanding any other provision of this Code to the contrary, a violation of any of the provisions of this chapter shall constitute an infraction punishable in accordance with the provisions of Section 36900 of the Government Code of the State of California, or any other successor provision thereto.

.020 The City Council shall by resolution pursuant to the recommendation of the General Manager, establish a schedule of penalties, up to and including termination of service, to be assessed for the violation of any of the provisions of this chapter.

.030 The penalties imposed pursuant to this chapter may be collected by adding same to the customer's water bill, in which case they shall be payable at the same time and in the same manner as such bills, or by such other method of collection and payment as established by the Department.

.040 All monies collected pursuant to this section shall be deposited in the water conservation account. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.070 NOTICES OF VIOLATIONS.

.010 The Department shall give notice of violation to any customer violating any of the provisions of this chapter. The notice shall contain, in addition to the facts of the violation, a statement of the penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the violation.

.020 Notice of violation shall be given by sending a copy through the regular mail to the address at which the customer is normally billed by the Department. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.080 RIGHT TO HEARING — STAY.

Any customer receiving a notice of violation of any provisions of this chapter shall have a right to a hearing by the General Manager, or his/her designee, on the merits of the violation upon that customer's written request to the Department. The customer's written request for a hearing must be received by the Department within ten working days of the date of notification of the violation or the customer's right to a hearing shall be deemed waived. The customer shall be deemed notified of a violation upon personal delivery of the notice to the customer or, if personal delivery is not given, the date on which the notice is placed in the regular mail, postage prepaid. The customer's timely written request for a hearing shall automatically stay the imposition of any penalty until the General Manager, or his/her designee, renders a decision. No other further stay will be granted by the Department. The Department shall issue regulations to govern the contents of the request for hearing and the manner in which such hearings may be conducted. The customer may appeal the General Manager's decision to the City Council. Failure of the customer to notify the City Council within fifteen days after receipt of the General Manager's findings will constitute acceptance by the customer of the General Manager's decision. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.090 WILFUL MISREPRESENTATIONS.

Notwithstanding any other provision of law, and in addition thereto, and not in lieu thereof, any person or entity who willfully misrepresents a material fact to the Department for the purpose of securing relief from the provisions of this chapter for any customer shall be guilty of a misdemeanor. A violation of this section shall be punishable by a fine not exceeding the sum of one thousand dollars, or by imprisonment in the county jail for a period not to exceed six months, or by both such fine and imprisonment. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.100 APPLICATION FOR RELIEF.

.010 A customer may file with the Department an application for relief from the water use limitations adopted by the City Council pursuant to this chapter. The Department shall have the power to take such steps as it deems reasonable and to set up such procedures as it considers necessary to resolve such applications for relief. In determining whether to grant relief and the nature of the relief to grant, the Department shall take into consideration all factors relevant to the customer's water usage.

.020 Relief shall be granted only on a showing by the customer that the customer has achieved the maximum practical reduction in water consumption, when all relevant factors are considered. No relief shall be granted to any customer who, when requested by the Department, fails to provide the Department with information necessary for the Department to resolve the customer's application for relief. (Ord. 5349 § 1 (part); January 12, 1993.)

10.19.110 PUBLIC EDUCATION.

.010 All model home sites consisting of four or more model homes/units in all residential development shall have at least one model which demonstrates, via signs and information, the principles of water-efficient landscapes as described in this chapter.

.020 Signs to identify the model as an example of a water-efficient landscape featuring elements, including without limitation hydrozones, irrigation equipment, plant palette selection, and other factors which contribute to the overall water efficient theme shall be provided. (Ord. 5349 § 1 (part); January 12, 1993.)

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APPENDIX G

DRAFT WATER SHORTAGE PLAN RESOLUTION

Resolution No. 91R-65

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANAHEIM FINDING THE EXISTENCE OF A WATER SHORTAGE, ORDERING THE IMPLEMENTATION OF WATER SHORTAGE 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 Anaheim; and

WHEREAS, the City Council has adopted Ordinance No, 5204, which added Chapter 10.18 to Title 10 of the Anaheim Municipal Code relating to water shortages, which provides that the City Council may, upon funding 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 ANAHEIM 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 Anaheim.
2. That the City Council hereby orders implementation of Water Shortage Plan II, as set forth in Section 10.18.070 of Chapter 10.18 of the Anaheim Municipal Code, provided, however, that the City Council by this resolution is not adopting a Drought Surcharge or other rate revision.
3. That the following penalties shall be assessed for violation of any of the provisions of Section 10.18.070 Water Shortage Plan __.
    a) For the first violation, the Department shall issue written notice of the fact of such violation to the Customer.
    b) For the second violation, a penalty shall be imposed in the amount of twenty-five ($25.00) dollars.
    c) For the third violation, a penalty shall be imposed in the amount of fifty ($50.00) dollars.
    d) For the fourth violation, a penalty shall be imposed in the amount of seventy-five ($75.00) dollars. In addition, the Department shall install a flow-restricting device of one gallon per minute capacity for services up to one and one-half inch size, and comparably sized restrictors for larger services, on the service of the Customer at the premises where the violation occurred. The flow-restricting device shall remain on the Customer’s service for a period of not less than forty-eight hours.

e) For the fifth and any subsequent violations, the Department shall have the right to reduce the amount of water provided to the Customer, including termination of service.

The method of payment of penalties shall be described in the Notice of Violation provide to the Customer pursuant to Section 10.18.120.

Penalties assessed under this resolution pursuant to Section 10.18.120 shall be deemed a debt due and owing to the City of Anaheim. If the penalty is not paid in full within sixty (60) days after the Notice of Violation is issued, or within thirty (30) days after the final decision of the General Manager if imposition of a penalty has been stayed pursuant to Section 10.18.140, the Department may include the amount owed as part of the Customer's bill for charges for water service. In the event that the penalty is not then paid, the City may, in addition to whatever other remedies it has, discontinue service until all delinquent charges have been paid.

4. Capitalized terms used in this Resolution shall have the meanings as set forth in Section 10.18.020 of the Anaheim Municipal Code.
5. This Resolution shall take effect on the effective date of Ordinance No. 5204. If, for any reason, Ordinance No. 5204 does not take effect, this Resolution shall be null and void.

THE FOREGOING RESOLUTION is approved and adopted by the City Council of the City of Anaheim this __ day of ____, 20__

_____

_____

MAYOR OF THE CITY OF ANAHEIM

ATTEST:

_____

CITY CLERK OF THE CITY OF ANAHEIM

City of Anaheim

201 South Anaheim Boulevard, City Hall West, Suite 601, Anaheim, CA 92805
(714) 765-4181