San Diego County Water Authority

FINAL DRAFT

2005 Urban Water Management Plan

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2005 URBAN WATER MANAGEMENT PLAN
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ABBREVIATIONS

2000 Plan	2000 Urban Water Management Plan
2005 Plan	2005 Urban Water Management Plan
AAC	All-American Canal
Act	Urban Water Management Planning Act
AF	acre-feet
AF/YR	acre-feet per year
Bay-Delta	San Francisco Bay/Sacramento-San Joaquin River Delta
BMPs	Best Management Practices (Water Conservation)
CC	Coachella Canal
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	Commercial, Industrial and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CRA	Colorado River Aqueduct
CSP	Carryover Storage Project
CUWA	California Urban Water Agencies
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project (Federal)
CVWD	Coachella Valley Water District
CWA-MAIN	County Water Authority - Municipal and Industrial Needs
Delta	Sacramento - San Joaquin River Delta
DHS	Department of Health Services (State of California)
DIP	Delta Improvement Package
DMP	Drought Management Plan
DWR	Department of Water Resources (State of California)
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act (Federal)
ESP	Emergency Storage Project

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EWA	Environmental Water Account
EWDP	Emergency Water Delivery Plans
EWMPs	Efficient Water Management Practices
FAP	Financial Assistance Program
FFY	Federal Fiscal Year
Forum	Colorado River Basin Salinity Control Forum
FY	Fiscal Year
GRP	Groundwater Recovery Program
HEWs	high-efficiency clothes washers
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
IRWMP	Integrated Regional Water Management Plan
lb/day	pounds per day
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
LRP	Local Resource Program
M&I	municipal & industrial
MAF	million acre-feet
MAF/YR	million acre-feet per year
MAIN	Institute for Water Resources – Municipal and Industrial Needs
MCB Camp Pendleton	Marine Corps Base Camp Pendleton
mg/l	milligrams per liter
mgd	million gallons per day
Metropolitan	Metropolitan Water District of Southern California
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
MTBE	Methyl Tertiary Butyl Ether
MWDOC	Municipal Water District of Orange County
NEPA	National Environmental Policy Act
OAEP	Operational Area Emergency Plan
Omnibus Act	Omnibus Appropriations Act
OM&R	Operation, Maintenance, and Repair
O&M	Operations and Maintenance

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PEIR	Programmatic Environmental Impact Report
ppb	parts per billion
ppm	parts per million
QSA	Quantification Settlement Agreement
Regional Board	California Regional Water Quality Control Board
RO	reverse osmosis
ROD	Record of Decision
RUWMP	Regional Urban Water Management Plan
RWDF	Reclaimed Water Development Fund
RWFMP	Regional Water Facilities Master Plan
SANDAG	San Diego Association of Governments
SDP	Metropolitan Water District of Southern California's Seawater Desalination Program
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
Skinner TP	Lake Skinner Water Treatment Plant
SONGS	San Onofre Nuclear Generating Station
SRF	State Revolving Fund
SSOA	Surface Storage Operating Agreement
SWA	Source Water Assessment
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
Transfer Agreement	Water Authority-Imperial Irrigation District Transfer Agreement
TOC	total organic carbon
TDS	total dissolved solids
ULFTs	ultra-low flush toilets
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VIP	Voucher Incentive Program
Water Authority	San Diego County Water Authority
Water Use Plan	California's Colorado Water Use Plan
WRLP	Water Reclamation Loan Program
WSDM Plan	Water Surplus and Drought Management Plan

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SECTION 1 – INTRODUCTION

The mission of the San Diego County Water Authority (Water Authority) is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. This 2005 Urban Water Management Plan (2005 Plan) identifies a diverse mix of water resources projected to be developed over the next 25 years to ensure long-term water supply reliability for the region.

Since adopting the 2000 Urban Water Management Plan (2000 Plan), the Water Authority and its member agencies have made great strides in conserving and diversifying its supplies. With an aggressive conservation program, the region has conserved an average of 40,500 acre-feet per year (AF/YR) over the last five years. In 2003, conserved agricultural transfer water from the Imperial Valley began flowing to the region, which will provide 200,000 AF/YR by 2021. In 2003, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects that will line the All-American and Coachella Canals. Deliveries of this conserved water will reach the region by year 2007. Since the 2000 Plan, the Water Authority has also completed a number of actions towards developing a 50-million gallon per day (mgd) seawater desalination facility at the Encina Power Station in the City of Carlsbad.

Developing these supplies is key to diversifying the region's supply sources, but other factors are also important, such as member agencies implementing and managing local resources. Indeed, local surface water, groundwater, and recycled water are all important elements of a diverse water supply portfolio. Likewise, it is critical that the Metropolitan Water District of Southern California (Metropolitan) continue to provide a reliable supply of imported water to the region. The Water Authority, its member agencies, and Metropolitan must work together to ensure a diverse and reliable supply for the region.

This section of the 2005 Plan describes the state laws that influence preparation of the plan, including the Urban Water Management Planning Act (Act) and Water Code Sections that were enacted with the passage of Senate Bills 610 and 221 in 2001. It also includes a discussion of the coordination that occurred in preparation of the 2005 Plan as well as a general description of the Water Authority, with its physical water delivery system, service area characteristics, climate, and population projections.

1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers in the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Act of 1983, including amendments that have been made to the Act. Sections 10610 through 10657 of the California Water Code details the information that must be included in these plans, as well as who must file them.

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Major amendments made to the Act since the Water Authority's 2000 Plan was prepared include:

* Description of specific water supply projects and implementation schedules to meet projected demands over the planning horizon;
* Description of the opportunities for the development of desalinated water;
* Additional information on groundwater, where groundwater is identified as an existing or planned water source;
* Description of water quality over the planning horizon; and
* Description of water management tools that maximize local resources and minimize imported water supplies.

In addition, the California Department of Water Resources (DWR) will consider whether the urban water supplier has submitted an updated plan when determining eligibility for funds made available pursuant to any program administered by the department.

According to the Act: "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." The Act requires that each urban water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 AF of water annually, shall prepare, update, and adopt its urban water management plan at least once every five years or before December 31, in years ending in five and zero. In accordance with the Act, the Water Authority is required to update and adopt its plan for submittal to the DWR by December 31, 2005. **Appendix A** contains the text of the Act.

1.2 SENATE BILLS 610 AND 221

Water Code Sections 10910 through 10914 and Government Code Sections 65867.5, 66455.3, and 66473.7 (commonly referred to as SB 610 and SB 221) amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain large proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain large residential subdivisions of property prior to approval of a tentative map.

Section 4 of the 2005 Plan contains documentation on the existing and planned water supplies being developed by the Water Authority. This documentation may be used by the Water Authority's member agencies in preparing the water supply assessments and written verifications required under state law. Specific documentation on member agency supplies and Metropolitan supplies may be found in their respective plans.

1.3 WATER AUTHORITY'S 2005 URBAN WATER MANAGEMENT PLAN

This report constitutes the 2005 update to the Water Authority's 2000 Plan. To adequately demonstrate how the region will be reliable over the next 25 years, the 2005 Plan quantifies the regional mix of existing and projected local and imported supplies necessary to meet future retail demands within the Water Authority's service area. While the 2005 Plan includes specific

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documentation on development of the Water Authority's supplies, the plans submitted by the member agencies and Metropolitan will provide details on their supplies that contribute to the diversification and reliability of supplies for the San Diego region.

Striving for consistency among the plans of Metropolitan, the Water Authority, and its member agencies is important to accurately reflect the projected supplies available to meet regional demands. In order to facilitate coordination within the Water Authority's service area, the Water Authority formed an Urban Water Management Plan Working Group made up of staff from the Water Authority and its member agencies. This group provided a forum for exchanging demand and supply information. In addition, DWR and the California Urban Water Conservation Council (CUWCC) hosted a special workshop to review the requirements of the Act. At a separate workshop, the Working Group received a briefing from Metropolitan on its regional plan, and participants discussed strategies for coordination between the supply agencies.

The Water Authority further coordinated its efforts by working with the appropriate wastewater agencies. These agencies helped prepare the water recycling element of the 2005 Plan, which describes the wastewater treatment requirements and water recycling potential. The Water Authority also coordinated with Metropolitan regarding projected needs for imported water deliveries. A member agency draft 2005 Plan was distributed for technical review by the Water Authority's member agencies and their comments incorporated.

In accordance with the Act, the Water Authority notified the land use jurisdictions within its service area that it was preparing the 2005 Plan. Prior to adoption, the Water Authority mailed the 2005 Plan to interested parties that included the Water Authority's member agencies, the San Diego Regional Chamber of Commerce, Sierra Club, County of San Diego, and cities within Water Authority's service area. The 2005 Plan was also available for public review at the Water Authority and on the Water Authority's Internet homepage.

The Water Authority reviewed all of the comments received and revised the plan accordingly. The Water Authority Board of Directors held a public hearing on October 27, 2005, and adopted the Water Authority's 2005 Plan on ___TBD___, 2005. **Appendix B** contains a copy of the resolution adopting the 2005 Plan.

DWR has prepared a checklist based on the Act of items that must be addressed in an agency's plan. This checklist allows an agency to identify where in its plan it has addressed each item. The Water Authority has completed the checklist, referencing the sections and page numbers included in the 2005 Plan. The completed checklist is included in **Appendix C**.

1.4 HISTORY AND DESCRIPTION OF THE WATER AUTHORITY

1.4.1 History

The Water Authority was established pursuant to legislation adopted by the California State Legislature in 1943 to provide a supplemental supply of water as the San Diego region's civilian and military population expanded to meet wartime activities. Due to the strong military presence, the federal government arranged for supplemental supplies from the Colorado River in the 1940s. In 1947, water began to be imported from the Colorado River via a single pipeline that connected to Metropolitan's Colorado River Aqueduct (CRA) located in Riverside County. To meet the water

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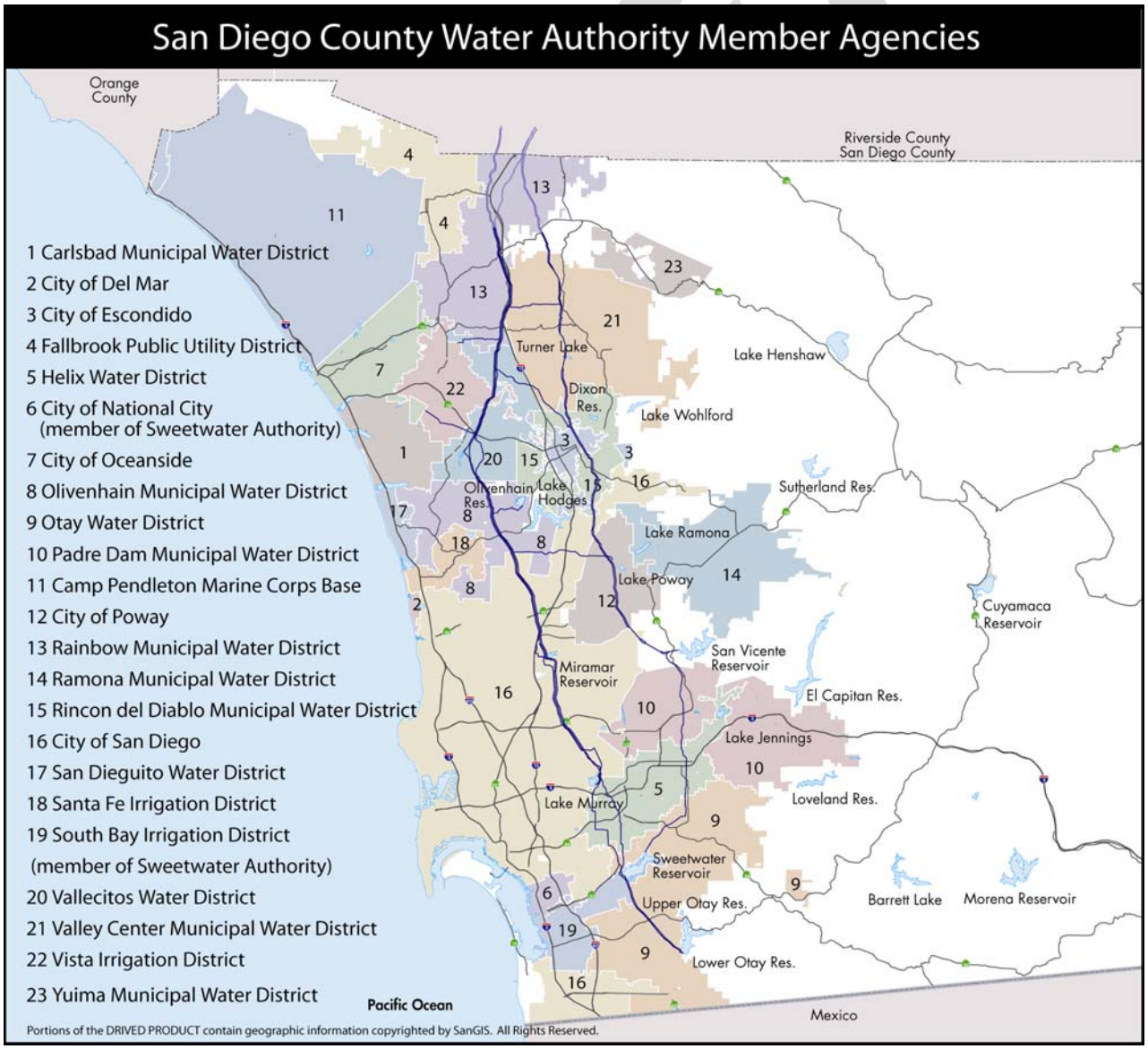
demand for a growing population and economy, the Water Authority constructed four additional pipelines between the 1950s and early 1980s that are all connected to Metropolitan's distribution system and deliver water to San Diego County. The Water Authority is now the county's predominant source of water, supplying from 75 to 95 percent of the region's needs depending upon weather conditions and yield from surface, recycled, and groundwater projects.

1.4.2 Service Area

The Water Authority's boundaries extend from the border with Mexico in the south, to Orange and Riverside counties in the north, and from the Pacific Ocean to the foothills that terminate the coastal plain in the east. With a total of 920,463 acres (1,438 square miles), the Water Authority's service area encompasses the western third of San Diego County. **Figure 1-1** shows the Water Authority's service area, its member agencies, and aqueducts.

FIGURE 1-1
WATER AUTHORITY SERVICE AREA



1.4.3 Member Agencies

The Water Authority's 23 member agencies purchase water from the Water Authority for retail distribution within their service territories. A 34 member Board of Directors comprised of member agency representatives governs the Water Authority. The member agencies six cities, four water districts, eight municipal water districts, three irrigation districts, a public utility district, and a federal military reservation have diverse and varying water needs.

In terms of land area, the city of San Diego is the largest member agency with 210,726 acres. The smallest is the City of Del Mar, with 1,159 acres. Some member agencies, such as the cities of National City and Del Mar, use water almost entirely for municipal and industrial purposes. Others, including Valley Center, Rainbow, and Yuima Municipal Water Districts, deliver water that is used mostly for agricultural production.

1.5 WATER AUTHORITY PHYSICAL WATER DELIVERY SYSTEM

The Water Authority currently purchases water from Metropolitan and transferred water from the Imperial Irrigation District (IID). These supplies are delivered to its member agencies through two aqueducts containing five large-diameter pipelines. The aqueducts follow general north-to-south alignments, and the water is delivered largely by gravity. The Water Authority has an exchange agreement with Metropolitan, which allows delivery of the IID transfer water through Metropolitan's system. Delivery points from Metropolitan are located about six miles south of the Riverside/San Diego county line. The largest single-year of sales of imported water ever recorded by the Water Authority was 644,000 acre-feet (AF) in fiscal year (FY) 2004.

The First Aqueduct includes Pipelines 1 and 2, located in a common right-of-way. They share five common tunnels and are operated as a unit. They have a combined capacity of 180 cubic feet per second (cfs). Pipelines 3, 4, and 5 form the Second Aqueduct. These pipelines are operated independent of the First Aqueduct and are located in separate rights-of-way. Pipeline 3 has a capacity of 280 cfs; Pipeline 4 carries 470 cfs, and Pipeline 5 carries 500 cfs. **Figure 1-1** shows the locations of the Water Authority's aqueducts within San Diego County.

1.5.1 Capital Improvement Program (CIP)

The Water Authority completed a Regional Water Facilities Master Plan (RWFMP) process in 2004. The RWFMP defines the regional facilities needed to meet water demands within the Water Authority's service area through the year 2030. The Water Authority examined the changing water supply and demand forecast patterns using a probabilistic approach to facilities planning. A computer model analyzed various facility options under a range of supply and demand scenarios. This modeling resulted in an assessment of the reliability of the system measured in terms of the probability, frequency, and magnitude of water shortages for each facility option.

In June 2004, the Water Authority Board of Directors voted unanimously to select seawater desalination as the preferred RWFMP alternative and added it and 21 other major water facilities projects to the CIP. This action, the largest investment in water supply reliability and system

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infrastructure in the Water Authority's 60-year history, more than doubled the agency's CIP, from $1.3 billion to more than $3.19 billion (**Table 1-1**). The water supply and capital improvements currently under way and planned for the future are designed to serve the region's needs through 2030. Besides seawater desalination, they include new pipelines and pump stations to convey the water, a water treatment facility, improvements to the existing water delivery system, the All-American and Coachella Canal Lining Projects, and projects to increase storage capacity throughout the county.

The timing for implementation of the CIP projects will be evaluated based on the reliability analysis prepared for the 2005 Plan. If necessary, project schedules will be adjusted to accurately reflect when the project is needed for reliability purposes.

TABLE 1-1
CIP COST SUMMARY BY CATEGORY
(IN $ MILLIONS)

PROJECT CATEGORY	PROJECT COST [2]
Pipeline Projects	$1,214.5
System-wide Improvements	$297.6
Emergency Storage Projects	$858.7
Water Supply Projects	$834.9
Flow Control & Pumping Facilities	$100.1
Reimbursable Projects - Total Cost	$9.2
Total Costs of Active & Future Projects	$3,315.0
Less All Reimbursable Costs [1]	$123.3
Net Water Authority Costs	$3,191.7

[1] There are project costs within the CIP that are considered reimbursable.
[2] Project costs are included in the FY 06/07 Water Authority CIP Budget

Water Authority Regional Treatment Facility

The treated water that serves the San Diego region is presently produced at local water treatment plants owned by several Water Authority member agencies, and is also imported from Metropolitan's Skinner Water Treatment Plant (Skinner TP) in Riverside County. The member agency treatment plants and capacity are shown in **Table 1-2**. A rapid increase in treated water demand over the last five years has produced significant strains on these treated water supply sources. During peak periods, local plants in the San Diego region typically operate at maximum capacity, and imported water from the Skinner TP meets the remaining demand.

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TABLE 1-2
MEMBER AGENCY TREATMENT PLANT CAPACITY

MEMBER AGENCY	WATER TREATMENT PLANT	CAPACITY (MILLION GALLONS PER DAY)
Escondido, City of/Vista Irrigation District	Escondido/Vista	65
Helix Water District	Levy	106
Olivenhain Municipal Water District	Olivenhain	34
Oceanside, City of	Weese	25
Poway, City of	Berglund	24
Ramona Municipal Water District	Bargar	4
San Diego, City of	Alvarado	150
San Diego, City of	Miramar	140
San Diego, City of	Lower Otay	40
San Dieguito Water District/Santa Fe Irrigation District	Badger	40
Sweetwater Authority	Perdue	30

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To maintain an adequate level of capacity to meet increased retail customer demands throughout the San Diego region, in September 2005, the Water Authority's Board of Directors certified an environmental impact report for the Twin Oaks Valley Water Treatment Plant and awarded a design-build-operate contact to begin final design and construction of the plant. The plant will be the Water Authority's first water treatment plant and will produce 100-million gallons of drinking water per day beginning in 2008. The plant will help address the growing demand for additional treated water supplies in the region, especially during hot summer days.

Emergency Storage Project

Also part of the CIP, the Emergency Storage Project (ESP) is an $939 million system of reservoirs, pipelines, pump stations, and other facilities that will work together to store and move water around the county in case of a prolonged interruption of the region's imported water supply. The facilities that make up the ESP are located throughout San Diego County and are being constructed in phases. The initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,364 AF Olivenhain Reservoir. **Section 9.1.2** contains additional information on the ESP.

Carryover Storage Project

The CIP also includes budget for the Carryover Storage Project (CSP). The Water Authority's RWFMP identifies the need for additional water storage capacity to improve water supply reliability for the region. The Water Authority is currently conducting environmental reviews of project alternatives, including a possible expansion of the San Vicente Reservoir.

The Water Authority has identified three main needs for carryover storage:

Enhance water supply reliability - Carryover storage provides a reliable and readily available source of water during periods of potential shortage, such as during dry years.

Increase system efficiency - Carryover storage provides operational flexibility to serve above-normal demands, such as those occurring in dry years, from storage rather than by the over-sizing of the Water Authority's imported water transmission facilities.

Better management of water supplies - Carryover storage allows the Water Authority to accept additional imported deliveries during periods of availability, such as during wet years, to ensure water availability during dry years. As described in **Section 6**, the Water Authority receives delivery of State Water Project (SWP) supplies from Metropolitan, which can be significantly influenced by the need to protect environmental resources in the Sacramento-San Joaquin Bay-Delta region. This protection requires that the SWP reduce deliveries in dry years, but similarly allows for increased deliveries during wet years. Efficient management of this system therefore requires carryover storage to absorb the annual fluctuations in supply.

1.6 SERVICE AREA CHARACTERISTICS

The Water Authority's service area characteristics have undergone dramatic changes over the last several decades. The region's population grew on average by 50,000 people per year resulting in a shifting of large amounts of rural land to urban uses. This shift in land use has resulted in the region's prominent urban and suburban character. San Diego County also has a rich history of agriculture, beginning with the large cattle ranches established in the 18th century and continuing through the diverse range of crops and products grown today. Although the total number of agricultural acres under production has declined, the region maintains a significant number of high value crops, such as flowers, vegetables, nursery plants, turf grass, avocados, and citrus. Based on the last survey conducted by DWR, irrigated agricultural land in the Water Authority's service area totaled 73,769 acres. San Diego County agriculture is a $1.3 billion dollar per year industry, eighth in farm production value in the state. Shifting market forces, including the increasing cost of water, may cause a change in agricultural practices and ultimately result in the retirement of some economically marginal lands.

1.6.1 Regional Economy and Demographics

Historically, defense-related contracting and manufacturing, particularly the aerospace industry, drove the local economy. This pattern peaked in the 1980s as federal spending fueled economic growth, and local defense-related expenditures surged to $9.6 billion in 1987. When this level of federal spending experienced sharp cuts in the early 1990s, widespread layoffs resulted and triggered a recession that lasted until 1995.

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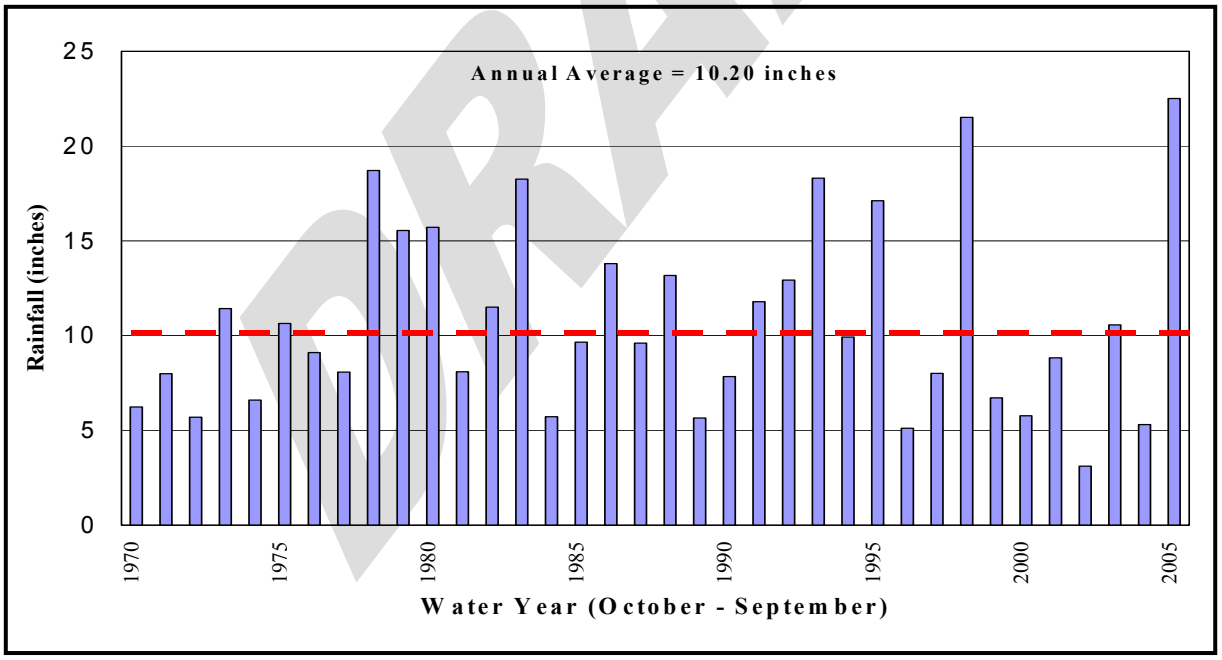
San Diego County has since rebounded, due in part to the emergence a diversified employment base that includes telecommunications, electronics, computers, software, and biotechnology. High technology and bioscience related employment now exceeds 160,000 jobs. San Diego's gross regional product is forecast to reach $151.1 billion in 2005, a 6.6 percent increase over 2004's $141.7 billion estimate. The number of people actively working averaged 1.42 million in 2004, and that number is forecast to rise by 2.1 percent in 2005, to 1.45 million. Compared to the pace of expansion recorded in the 1980s, the current growth is more moderate, and perhaps more healthy and sustainable.

1.6.2 Climate

Climatic conditions within the county area are characteristically Mediterranean along the coast, with mild temperatures year-round. Inland area weather patterns are more extreme, with summer temperatures often exceeding 90 degrees Fahrenheit and winter temperatures occasionally dipping below freezing. Average annual rainfall is approximately 10 inches per year on the coast and in excess of 33 inches per year in the inland mountains. More than 80 percent of the region's rainfall occurs between December and March.

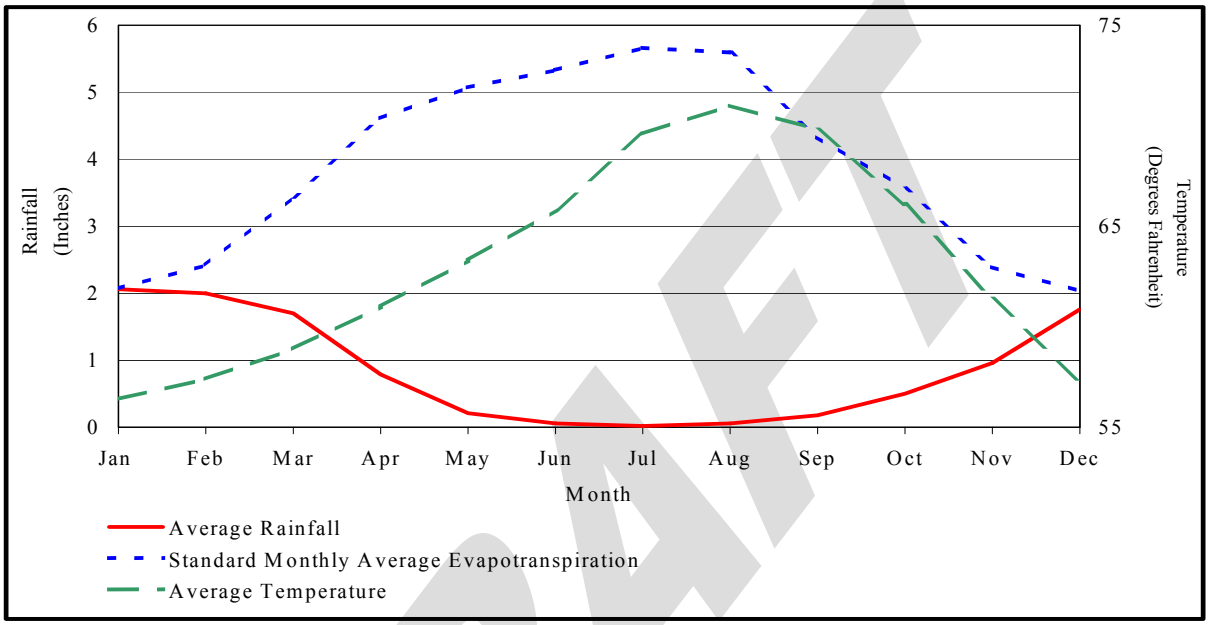
FIGURE 1-2
ANNUAL RAINFALL
(LINDBERGH FIELD STATION)



Variations in weather patterns affect regional short-term water requirements, causing reductions in water use during wet cycles and demand spikes during hot, dry periods. Over the last seven years, San Diego has experienced the latter event. Since 1999, local rainfall exceeded the historic annual average only twice (**Figure 1-2**). These conditions resulted in record level demands during FY

2004, with total local and imported water use surpassing 715,700 AF. With record rainfall in FY 2005, total demands decreased to 642,152 AF. On a monthly basis, water requirements tend to increase during the summer months when a decrease in rainfall combines with an increase in temperatures and an increase in evapotranspiration levels (**Figure 1-3**).

FIGURE 1-3
COMPARISON OF AVERAGE RAINFALL (Lindbergh Field), STANDARD MONTHLY AVERAGE EVAPOTRANSPIRATION (Balboa Park CIMIS Station #184), AND AVERAGE TEMPERATURE (Lindbergh Field)



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1.6.3 Population

When the Water Authority was formed in 1944, the population of San Diego County totaled roughly 260,000 people. In 2004, total population within the service area reached 2.8 million. The City of San Diego represents the largest population of any member agency, with approximately 1.3 million people. The Yuima Municipal Water District has the smallest population, at just under 2,000 people. The average population density in 2004 was 3.43 people per acre, with National City having the highest density (9.32/acre) and Yuima Municipal Water District the lowest (0.15/acre).

The population of San Diego County is projected to increase by 842,300 people between 2005 and 2030, for a total county population in excess of 3.8 million. This change represents an average annual increase of about 33,700 people, for an annual growth rate of roughly 1.1 percent. These regional growth projections are based on the San Diego Association of Governments (SANDAG) 2030 Cities/County Forecast.

The Water Authority's service area population projections are also based on SANDAG's 2030 Cities/County Forecast and appear in **Table 1-3**. Water Authority member agencies are projected to have varying future growth. Some, such as the Santa Fe Irrigation District and the City of Del Mar,

are expected to experience relatively little growth. Others, including the Otay and Vallecitos water districts, anticipate large increases in both population and water demand.

TABLE 1-3
POPULATION FORECAST WITHIN WATER AUTHORITY SERVICE AREA (2005-2030)

YEAR	POPULATION
2005	2,947,262
2010	3,113,498
2015	3,261,691
2020	3,414,068
2025	3,554,815
2030	3,703,243
Average Annual Growth	30,239

Source: SANDAG 2030 Cities/County Forecast

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SECTION 2 – WATER DEMANDS

Demand for water in the Water Authority's service area falls into two basic categories: municipal and industrial (M&I), and agricultural. M&I uses currently constitute about 80 to 85 percent of regional water consumption. Agricultural water, used mostly for irrigating groves and crops, accounts for the remaining 15 to 20 percent of demand. This section describes these use categories along with the total historic, current, and projected water demands. By 2030, total normal water demands are projected to reach 829,030 AF (includes projected near-term annexation demands), which represents about a 29 percent increase from the 642,152 AF of demand that occurred in FY 2005.

2.1 MUNICIPAL AND INDUSTRIAL WATER DEMAND

M&I demand can be subdivided into residential demand (water used for human consumption in the home, domestic purposes, and residential landscaping) and water used for commercial and industrial purposes.

2.1.1 Residential Demand

Residential water consumption covers both indoor and outdoor uses. Indoor water uses include sanitation, bathing, laundry, cooking, and drinking. Most outdoor water entails landscaping irrigation requirements. Other minor outdoor uses include car washing, surface cleaning, and similar activities. For single-family homes and rural areas, outdoor demands may be as high as 60 percent of total residential use.

Based on SANDAG data, the 2004 composition of San Diego regional housing stock was approximately 61 percent single-family homes, 35 percent multi-family homes, and 4 percent mobile homes. Single-family residences generally contain larger landscaped areas, predominantly planted in turf, and require more water for outdoor application in comparison to other types of housing. The general characteristics of multi-family and mobile homes limit outdoor landscaping and water use, although some condominium and apartment developments do contain green belt areas.

2.1.2 Commercial and Industrial Demand

Commercial water demands generally consist of incidental uses but are necessary for the operation of a business or institution, such as drinking, sanitation, and landscape irrigation. Major commercial water users include service industries, such as restaurants, car washes, laundries, hotels, and golf courses. Economic statistics developed by the San Diego Regional Chamber of Commerce indicate that almost half of San Diego's residents are employed in commercial (trade and service) industries.

Industrial water consumption consists of a wide range of uses, including product processing and small-scale equipment cooling, sanitation, and air conditioning. Water-intensive industrial uses in the City of San Diego, such as electronics manufacturing and aerospace manufacturing, typically require smaller amounts of water when compared to other water-intensive industries found

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elsewhere in Southern California, such as petroleum refineries, smelters, chemical processors, and canneries.

The tourism industry in San Diego County affects water usage within the Water Authority's service area not only by the number of visitors, but also through expansion of service industries and attractions, which tend to be larger outdoor water users. Tourism is primarily concentrated in the summer months and affects seasonal demands and peaking. SANDAG regional population forecasts do not specifically account for tourism, but tourism is reflected in the economic forecasts, and it causes per capita use to increase.

2.2 AGRICULTURAL WATER DEMAND

The coastal and inland valley areas of the county possess a moderate and virtually frost-free climate able to support a variety of sub-tropical crops, making the San Diego area a unique agricultural region. The primary crops grown for the national and international markets are avocados, citrus, cut flowers, and nursery products. To a lesser extent, local fresh market crops and livestock are produced in the Water Authority's service area. In recent years, agriculture has accounted for 10 to 20 percent of the Water Authority's total water demand depending on weather conditions.

The Water Authority is the largest consumer of agricultural water within Metropolitan's service area, accounting for over 65 percent of Metropolitan's total agricultural water demands in FY 2004. Agricultural water use within the Water Authority's service area is concentrated mainly in the north county, and includes member agencies such as the Rainbow, Valley Center, Ramona, and Yuima Municipal Water Districts, the Fallbrook Public Utility District, and the City of Escondido.

2.3 TOTAL CURRENT AND HISTORIC WATER USE

Water use in the San Diego area is closely linked to the local economy, population, and weather. Over the last half-century a prosperous local economy has stimulated population growth, which in turn produced a relatively steady increase in water demand. By 1999, a new combination of natural population increases and job creation surfaced as the primary drivers of long-term water consumption increases. In FY 2004, water demand in the Water Authority's service area reached a record level of 715,763 AF, only to drop to 642,152 AF in FY 2005 due to above average rainfall. **Table 2-1** shows the historic water demand within the Water Authority's service area.

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TABLE 2-1
HISTORIC WATER DEMAND WITHIN WATER AUTHORITY SERVICE AREA
(1995-2005)

FISCAL YEAR	WATER USE (AF)
1995	526,053
1996	615,900
1997	621,739
1998	562,225
1999	619,409
2000	694,995
2001	646,387
2002	686,530
2003	649,622
2004	715,763
2005	642,152

Source: Water Authority Annual Reports

Figures 2-1 and 2-2 show the estimated and projected relative percentages of various categories of water demand within the Water Authority's service area for FY 2005 and FY 2030. In these figures, residential demand includes single-family residential and multi-family residential.

FIGURE 2-1
ESTIMATED TYPE OF WATER USE
FY 2005

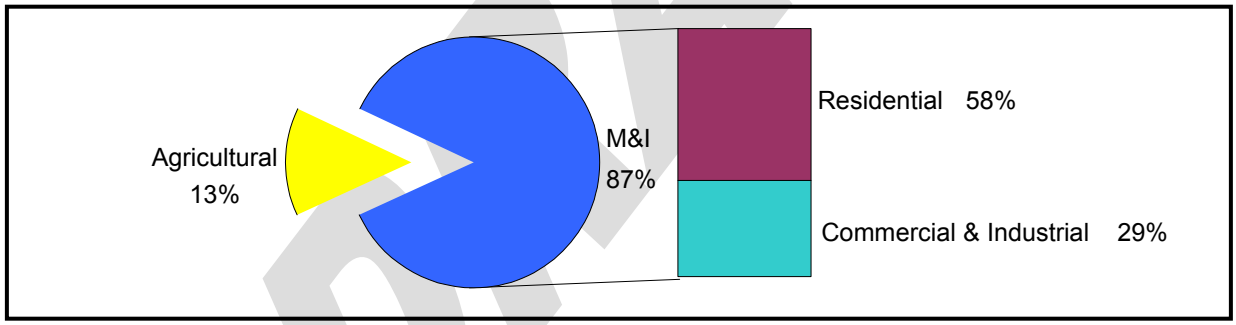
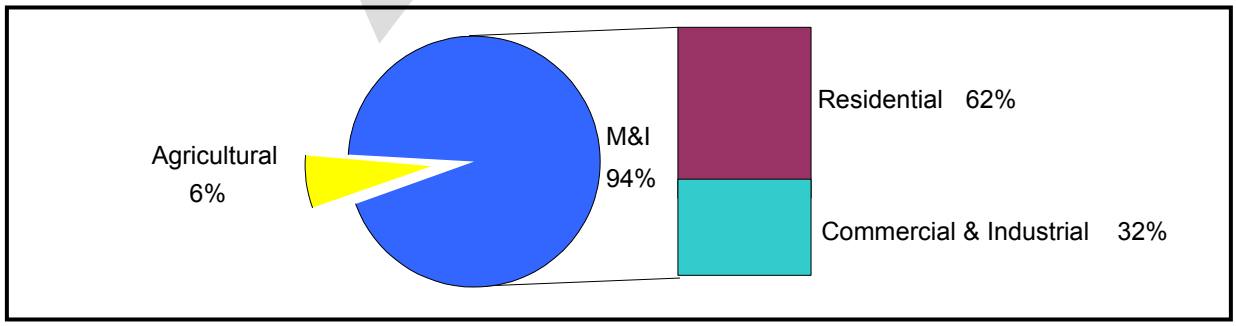


FIGURE 2-2
PROJECTED TYPE OF WATER USE
FY 2030



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2.4 PROJECTED WATER DEMANDS

In 1994, the Water Authority selected the Institute for Water Resources - Municipal And Industrial Needs (MAIN) computer model to forecast M&I water use for the San Diego region. The MAIN model uses demographic and economic data to project sector-level water demands (i.e. residential and non-residential demands). This econometric model has over a quarter of a century of practical application and is used by many cities and water agencies throughout the United States. The Water Authority's version of the MAIN model was modified to reflect the San Diego region's unique parameters and is known as CWA-MAIN.

As stated, the foundation of the water demand forecast is the underlying demographic and economic projections. This was a primary reason, why, in 1992, the Water Authority and SANDAG entered into a Memorandum of Agreement (MOA), in which the Water Authority agreed to use SANDAG's current regional growth forecast for water supply planning purposes. In addition, the MOA recognizes that water supply reliability must be a component of San Diego County's regional growth management strategy as required in Proposition C (passed by San Diego County voters in 1988). The MOA ensures a strong linkage between local general plan land use forecasts and water demand projections for the San Diego region.

Consistent with previous CWA-MAIN modeling efforts, the 2005 water demand forecast update utilized the latest official SANDAG demographic projections. The new SANDAG 2030 Forecast, released in December 2003, extended the projection horizon an additional ten years to 2030. Member agency-level demographic and economic projections were compiled from this SANDAG forecast and incorporated into the MAIN model. Demand projections for the Marine Corps Base Camp Pendleton (MCB Camp Pendleton) were forecast outside of the MAIN model due to uncertainty regarding future land use development. Water-use projections for the various developments within the MCB Camp Pendleton area were based on historic demand trends, which were then added to the baseline forecast.

The M&I forecast also included an updated accounting of projected conservation savings based on projected regional implementation of the CUWCC Best Management Practices and SANDAG demographic information for the period 2005 through 2030. These savings estimates were then factored into the baseline M&I forecast. **Section 3.3** discusses the derivation of the estimated savings.

A separate agricultural model, also used in prior modeling efforts, was used to forecast water demands within the Water Authority service area. This model estimates agricultural demand met by the Water Authority's member agencies based on agricultural acreage projections provided by SANDAG, crop distribution data derived from the DWR and the California Avocado Commission, and average crop-type watering requirements based on California Irrigation Management Information System (CIMIS) data.

Utilizing SANDAG's most recent growth forecast to project future water demands is an important link to the land use plans of the cities and the county. This process ensures supplies are being planned to meet future growth. Any revisions to the land use plans are captured in SANDAG's updated forecasts. The Water Authority will update its demand forecast based on SANDAG's most recent forecast approximately every five years to coincide with preparation of

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the urban water management plan. Prior to the next forecast update, local jurisdictions may require water supply availability reports under Senate Bills 610 and 221 for proposed land use developments that have a higher density than reflected in the existing growth forecast. The increased density could result in a higher demand for the parcel than originally anticipated. In evaluating the availability of supply, the Water Authority member agency can determine if "offset" supplies are available as a result of other land use decisions, which lowered water use within their service area. In addition, Metropolitan's draft 2005 Regional Urban Water Management Plan identified potential reserve supplies in the supply capability analysis (Tables II-7, II-8, II-9), which could be available to meet the unanticipated demands. The Water Authority's next forecast and other supply planning documents would then capture this increase in demands.

2.4.1 Projected Normal Water Demands

Table 2-2 shows projected normal water demand for the Water Authority through 2030. The baseline M&I demand forecast reflects an adjustment for estimated water conservation, MCB Camp Pendleton area demands, and forecasted agricultural water use, to produce total projected demand. Water conservation measures are expected to reduce total M&I demands by approximately 12 percent in 2030, with an estimated savings of 108,400 AF. Agricultural water use is projected to decrease by approximately 42 percent between 2010 and 2030, to an estimated 51,630 AF, primarily due to the conversion of agricultural land to residential use.

To fully quantify probable demands served by the Water Authority, lands with impending applications for annexation to the Water Authority's service area were identified. ~~Projected water demands for those parcels likely to annex within the next five years were compiled and added to the forecast.~~ Working with its member agencies, the Water Authority identified potential near-term annexations as being parcels that may be annexed to the Water Authority within the next five years. Estimated water demands for those parcels were provided to the Water Authority by the member agency or project proponent and then added to the forecast. Including the demands provides no assurance of annexation; approval by the Water Authority Board would be required before water service is provided to these lands. It is difficult to know exactly which parcels will be annexed and when, but including this additional demand will provide for more comprehensive supply planning and assist member agencies in complying with Senate Bills 610 and 221.

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TABLE 2-2
NORMAL YEAR WATER DEMAND FORECAST
ADJUSTED FOR WATER CONSERVATION
(2010-2030)

YEAR	M&I BASELINE FORECAST (AF)	ESTIMATED CONSERVATION SAVINGS (AF)	M&I FORECAST REDUCED BY CONSERVATION [1] (AF)	AGRICULTURAL FORECAST (AF) [2]	TOTAL PROJECTED DEMAND (AF)	TOTAL PROJECTED DEMAND WITH PENDING ANNEXATIONS [3]
2010	699,250	79,960	619,290	89,700	708,990	715,450
2015	739,020	87,310	651,710	83,130	734,840	742,900
2020	780,350	94,170	686,180	77,270	763,450	771,510
2025	830,550	101,950	728,600	58,980	787,580	795,640
2030	877,740	108,400	769,340	51,630	820,970	829,030

Source: CWA-MAIN Forecast (August 2005)
[1] Includes M&I demands for Camp Pendleton area customers.
[2] Includes certified IAWP agricultural water and non-credited agricultural water.
[3] Estimated near-term annexation demands are 6,455AF/YR in 2010 and 8,060 AF/YR in years 2015, 2020, 2025 and 2030. The potential near-term annexations used to calculate the estimate include, Otay Ranch Village 3 (1,961AF), Peaceful Valley Ranch (51AF), Sycuan Reservation (392AF), San Luis Rey MWD (includes the Meadowood development) (4,217AF) and four potential annexations to Yuima MWD (1,435AF). Including the demands for these parcels does not limit the Board's discretion to deny or approve these or other annexations not contemplated at this time.
~~are tentatively included in draft water demand forecast total. Final determination on including near-term annexation demands in final water demand forecast to be made by Board of Directors.~~

Figure 2-3 illustrates the projected trend in water demands over the 2005 to 2030 time frame. This figure combines historic water use and forecasted CWA-MAIN model demands based on SANDAG 2030 demographic and economic projections.

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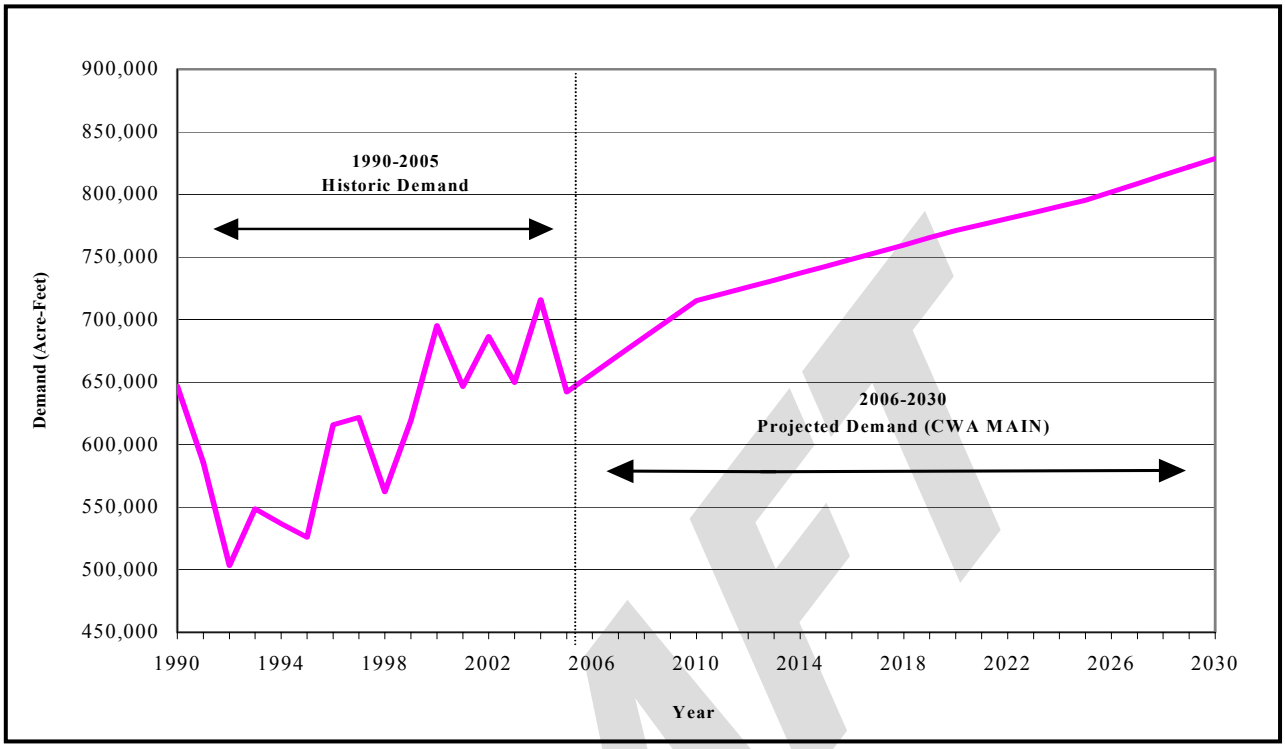
FIGURE 2-3
REGIONAL HISTORIC AND PROJECTED NORMAL WATER DEMANDS



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2.4.2 Projected Dry-Year Water Demands

To assess water service reliability during dry-year events, the Act requires single dry-year and multiple dry-year demand projections, in five-year increments. Based on observed historic demand impacts associated with each of these events, separate approaches were taken to project single and multiple dry-year conditions.

Since the CWA-MAIN model was constructed to project water demands over discrete twelve-month periods and utilizes weather as a predictive variable; it was utilized to forecast single dry-year demands for the region. By inserting annual dry-year weather data into the model and holding all non-weather related predictive variables constant for a given year, the model produces an annual forecast of weather-driven demand. An analysis of historic dry-year events was performed to select a representative year. This analysis evaluated the relative impact of weather (e.g. high temperature and low rainfall) to resulting total water demand, and also the availability of local supplies. Using this criterion, 1989 was selected as the representative single dry-year event. Weather data for 1989 was then run through the model for each five year increment. Projected single dry-year demands are shown in **Table 2-3**.

TABLE 2-3
SINGLE DRY-YEAR TOTAL WATER DEMAND FORECAST
FIVE-YEAR INCREMENTS
(AF/YR)

	2010	2015	2020	2025	2030
Single Dry-Year Demands	767,650	795,970	825,560	848,610	883,030

The Act requires agencies to prepare multiple dry-year demand scenarios every five years for at least 20 years. An analysis of historic water demands reveals that multiple dry-year events may have a compounding effect on demands that is not captured through the modeling of discrete yearly weather patterns. For this reason, the CWA-MAIN model was not directly used to project multiple dry-year demands. Instead, an alternative method which utilized a 7% annual increase in demands was used to develop the multiple dry-year scenarios. This value is supported by the projected yearly increase in demands generated from the CWA-MAIN model single dry-year forecast. The annual 7% factor was applied to the normal year demand estimates to generate the multiple dry-year demand projections shown in **Tables 2-4, 2-5, 2-6, 2-7,** and **2-8**.

MULTIPLE DRY-YEAR TOTAL WATER DEMAND FORECAST
FIVE-YEAR INCREMENTS
(AF/YR)

TABLE 2-4

	2006	2007	2008
Total Estimated Demands	744,520	749,780	755,030

TABLE 2-5

	2011	2012	2013
Total Estimated Demands	771,410	777,280	783,150

TABLE 2-6

	2016	2017	2018
Total Estimated Demands	801,030	807,150	813,270

TABLE 2-7

	2021	2022	2023
Total Estimated Demands	830,680	835,840	841,010

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TABLE 2-8

	2026	2027	2028
Total Estimated Demands	858,480	865,630	872,770

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SECTION 3 - DEMAND MANAGEMENT

3.1 DESCRIPTION

Demand management, or water conservation, is frequently the lowest-cost resource available to the Water Authority and its member agencies. Water conservation is a critical part of the Water Authority's 2005 Plan and long-term strategy for meeting water supply needs of the San Diego region. The goals of the Water Authority's water conservation program are to (1) reduce demand for more expensive, imported water; (2) demonstrate continued commitment to the Best Management Practices (BMPs) and Agricultural Efficient Water Management Practices (EWMPs); (3) ensure a reliable future water supply; and (4) reduce consumption during periods of high treated-water demand.

3.2 BEST MANAGEMENT PRACTICES

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The urban Best Management Practices, or BMPs, for water conservation included in the MOU are intended to reduce California's long-term urban water demands. **Table 3-1** provides an overview of the Water Authority and its member agencies' progress in the implementation of the BMPs. Most member agencies are signatories to the MOU and submit biennial BMP reports to show compliance with the appropriate BMPs. **Appendix D** shows the Water Authority's FY 01, 02, 03, and 04 BMP Reports, as well as the Coverage Reports for FY 04. Major Water Authority activities include actively participating to develop and implement statewide BMPs; participating with member agencies, Metropolitan, the CUWCC, and the American Water Works Association Research Foundation in research and development activities; and implementing public information and education programs.

Implementation of BMPs

The Water Authority began implementing its aggressive conservation program in 1990. Some of the early programs to address the BMPs provided financial incentives for retrofitting high-water-use toilets with ultra-low-flush models and distributed low-flow showerheads to consumers. Since the program's inception, the Water Authority and its member agencies have provided incentives for the installation of over 528,000 ultra-low-flush toilets (ULFTs). In addition, financial incentives have been provided for the installation of more than 45,100 residential high-efficiency clothes washers (HEWs), 7,600 coin-operated HEWs, 355 cooling tower conductivity controllers, and 3,200 pre-rinse spray valves. The Water Authority, its member agencies, and San Diego Gas & Electric have also distributed over half-a-million showerheads to customers. Since 1990, the Water Authority has invested more than $12 million to help implement these and other conservation programs. In addition, the Water Authority's member agencies have invested a similar amount to co-fund these conservation programs.

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TABLE 3-1
BEST MANAGEMENT PRACTICES FOR
URBAN WATER CONSERVATION IN CALIFORNIA

BMP	DESCRIPTION	CONSERVATION PROGRAMS	COMPLIANCE [1]	SDCWA Assistance
1	Residential Water Surveys	Residential Survey Program	√ Yes	√ Yes
2	Residential Plumbing Retrofit	Showerhead distribution	√ Yes	√ Yes
3	Distribution System Water Audits	Water Authority and member agencies independently operate separate system audits	√ Yes	
4	Metering with Commodity Rates	Member agencies operate	√ Yes	
5	Large Landscape Programs and Incentives	▪ Commercial Landscape Incentive Program ▪ Landscape Assistance Program for Business and Home ▪ Protector Del Agua	√ Yes	√ Yes
6	High-Efficiency Washing Machine (HEW) Rebate Programs	▪ Residential HEW Voucher Program	√ Yes	√ Yes
7	Public Information Programs	▪ Media Coverage ▪ Xeriscape Awards ▪ WebSite ▪ Water Conservation Literature	√ Yes	
8	School Education Programs	▪ Classroom Presentations ▪ Splash Science Mobile Lab ▪ Youth Merit Badge Program ▪ Magic Show ▪ Teaching Garden ▪ Mini-grants of up to $250	√ Yes	
9	Commercial, Industrial & Institutional (CII) Water Conservation Programs	▪ CII Voucher Program ▪ Industrial Process Improvement Program	√ Yes	√ Yes
10	Wholesale Agency Assistance Programs	Ongoing	√ Yes	
11	Conservation Pricing	Member agencies operate	√ Yes	
12	Water Conservation Coordinator	Water Resources staff	√ Yes	
13	Water Waste Prohibition	Member agencies operate	√ Yes	
14	Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs	Residential ULFT Voucher Program	√ Yes	√ Yes

[1] The Water Authority and one or more of its member agencies comply with the statewide BMPs listed.
[2] The Water Authority provides financial assistance to its member agencies to implement conservation programs.

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The Water Authority's FY 05 budget included $972,000 for conservation programs that are anticipated to save 68,000 acre-feet per year over the useful life of the measures. The Water Authority's member agencies, Metropolitan, and the DWR augment this funding. In FY 05 this additional funding totaled $4.74 million, bringing the total FY 05 amount budgeted for all conservation programs to $5.7 million. The Water Authority provides approximately 20 percent of all conservation funding and manages most of the programs for its member agencies. The Water Authority also administers the Agriculture Water Management Program and CIMIS for agricultural use. **Appendix D**, the CUWCC BMP Reports for FY 01, 02, 03, and 04, contains additional information on implementation of the BMPs by the Water Authority.

Revenue Impacts

Water conservation is a well-established practice in ensuring that there will be a reliable water supply in the future for the increasing population and commerce of our local region. However, conservation occasionally suffers from the perception that it reduces revenues. Over the long-term, conservation measures actually serve to defer or limit rate increases by reducing the region's need for other, more expensive supplies and increased infrastructure. The Water Authority's FY 05 budget included $972,000 for conservation programs, which represents an average cost of $1.74 per acre-foot of projected water sales during FY 05. Conservation programs also reduce imported water demand that in turn allows the Water Authority to purchase less of Metropolitan's more expensive Tier 2 water. Tier 2 water is more expensive since it represents Metropolitan's cost to develop additional supplies.

3.3 FUTURE WATER CONSERVATION SAVINGS

Projected water savings and effectiveness provided in the 2005 Plan are based on industry standard methodologies for calculating savings, as defined by the CUWCC. The Water Authority assists the CUWCC in conducting pilot programs and analyzing ways to increase the accuracy of savings calculation methodologies. Projections show that implementing existing and proposed urban BMPs would produce water savings of approximately 108,396 AF/YR by the year 2030 within the Water Authority's service area (**Table 3-2**).

This conservation target is appropriate to implement the BMPs and fulfill the Water Authority's commitment to the MOU. Additionally, this target coincides with the availability of anticipated funds from member agencies, the Water Authority, and/or Metropolitan. The estimates presented in **Table 3-2** are based on savings projections from implementing various conservation measures and the result of state and national efficiency standards. The table represents a projection of the amount of water that will be conserved based on the best information available at this time.

Future water conservation savings are based on historical activity for Residential Surveys, Residential Retrofits, High-Efficiency Clothes Washer Incentives, and Toilet Incentives. Efficiency Standards include water-saving devices installed in new residential construction as part of state-required codes, as well as toilets replaced through natural replacement outside of the toilet incentive. Updated SANDAG demographic information is utilized to determine savings for new construction through BMP implementation.

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TABLE 3-2
POTENTIAL WATER CONSERVATION SAVINGS THROUGH 2030
WITHIN WATER AUTHORITY SERVICE AREA (AF)

Best Management Practices	2005	2010	2015	2020	2025	2030
Existing BMPs						
Residential Surveys	1,620	1,620	1,620	1,620	1,620	1,620
Residential Retrofits	8,100	8,100	8,100	8,100	8,100	8,100
Landscape [1]	3,524	18,848	21,793	24,783	27,744	30,718
Clothes Washer Incentives	495	1,281	1,672	1,672	1,672	1,672
Commercial/Industrial/Institutional	2,260	3,328	5,056	6,801	8,533	10,272
Toilet Incentives	17,553	23,616	23,616	23,616	23,616	23,616
Subtotal	**33,551**	**56,792**	**61,857**	**66,593**	**71,286**	**75,998**
Potential BMPs and Efficiency Standards						
Efficiency Standards [2]	19,837	23,137	25,409	27,526	30,598	32,323
Graywater	0	25	30	40	50	50
On Demand Water Heaters	0	5	10	15	20	25
Subtotal	**19,837**	**23,167**	**25,449**	**27,581**	**30,668**	**32,398**
TOTAL [3]	**53,389**	**79,960**	**87,306**	**94,174**	**101,954**	**108,396**

[1] Includes savings from Audits, Artificial Turf, WBIC (residential & commercial), Water Budget, and CLIP programs.
[2] Code Compliance: new construction, ULFT natural replacement @ 4%, commercial HEWs natural replacement.
[3] Values may not add to exact total due to rounding.

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On average, more than 50 percent of the water used in San Diego County goes to outdoor watering, and the savings potential from this irrigation is significant. Landscape savings are based on full implementation of BMP 5, through water budgets, large landscape audits, and irrigation hardware replacements. Some of these measures are labor intensive and may be a challenge to achieve due to the limited resources of member agencies.

Water savings in the Commercial, Industrial, and Institutional (CII) sector are based on both historical activity and anticipated new water-efficient products that will experience expanded use. These products include multi-load commercial HEWs, food steamers, commercial dishwashers, and waterless urinals.

Some of the BMPs that are not quantified in **Table 3-2,** such as public information and school education, do not directly result in water savings. Instead, these BMPs result in a decision by a water user to take an action that will result in savings. For example, a water user may learn about the availability of HEWs through a public information program, but water will not be saved until the user installs a new HEW. To avoid double counting, the projected savings from the machine is reflected only in the high-efficiency washing machine BMP.

The Water Authority is a statewide leader of innovative programs in water conservation. Efforts have been so successful, however, that many of the conservation programs implemented in the early 1990s are maturing. Additional measures are now being taken to achieve further water savings, particularly in the CII and landscape sectors.

3.3.1 Landscape

Additional landscape water savings can potentially be achieved through incentives, regulations, and rates. In 2004, new programs included financial incentives for purchasing and installing self-adjusting, weather-based irrigation controllers, financial incentives to purchase improved efficiency irrigation devices, additional conservation literature, expanded water user efficient irrigation training programs, an artificial turf incentive program, and support for the Water Conservation Garden.

As a result of the passage of the Water Authority sponsored Assembly Bill 2717, the Landscape Water Conservation Task Force has convened a stakeholders workgroup to evaluate and recommend proposals for improving the efficiency of water use in new and existing urban irrigated landscapes. Potential regulations include the requirement that residential sites have a dedicated water meter for outdoor use and a dedicated water meter for indoor use. Another potential regulation would require homeowners associations to allow water-efficient landscape if desired by the homeowner.

3.3.2 Commercial, Industrial, & Institutional

For the past decade, the Water Authority has used its extensive relationships with manufacturers, suppliers and contractors to increase participation in the CII Voucher Incentive Program (VIP) with a point-of-purchase service to customers. A number of new water-saving devices have recently been incorporated into the CII Program, including a hospital x-ray processor recirculating system that can save up to 3.2 acre-feet per year per system; water pressurized brooms, which save as much as 50,000 gallons per year per location; and pre-rinse spray valves, which can save up to 50,000 gallons of water annually.

The Industrial Process Improvement Program offers financial assistance to local industries to encourage investment in water saving process improvements. In the future, the Water Authority may consider providing additional funds to qualified projects to maximize water saving possibilities in the commercial, industrial and institutional sectors. Ever-advancing technologies coupled with an aggressive marketing plan provides solid foundations for these growing programs.

3.3.3 Residential

Programs, such as the HEW and ULFT VIP that target residential customers, have been highly effective in achieving conservation savings. The Residential ULFT VIP has been effective in encouraging toilet retrofits and is being expanded to serve other markets such as new residential construction. The current program focuses on multi-family sites and incentives for dual-flush toilets to maximize the water savings. Dual-flush toilets have two flushing mechanisms, one for liquid waste (0.8-1.1 gallons per flush) and one for solid matter (1.6 gallons per flush). Each of these toilets saves 2,250 gallons per year more than standard ULFTs.

The Residential HEW VIP has evolved to encourage consumers to purchase the most water efficient models. Clothes washers eligible for incentives use 65 percent less water than standard

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washers. This savings will be expanded by further limiting the amount of water used in the washers that are eligible for vouchers. Effective in July 2005, only HEWs with a water efficiency factor of 6.0 or less will be eligible for incentives. The water efficiency factor is determined by the amount of water it takes to wash a cubic foot of laundry. The lower the water efficiency factor, the greater the water efficiency of the clothes washer.

Studies for hot-water-on-demand systems are proceeding, and the outcome of those studies will help determine appropriate programs for encouraging the use of these systems in new homes. Finally, the Water Authority and its member agencies will continue to cooperate with the CUWCC and Metropolitan to identify future opportunities for water conservation savings.

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SECTION 4 – SAN DIEGO COUNTY WATER AUTHORITY SUPPLIES

Historically, the Water Authority has relied on imported water supplies purchased from Metropolitan to meet the needs of its member agencies. Metropolitan's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing severe shortages from Metropolitan during the 1987-1992 drought, the Water Authority began aggressively pursuing actions to diversify the region's supply sources. Comprehensive supply and facility planning over the last 12 years has provided the direction for implementation of these actions.

A Water Resources Plan developed in 1993 and updated in 1997 emphasized the development of local supplies and core water transfers. Consistent with the direction provided in the 1997 Water Resources Plan, the Water Authority entered into a Water Conservation and Transfer Agreement with IID, an agricultural district in neighboring Imperial County in 1998. Through the transfer agreement, the Water Authority will receive 30,000 AF in 2005, with the volume increasing annually until it reaches 200,000 AF/YR in 2021.

To further diversify regional supplies, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority Board approved a Seawater Desalination Action Plan in 2001. The current focus of the Action Plan is on developing a 50-mgd seawater desalination facility at the Encina Power Station in the City of Carlsbad by 2011.

In addition, the 2000 Plan identified the need for other competitive imported water sources to meet the demands of the region. In 2003, as part of the execution of the Quantification Settlement Agreement (QSA) on the Colorado River, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal will reach the region by 2007, and from the All-American Canal by 2008. This section provides specific documentation on the existing and projected supply sources being implemented by the Water Authority.

4.1 WATER AUTHORITY – IID WATER CONSERVATION AND TRANSFER AGREEMENT

On April 29, 1998, the Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority-IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by Imperial Valley farmers who voluntarily participate in the program and then transferred to the Water Authority for use in San Diego County.

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4.1.1 Implementation Status

On October 10, 2003, the Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified certain aspects of the 1998 Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003. **Section 6.2.1** contains details on the QSA.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water transfer, and related agreements. The lawsuits have been coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and State are defending these suits and coordinating to seek validation of the contracts. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation, please contact the Water Authority's General Counsel.

4.1.2 Expected Supply

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 AF. The Water Authority received 20,000 AF in 2004 and will receive an additional 30,000 AF by the end of the year 2005. The quantities will increase annually to 200,000 AF by 2021 then remain fixed for the duration of the transfer agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

During dry years, when water availability is low, the conserved water will be transferred under IID's Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks. In recognition for the value of such reliability, the 1998 contract required the Water Authority to pay a premium on transfer water under defined regional shortage circumstances. The shortage premium period duration is the period of consecutive days during which any of the following exist: i) a Water Authority shortage; ii) a shortage condition for the Lower Colorado River as declared by the Secretary; and iii) a Critical Year. Under terms of the October 2003 amendment, the shortage premium will not be included in the cost formula until Agreement Year 16.

4.1.3 Transportation

The Water Authority entered into a water exchange agreement with Metropolitan on October 10, 2003, to transport the Water Authority-IID transfer water from the Colorado River to San Diego County. Under the exchange agreement, Metropolitan will take delivery of the transfer water through its Colorado River Aqueduct. In exchange, Metropolitan will deliver to the Water Authority a like quantity and quality of water. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. According to the water

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exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority elects to extend the agreement another 10 years for a total of 45 years.

4.1.4 Cost/Financing

The costs associated with the transfer are proposed to be financed through the Water Authority's rates and charges. In the agreement between the Water Authority and IID, the price for the transfer water started at $258/AF and increases by a set amount for the first five years. The 2005 price for transfer water is $276/AF. Procedures are in place to evaluate and determine market-based rates following the first five-year period.

In accordance with the October 2003 amended exchange agreement between Metropolitan and the Water Authority, the initial cost to transport the conserved water was $253/AF. Thereafter, the price would be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable laws and regulation, and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies. The transportation charge in 2005 is $258/AF.

The Water Authority is providing $10 million to help offset potential socioeconomic impacts associated with temporary land fallowing. IID will credit the Water Authority for these funds during years 16 through 45. At the end of the fifth year of the transfer agreement (2007), the Water Authority will prepay IID an additional $10 million for future deliveries of water. IID will credit the Water Authority for this up-front payment during years 16 through 30.

As part of implementation of the QSA and water transfer, the Water Authority also entered into an environmental cost sharing agreement. The agreement specifies that the Water Authority will contribute $64 million for the purpose of funding environmental mitigation costs and contributing to the Salton Sea Restoration Fund.

4.1.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Water Authority–IID Transfer.

4.1.6 Existing and Future Supplies

Based on the terms and conditions in the Transfer Agreement, **Table 4-1** shows the anticipated delivery schedule of the conserved transfer water in 5-year increments. There is adequate documentation to demonstrate the availability of this supply, and therefore, the supply yields shown in **Table 4-1** will be included in the reliability analysis found in **Section 8** of this 2005 Plan.

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TABLE 4-1
EXISTING AND PROJECTED
WATER AUTHORITY – IID TRANSFER SUPPLIES
(Normal Year - AF/YR)

2005	*2010*	*2015*	*2020*	*2025*	*2030*
30,000	70,000	100,000	190,000	200,000	200,000

4.2 ALL-AMERICAN CANAL AND COACHELLA CANAL LINING PROJECTS

As part of the QSA and related contracts, the Water Authority was assigned Metropolitan's rights to 77,700 AF/YR of conserved water from projects that will line the All-American Canal (AAC) and Coachella Canal (CC). The projects will reduce the loss of water that currently occurs through seepage, and the conserved water will be delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million acre-feet over the 110-year life of the agreement.

4.2.1 Implementation Status

Earthwork for the Coachella Canal lining project began in November 2004 and involves approximately 37 miles of canal. National Environmental Policy Act (NEPA) and CEQA documentation is complete, including an amended Record of Decision by the U.S. Bureau of Reclamation (USBR). The amendment was required after revising the project design: instead of lining the canal in place, the project now entails the construction of a parallel canal. The current project schedule provides 30 months for construction, resulting in an estimated completion date of early-2007.

Preliminary design-related activities have begun on the AAC lining project, including ground and aerial surveying, mapping cultural resources, and geotechnical investigations. The lining project consists of constructing a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3. NEPA and CEQA documentation is complete, environmental mitigation measures have been identified and Endangered Species Act consultations are pending. Construction of the project is expected to begin by early-2006 and be completed in late-2008.

In July 2005, a lawsuit (*CDEM v United States,* Case No. CV-S-05-0870-KJD-PAL) was filed in the U. S. District Court for the District of Nevada on behalf of U.S. and Mexican groups challenging the lining of the AAC. The lawsuit, which names the Secretary of the Interior as a defendant, claims that seepage water from the canal belongs to water users in Mexico. California water agencies note that the seepage water is actually part of California's Colorado River allocation and not part of Mexico's allocation. The plaintiffs also allege a failure by the United States to comply with environmental laws. Federal officials have stated that they intend to vigorously defend the case.

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4.2.2 Expected Supply

The AAC lining project will yield 67,700 AF of Colorado River water per year for allocation upon completion of construction. The CC lining project will yield 26,000 AF of Colorado River water each year available for allocation upon completion of construction. The October 10, 2003, Allocation Agreement states that 16,000 AF/YR of conserved canal lining water will be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, will be available to the Water Authority. According to the Allocation Agreement, IID has call rights to a portion (5,000 AF/YR) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

4.2.3 Transportation

The October 10, 2003, Exchange Agreement between the Water Authority and Metropolitan also provides for the delivery of the conserved water from the canal lining projects. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. In the Agreement, Metropolitan will deliver the canal lining water for the term of the Allocation Agreement (110 years).

4.2.4 Cost/Financing

Under California Water Code Section 12560 et seq., the Water Authority will receive $200 million in state funds for construction of the projects. In addition, under California Water Code Section 79567, $20 million from Proposition 50 is also available for the lining projects. Additionally, the Water Authority will receive $35 million for groundwater conjunctive use projects as part of the agreement. The Water Authority would be responsible for additional expenses above the funds provided by the state.

The rate to be paid to transport the canal lining water will be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable law and regulation and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies.

In accordance with the Allocation Agreement, the Water Authority will also be responsible for a portion of the net additional Operation, Maintenance, and Repair (OM&R) costs for the lined canals. Any costs associated with the lining projects as proposed, are to be financed through the Water Authority's rates and charges.

4.2.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Canal Lining Projects.

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4.2.6 Future Supplies

Table 4-2 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in 5-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in **Section 8** of this 2005 Plan will show the supply yields shown in **Table 4-2**.

TABLE 4-2
PROJECTED SUPPLY FROM CANAL LINING PROJECTS
(Normal Year - AF/YR)

	2005	*2010*	*2015*	*2020*	*2025*	*2030*
CC Lining Project [1]	0	21,500	21,500	21,500	21,500	21,500
AAC Lining Project [2]	0	56,200	56,200	56,200	56,200	56,200
TOTAL:	0	77,700	77,700	77,700	77,700	77,700

[1] The estimated project completion date is mid-2007.
[2] The estimated completion date is late-2008.

4.3 WATER AUTHORITY SEAWATER DESALINATION PROGRAM

The development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reducing dependence on imported supplies, and providing a new drought-proof treated water supply.

The Water Authority has been evaluating seawater desalination as a potential highly reliable local water resource since the early 1990s. From 1991 to 1993, the Water Authority conducted detailed studies on the feasibility of developing a seawater desalination facility at the South Bay Power Plant in the City of Chula Vista and Encina Power Station in the City of Carlsbad. During that period, the Water Authority also participated in a study for a desalination plant that would be sited at a power plant in Rosarito Beach, Mexico. The studies concluded that the environmental, regulatory and cost issues combined to make desalinated seawater more expensive than other available water resources options.

Data gathered from recently completed projects worldwide seem to indicate that the cost of seawater desalination has decreased since the Water Authority completed its last study in 1993. This decrease is mainly due to significant technological advances in the development and manufacture of membranes. The reverse osmosis (RO) membranes used in the desalination process cost approximately half the price and are twice as productive as membranes produced ten to fifteen years ago.

Based on the potential reduction in project costs, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority Board approved a Seawater Desalination Action Plan in January 2001. The Action Plan covered activities related to the evaluation of seawater desalination opportunities along the San Diego County coastline.

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In June 2004, following the Water Authority's RWFMP process, the Water Authority Board of Directors approved adding $668 million to the CIP to develop a desalinated seawater supply. Development of the first phase of the desalinated seawater supply, 56,000 AF/YR, is planned for 2011, with an additional 33,600 AF/YR planned for 2015.

The Water Authority's current seawater desalination efforts focus on three main areas within San Diego County: Encina Power Station in the City of Carlsbad (Carlsbad), San Onofre Generating Station (SONGS) in the northern portion of San Diego County on MCB Camp Pendleton, and the South Bay/South County area.

4.3.1 Regional Seawater Desalination Facility at Encina

The proposed regional seawater desalination project at the Encina Power Station in Carlsbad (Project) includes a 50-mgd seawater desalination facility and a conveyance system consisting of pipelines, pumping station(s), storage tanks, and other appurtenances necessary to deliver and integrate the desalinated water into the Water Authority's aqueduct system. The desalination facility is proposed to be sited within the power plant premises to take advantage of a number of co-location benefits such as an available site that meets land use requirements, access to power sources, and utilization of existing seawater intake and discharge infrastructure.

Implementation Status

To date the Water Authority has accomplished the following actions towards implementation of the project:

* The current CIP budget includes the estimated construction costs associated with the project;
* A preliminary design report has been completed for the distribution facilities;
* In September 2003, work began on an Environmental Impact Report (EIR) for both the desalination plant and conveyance system, with scheduled certification in early-2006;
* On April 28, 2005, the Water Authority entered into an agreement with the City of Carlsbad, the Carlsbad Municipal Water District, and the Carlsbad Housing and Redevelopment Commission to memorialize certain understandings and establish a framework for cooperation regarding the development of a regional seawater desalination project located at the Encina Power Station (Water Authority – Carlsbad Agreement); and
* Negotiations are underway with a private leaseholder at the Encina Power Station regarding a public/private partnership structure that would result in the development of a single regional seawater desalination project at the Encina Power Station.

One of the issues related to the implementation of this Project, along with any other seawater desalination projects located along the coastline, is the potential environmental impact that operating the facilities will have on the existing coastal and marine environment from the feedwater intake and the concentrate discharge. These issues are being addressed as part of the environmental review and permitting process for the Project.

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Cost/Financing

The CIP budget costs for the Project are included in the $668 million that the Water Authority's Board of Directors approved in June 2004. The Water Authority proposes to obtain outside funding and finance the Project through its rates and charges.

The Water Authority is pursuing external funding to offset the capital and operating cost of the Project, including funding through the Metropolitan Water District's Seawater Desalination Program (SDP), state funding through Proposition 50, and federal funding opportunities. In July 2005, the Metropolitan board approved a SDP funding agreement with the Water Authority for the Project.

The Water Authority secured federal funding in the FY 04 Omnibus Appropriations Act (Omnibus Act) for seawater desalination development. The Omnibus Act includes a provision under the VA/HUD State and Tribal Assistance Grants account program that provides funding for the Water Authority's seawater desalination program. The Water Authority received awards totaling $723,200 in FY 04 for seawater desalination project development activities at the Encina Power Station in Carlsbad, California. For FY 05, funding in the amount of $721,700 has been appropriated to the Water Authority for additional seawater desalination project development activities.

Federal, State, and Local Permits/Approvals

Table 4-3 provides a list of the major permits and discretionary actions required for the Project and the anticipated schedule for completion of the permitting process. Based on the estimated completion dates, the Water Authority anticipates the Project to be on-line in 2011.

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TABLE 4-3
LIST OF MAJOR PERMITS AND DISCRETIONARY ACTIONS

Permit or Discretionary Action	Purpose	Scheduled Completion
Certification of Environmental Impact Report	Satisfy the requirements of the California Environmental Quality Act.	2006
Endangered Species Act (ESA) Compliance	Satisfy ESA requirements.	2006
Coastal Development Permit	Satisfy the requirements of the California Coastal Act and the federal Coastal Zone Management Act.	2007
Domestic Water Supply Permit	Satisfy the requirements of the state and federal Safe Drinking Water Acts.	2007 (Conceptual approval)
National Pollutant Discharge Elimination System Permit	Satisfy the requirements of the federal Clean Water Act, California Water Code, Ocean Plan, and Comprehensive Water Quality Control Plan for the San Diego Region.	2007
Right-of-Way Acquisition for conveyance facilities	Acquire land necessary for construction of conveyance facilities.	2007

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Expected Supplies

Based on completion of the items shown in **Table 4-3** within the schedule, **Table 4-4** shows the estimated annual yield from the Project in 5-year increments. Adequate documentation exists to demonstrate the availability of this potential supply in the future, and therefore, the reliability analysis in **Section 8** of this 2005 Plan will include the supply yields shown in **Table 4-4**. The Water Authority – Carlsbad Agreement provides the City of Carlsbad the opportunity to receive up to 5,000 AF/YR of supply from the project; however, at this time the annual delivery amount for the City of Carlsbad has not been determined. **Table 4-4** shows the full yield from the proposed project.

TABLE 4-4
PROJECTED SEAWATER DESALINATION SUPPLY
REGIONAL PROJECT AT ENCINA POWER STATION
(Normal Year - AF/YR)

2005	*2010*	*2015*	*2020*	*2025*	*2030*
0	0	56,000	56,000	56,000	56,000

4.3.2 Additional Opportunities for Seawater Desalination Development

The Water Authority is also planning for an additional increment of seawater desalination beyond what is currently being planned at the Encina Power Station. This additional increment of supply will be an expansion of the facilities at the Encina Power Station and other options.

Expansion at Encina Power Station

While the Water Authority is currently focusing its efforts on implementing the 50-mgd seawater desalination project at Encina Power Station, the potential exists for future expansion at the site. Therefore, funding has been budgeted in the Water Authority's CIP for an additional 30-mgd at the Encina Power Station. If, after the completion of the 50-mgd project, expanding the project seems feasible, the Water Authority will conduct the necessary environmental documentation and permitting to implement an expanded project.

Seawater Desalination Pre-Feasibility Level Assessment/Fatal Flaw Analysis Study at the San Onofre Nuclear Generating Station

The Water Authority, in collaboration with the Municipal Water District of Orange County (MWDOC), completed a seawater desalination pre-feasibility level assessment/fatal flaw analysis study at SONGS in 2005. The purpose of this study was to determine whether there are sites suitable for a regional seawater desalination facility at or in the vicinity of generating station. A desalination facility at SONGS would provide a new water source and increase reliability for San Diego County and southern Orange County, and potentially provide back-up supplies to MCB Camp Pendleton.

The fatal flaw study considered nine potential sites. After screening all nine locations with a set of siting criteria, two sites – the Percolation Pond Site and the South State Park Site – underwent further evaluation. Both sites are adequate for a 50-mgd or 100-mgd facility, including an area for product water storage and a conveyance system pump station.

The product water conveyance systems from a desalination facility to the interconnection point within the Water Authority and MWDOC regional systems would include pump stations, pipelines, storage facilities, and other appurtenances. The study assumed that the product water from the desalination facility would be split 50/50 between the Water Authority and MWDOC.

This study also included a budgetary estimate for capital as well as operations and maintenance (O&M) costs for the desalination facility and conveyance systems (one segment heading north to MWDOC and the other heading south to San Diego).

The study identified no fatal flaws with respect to locating a regional 50-mgd to 100-mgd seawater desalination facility in the vicinity of SONGS. Based on the preliminary results of the study, the Water Authority and MWDOC are proceeding with the development of a detailed feasibility study with concurrence from MCB Camp Pendleton and Southern California Edison.

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South County/Tijuana Region Seawater Desalination Feasibility Study

In 2005, the Water Authority, in coordination with Mexico, completed a South County/Tijuana Region Seawater Desalination Feasibility Study (South County/Tijuana Study). The purpose of this study was to identify and evaluate, at a feasibility level, suitable sites in the United States and Mexico for a seawater desalination facility that could provide both domestic and cross-border water deliveries.

Overall, six sites in Mexico and eight sites in the United States were identified and screened. Sites at the South Bay Power Plant and property adjacent to the International Boundary and Water Commission wastewater treatment plant were selected in the United States. The Rosarito Power Plant site and the La Mision Beach Well site were selected in Mexico.

For each potential desalination facility identified, two-product water delivery scenarios were evaluated. The first scenario evaluated domestic water delivery only; the second evaluated domestic and cross-border water delivery.

Conclusions from the South County/Tijuana Study show that desalination is technically feasible in the Border region, including South County and Mexico. However, significant uncertainties exist over the viability of intake and discharge infrastructure, particularly for a project in the South County. In addition, with treated water demand in the South County not projected to exceed supply until 2018, a facility in the South County would not likely be economically viable prior to that date. As such, the Water Authority plans no further desalination study or project activity for the South County region for the near term.

Water Authority Seawater Desalination Program Goal

The Water Authority is currently focusing its efforts on implementing the 50-mgd seawater desalination project at the Encina Power Station but will continue to evaluate opportunities at San Onofre and South County along with an expansion beyond the 50-mgd at the Encina Power Station. Upon further development of these supplies and adequate documentation of project implementation, they will be included in the next update of the Water Authority's Urban Water Management Plan. Because seawater desalination will play an important role in both the near-term and long-term, the Water Authority has established a long-term goal for future development of this supply. In combination with the yield from the regional project at the Encina Power Station and other potential seawater desalination supplies, the goal for the Water Authority's Seawater Desalination Program is up to 89,600 AF/YR starting in 2020 and continuing at this level through the 2030 planning period.

4.4 SUMMARY OF WATER AUTHORITY SUPPLIES

Table 4-5 shows the documented Water Authority supplies existing and currently planned to assist in meeting future demands within the Water Authority's service area. In 2005, the Water Authority's IID transfer water accounted for 30,000 AF of supply. By 2030, deliveries of water from the IID transfer, AAC and CC Lining Projects, and Regional Seawater Desalination Project at the Encina Power Station will provide an expected supply of 333,700 AF/YR. The expected

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Water Authority supplies from **Table 4-5** are utilized in the reliability analysis included in **Section 8**. The additional seawater desalination supplies being planned are included in the 2005 Plan water resources goal.

TABLE 4-5
PROJECTED WATER AUTHORITY SUPPLIES
(Normal Year - AF/YR)

	2005	*2010*	*2015*	*2020*	*2025*	*2030*
IID Water Transfer	30,000	70,000	100,000	190,000	200,000	200,000
All-American Canal Lining Project	0	56,200	56,200	56,200	56,200	56,200
Coachella Canal Lining Project	0	21,500	21,500	21,500	21,500	21,500
Regional Seawater Desalination at Encina	0	0	56,000	56,000	56,000	56,000
TOTAL WATER AUTHORITY SUPPLIES	**30,000**	**147,700**	**233,700**	**323,700**	**333,700**	**333,700**

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SECTION 5 – MEMBER AGENCY SUPPLIES

Local resources developed and managed by the Water Authority's member agencies are critical to securing a diverse and reliable supply for the region. Local projects, such as recycled water and groundwater recovery, reduce demands for imported water and often provide agencies with a drought-proof supply. This section provides general information on the local resources being developed and managed by the member agencies. These supplies include surface water, groundwater, and recycled water. In addition, as discussed in **Section 4.3**, the Water Authority is implementing a local seawater desalination project with the City of Carlsbad.

The Water Authority, working closely with its member agencies, took the following steps to update the yields anticipated from the member agencies' local supplies:

1. Provided the member agencies with the projected supply numbers included in the Water Authority's 2000 Plan and requested they update the figures for their specific project(s);
2. Prepared revised projections based on input from agencies;
3. Separated the recycled water and groundwater projects into two categories, "verifiable" and "other potential projects," based on the likelihood of development. "Verifiable" projects are those with adequate documentation regarding implementation or existing projects already planned for expansion. "Other potential projects" are not far enough along in the planning process, but they are included with the verifiable projects to form a 2005 Plan water supply goal;
4. Presented revised supply numbers to member agencies at several meetings and requested input; and
5. Distributed administrative draft of the 2005 Plan to member agencies for their review, providing them another opportunity to review and revise the updated local supply figures prior to Water Authority Board of Directors approval.

Before 1947, the San Diego region relied on local surface water runoff in normal and wet weather years and on groundwater pumped from local aquifers during dry years when stream flows were reduced. As the economy and population grew, local resources became insufficient to meet the region's water supply needs. From the 1950s onward, the region became increasingly reliant on imported water supplies. Since 1980, a range of 5 to 36 percent of the water used within the Water Authority's service area has come from local sources, primarily from surface water reservoirs with yields that vary directly with annual rainfall. A small but growing share of local supply comes from recycled water and groundwater recovery projects. Yield from these projects are considered drought-proof since they are primarily independent of precipitation. In FY 2005, total local water sources provided eleven - percent of the water used in the Water Authority's service area.

5.1 SURFACE WATER

5.1.1 Description

Seven watersheds in San Diego County contain water supply reservoirs. These watersheds start at the crest of the Peninsular Range and drain into the Pacific Ocean. Runoff within these

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watersheds is largely developed. The oldest functional reservoir in the county, Cuyamaca Reservoir, was completed in 1887. The Olivenhain Reservoir completed in 2003 is the region's newest. It is part of the Water Authority's ESP and has a storage capacity of 24,364 AF. Twenty-five surface reservoirs with a combined capacity of 593,490 AF are located in the Water Authority's service area (**Table 5-1**). **Figure 5-1** shows the location of local reservoirs.

TABLE 5-1
MAJOR SAN DIEGO COUNTY RESERVOIRS

MEMBER AGENCY	RESERVOIR	CAPACITY (AF)
Carlsbad M.W.D.	Maerkle	600
Escondido, City of	Dixon	2,606
Escondido, City of	Wohlford	6,506
Fallbrook P.U.D.	Red Mountain	1,335
Helix W.D.	Cuyamaca	8,195
Helix W.D.	Jennings	9,790
Poway, City of	Poway	3,330
Rainbow M.W.D.	Beck	625
Rainbow M.W.D.	Morro Hill	465
Ramona M.W.D.	Ramona	12,000
San Diego, City of	Barrett	37,947
San Diego, City of [1]	El Capitan	112,807
San Diego, City of [2]	Hodges	33,550
San Diego, City of	Lower Otay	49,510
San Diego, City of	Miramar	7,185
San Diego, City of	Morena	50,207
San Diego, City of	Murray	4,818
San Diego, City of	San Vicente	90,230
San Diego, City of	Sutherland	29,685
San Dieguito W.D./Santa Fe I.D.	San Dieguito	883
SDCWA/Olivenhain MWD	Olivenhain	24,364
Sweetwater Authority	Loveland	25,387
Sweetwater Authority	Sweetwater	28,079
Valley Center M.W.D.	Turner	1,612
Vista I.D.	Henshaw	51,774
Total Capacity		593,490

= Connected to Water Authority aqueduct system.
[1] = Imported water can be delivered via San Vicente.
[2] = System connection is proposed as part of the Emergency Storage Project.

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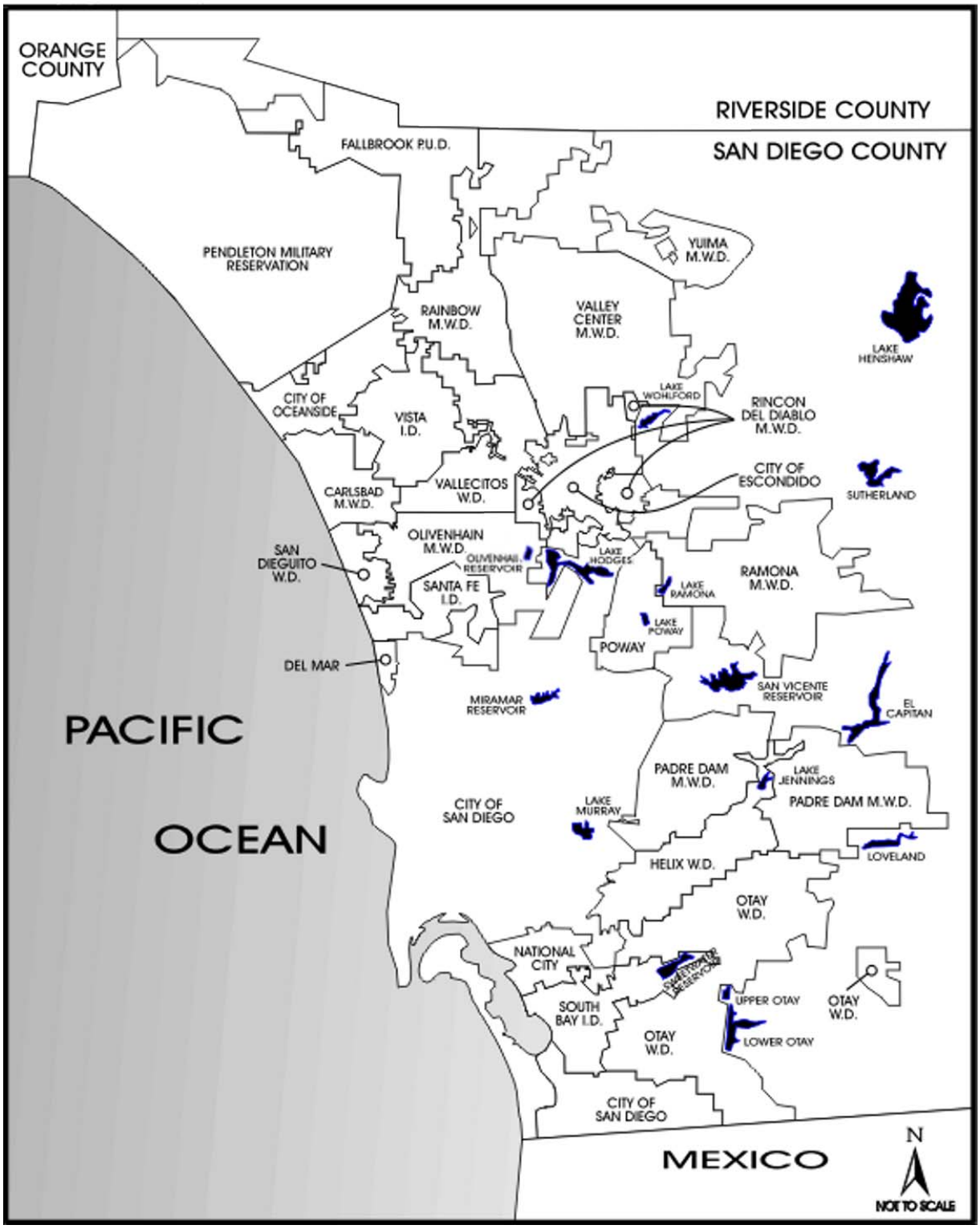
FIGURE 5-1
MAJOR SAN DIEGO COUNTY
RESERVOIRS



5.1.2 Issues

Management

Managing the region's reservoir system to achieve the optimal use of local and imported water is an important element of resources planning. Local surface water supplies can offset dry-year shortfalls in imported water. However, water use records indicate that local reservoirs are generally operated to maximize the use of local supplies in wet and normal years in order to reduce the need for imported water purchases. While this mode of reservoir operation reduces losses due to evaporation and spills, it also results in increased demands for imported water during dry years when imported water is more likely to be in short supply. Most member agencies also maintain a portion of their storage capacity for emergency storage. Many local reservoirs could be operated to maintain carryover storage, but this practice would tend to decrease their average annual yield. An environmental analysis of dedicated carryover storage capacity is being evaluated as part of the expansion of the San Vicente Reservoir, which is being implemented under the ESP. The RWFMP identified carryover storage as necessary to supplement supplies during dry weather events and to maximize the efficient use of existing and planned infrastructure.

Water Quality

See **Section 7** for water quality information.

5.1.3 Encouraging Optimization of Local Surface Water Reservoirs

To optimize the use of local storage, the Water Authority and its member agencies participate in Metropolitan's Surface Storage Operating Agreement (SSOA). The SSOA, initiated in October 2003, allows Metropolitan to store up to 70,000 AF/YR of water in the Water Authority's member agency reservoirs. The water is placed into storage in the winter months when demand is low and pipeline capacity is available, and withdrawn by the member agencies in the summer months when demand increases and pipeline capacity is restricted due to increased demands. Benefits of the SSOA include decreased peak demands on the Skinner TP, enhancement of local storage operations, and a credit on the member agency's invoice when water is withdrawn from the reservoir by the member agency. Up to 32 percent of the regional water demands have been met in the peak demands months utilizing SSOA water.

5.1.4 Projected Surface Water Supplies

Surface water supplies represent the largest single local resource in the Water Authority's service area. However, annual surface water yields can vary substantially due to fluctuating hydrologic cycles. Since 1980, annual surface water yields have ranged from a low of 24,000 AF to a high of 174,000 AF. Planned ESP projects are expected to increase local yield due to the more efficient use of local reservoirs; the volume has not been determined. Based on information provided by the Water Authority's member agencies, the local surface water supplies are assumed to have an average yield of 59,649 AF.

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A list of the individual reservoirs, expected yield and basis for the supply figure can be found in **Appendix F, Table F-1**. **Table 5-2** shows the projected average surface water supply within the Water Authority's service area. Specific information on the projected yields from local reservoirs is expected to be included in the member agencies' 2005 Plans.

TABLE 5-2
PROJECTED SURFACE WATER SUPPLY
(Normal Year - AF/YR)

2005 [a]	*2010*	*2015*	*2020*	*2025*	*2030*
45,521	59,649	59,649	59,649	59,649	59,649

[a] Based on FY 2005 totals.

5.2 GROUNDWATER

Groundwater is being used to meet demands throughout the Water Authority's service area, from the City of Oceanside in the north to National City in the south. This section provides a general description of groundwater development within the Water Authority's service area, the issues associated with development of this supply, and projected regional yield. Specific information required under the Act on groundwater basins and projects is expected to be included in the member agencies' 2005 Plans.

5.2.1 Description

Agencies within the Water Authority's service area used approximately 17,844 AF of groundwater in FY 2005, which is lower than the average due to an extended period of low rainfall, which resulted in limited natural recharge into the basins. In fact, over the last five years groundwater production used to meet potable demands has been below average at about 17,000 AF/YR. Many private well owners also draw on groundwater to help meet their domestic water needs, which helps to offset demand for imported water. The amount of groundwater pumped by private wells is significant, but to date has not been accurately quantified.

Groundwater production in the Water Authority's service area is limited by a number of elements, including lack of storage capacity in local aquifers, availability of groundwater recharge, and degraded water quality. Narrow river valleys filled with shallow sand and gravel deposits are characteristic of the most productive groundwater basins in the San Diego region. Outside of the principal alluvial aquifers and farther inland, groundwater occurs in fractured crystalline bedrock and semi-consolidated sedimentary deposits where yield and storage are limited and the aquifers are best suited for lower-yielding domestic water supply wells. **Figure 5-2** shows the location of the principal alluvial groundwater basins located within the Water Authority's service area.

Although groundwater supplies are less plentiful in the San Diego region than in some other areas of California, such as the Los Angeles Basin in southern California and the Central Valley in northern California, the Water Authority believes that sufficient undeveloped supplies exist that could help meet a greater portion of the region's future water supply and storage needs. Several agencies within the Water Authority's service area have documented potential projects

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that could provide an additional 21,400 AF/YR of groundwater production in the coming years. Existing, planned and potential projects can be grouped into the following three categories:

Groundwater Extraction and Disinfection Projects

These projects are generally located in basins with higher water quality levels, where extracted groundwater requires minimal treatment for use as a potable water supply. Examples of this type of groundwater project include projects currently operated by MCB Camp Pendleton, Yuima MWD, and the Sweetwater Water Authority (National City Well Field). Another high yielding basin is the upper San Luis Rey, which provides groundwater supplies to the Vista Irrigation District and City of Escondido and is operated in conjunction with surface water supplies. The unit cost of water produced from simple groundwater extraction and disinfection projects is generally well below the cost of imported water. Because most of the higher quality groundwater within the Water Authority's service area is already being fully utilized, a relatively small amount of this "least cost" groundwater is available for new supplies. However, these basins are good candidates for conjunctive-use operations, which can significantly increase the average annual production rate of groundwater.

Brackish Groundwater Recovery Projects

Groundwater that is high in Total Dissolved Solids (TDS) is typically found in basins that have been impacted by imported-water irrigation or by seawater intrusion resulting from the historical overdraft of coastal basins. Brackish groundwater recovery projects use desalination technologies, principally reverse osmosis, to treat extracted groundwater to potable water standards. The City of Oceanside's 6.37-mgd capacity Mission Basin Desalter and the Sweetwater Authority's existing 4.0-mgd Richard A. Reynolds Groundwater Desalination Facility are two currently operating brackish groundwater recovery projects in the Water Authority's service area. Unit costs for brackish groundwater recovery projects are considerably higher than those for simple groundwater extraction projects due to the additional treatment requirements, including concentrate disposal needs. However, where economical options exist for disposal of brine, this type of groundwater project has proven to be an economically sound water supply option.

Groundwater Recharge and Recovery Projects

Artificial recharge and recovery projects or conjunctive-use projects improve groundwater basin yields by supplementing natural recharge sources with potable or recycled water, and/or inducing additional natural recharge. These projects can supply stored water to the region if imported deliveries are limited due to supply and facility constraints. The Water Authority and City of Oceanside completed a study in 2005 that evaluated the potential for a conjunctive-use project in the Mission Basin. Results from the study indicate that use of the basin for recharge and recovery may be limited due to the impact on sensitive riparian habitat and costs for recharge facilities. Oceanside plans to complete expansion of its existing demineralization facility and then monitor groundwater levels in the basin prior to proposing development of a potential conjunctive-use project. The study approach and information generated by this conjunctive-use study is being made available to other agencies within the Water Authority's service area considering development of such a project. Refer to **Section 5.2.3** for additional information on the study.

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FIGURE 5-2
ALLUVIAL GROUNDWATER BASINS

5.2.2 Issues

Local agencies must consider a number of issues when developing groundwater projects, including economic and financial considerations, legal, institutional, regulatory, environmental, and water quality issues. These issues can limit the amount of groundwater development in San Diego County.

Please see **Section 5.3.4** for information on the Water Authority's Financial Assistance Program funding opportunities for facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports, and research projects related to groundwater development.

Economic and Financial Considerations

Because of the saline nature of the groundwater basins in San Diego County, the cost of groundwater development usually includes demineralization, which can be costly to construct and operate. One of the more costly elements is the facility necessary to dispose of the brine generated from the treatment process. To address this element, the United States Bureau of Reclamation (USBR), in coordination with numerous public agencies including the Water Authority, is conducting a multiyear planning study to evaluate brine concentrate management and disposal technologies.

Institutional, Legal, and Regulatory Issues

Institutional and legal issues can also impact project development. Because most basins involve multiple water agencies and numerous private wells, water rights are a concern. Agencies are often reluctant to implement groundwater development projects unless jurisdiction and water rights issues are resolved beforehand.

Uncertainty over future regulatory requirements for drinking water supplies can pose another barrier to project development. When developing facilities and compliance plans for groundwater recharge projects, agencies must take into account proposed or potential regulatory changes related to water quality issues. Some of the regulations for which changes are expected over the next decade include state and federal drinking water standards and California Department of Health Services groundwater recharge regulations.

Environmental Regulatory Constraints

Regulatory issues related to environmental protection are common to many of the groundwater projects proposed within the Water Authority's service area. These issues include potential impacts to endangered species and groundwater-dependent vegetation. Impacts may occur if a project results in seasonal or long-term increases in the depth of the groundwater. Although potential environmental impacts can generally be mitigated, mitigation costs can reduce the cost-effectiveness of a project. Concentrate disposal requirements for brackish groundwater recovery projects can also constrain projects sited in inland basins without access to an ocean outfall.

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Water Quality

See **Section 7** for water quality information.

5.2.3 Projected Groundwater Supplies

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned groundwater projects. **Table 5-3** shows the estimated annual yield from groundwater projects in 5-year increments, based on the implementation schedules provided by the member agencies and the likelihood of development. The reliability analysis found in **Section 8** of this 2005 Plan includes these projected supply yields. **Table F-2, Appendix F** contains a detailed list of the projects and projected supplies.

TABLE 5-3
PROJECTED GROUNDWATER SUPPLY
(Normal Year - AF/YR)

2005 [a]	*2010*	*2015*	*2020*	*2025*	*2030*
17,844	28,575	30,345	31,175	31,175	31,175

[a] Based on FY 2005 totals.

Table 5-3 shows the increase in groundwater production from the current yield of 17,844 AF/YR resulting from the expansion of projects operated by the Sweetwater Authority and the City of Oceanside. To achieve this increase in groundwater yield, funding assistance is critical, as is overcoming the regulatory constraints associated with development.

The City of Oceanside anticipates that its proposed 6.37 mgd Mission Basin Desalter (4.0-mgd expansion) will be completed by the end of the year 2006. The project will include the development of the estimated remaining "safe yield" of the basin through expansion of the existing demineralization facility. The Sweetwater Authority is participating in studies with the United States Geological Survey to evaluate the San Diego Formation Aquifer and make safe use of the available yield from the aquifer.

Regional Groundwater Goal

Maximizing groundwater development is critical to diversifying the region's water supply portfolio. Beyond the verifiable yield included in **Table 5-3**, the member agencies are considering developing an estimated 21,400 AF/YR of additional yield by 2030. These projects are generally not expansions of existing projects and are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-2, Appendix F** includes a list of the projects. When these projects become more certain, they will be included in future updates of the Water Authority's Urban Water Management Plan.

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To highlight the importance of maximizing groundwater supplies within the region, a regional groundwater goal has been established: 52,575 AF/YR by 2030, in combination with the yields shown in **Table 5-3**.

Conjunctive-Use

As mentioned above, conjunctive-use projects can supply stored water to the region if imported deliveries are limited due to supply and/or facility constraints. The City of San Diego, Otay Water District, Olivenhain Municipal Water District, and the City of Oceanside are considering developing conjunctive-use projects in the future. **Table F-2, Appendix F** includes the estimated potential storage yield from these projects. If developed, they could provide 17,450 AF/YR of storage yield for the region by 2030.

Because the imported conjunctive-use projects produce minimum amounts of new yield, the regional reliability analysis in **Section 8** does not include the supply figures. In addition, the projects are still in the conceptual and/or planning stages.

Results from the Lower San Luis Rey River Valley Groundwater Storage and Recovery Feasibility Study, prepared by the Water Authority in conjunction with the City of Oceanside, also identifies significant constraints to the development of groundwater conjunctive-use projects in San Diego County. These constraints relate to the following:

- Cost to install infrastructure to deliver and extract the recharge water;
- Injecting higher quality imported water into brackish basins and then having to demineralize the water when it is extracted;
- Potential impact on sensitive riparian habitat; and
- Lack of opportunities for spreading basins.

5.3 WATER RECYCLING

A fundamental element to developing a diverse supply mix for the region and to using existing water supplies more efficiently is through implementation of water recycling projects. This section provides a general description of recycled water development within the Water Authority's service area, the issues associated with developing this supply, and projected regional yield. Documentation on specific existing and future recycling projects is expected to be in the 2005 Plans for those agencies that include water recycling as a supply. The Water Authority coordinated the preparation of this section with its member agencies and those wastewater agencies that operate water recycling facilities within the Water Authority's service area.

5.3.1 Description

Water recycling is the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-drinking purposes. Agencies in San Diego County use recycled water to fill lakes, ponds, and ornamental fountains; to irrigate parks, campgrounds, golf courses, freeway medians, community greenbelts, school athletic fields, food crops, and nursery stock; and to control dust at construction sites. Recycled water can also be used in certain industrial processes and for flushing toilets and urinals in non-residential buildings. As an example, the detention facility in the Otay Mesa area of San Diego County is dual-plumbed to allow use of recycled

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water for toilet and urinal flushing. However, current regulations allow only new buildings to be dual-plumbed for this specific use. Additional uses for recycled water are being identified and approved as local agencies and regulators become comfortable with its use.

5.3.2 Issues

Local agencies must consider a number of issues when developing recycled water projects, including economic and financial considerations, regulatory, institutional, public acceptance, and water quality concerns related to unknown or perceived health and environmental risks. These issues, if unresolved, can limit the amount of wastewater recycled in San Diego County. In fact, the impact from the challenges associated with recycled water are apparent when comparing the 2005 recycled water projections from the Water Authority's 2000 Plan (33,400 AF) to actual FY 2005 recycled water demand (11,479 AF). The following sections discuss some of the specific challenges associated with recycled water development.

Economic and Financial Considerations

The capital-intensive cost of constructing recycled water projects has traditionally been a barrier to project implementation. The up-front capital costs for construction of treatment facilities and recycled water distribution systems can be high, while full market implementation is usually phased in over a number of years, resulting in very high initial unit costs that affect cash flow in the early project years.

Costs associated with converting existing potable water customers to recycled water customers have also proved challenging. This situation is compounded by the seasonal nature of recycled water demands and the lack of large industrial water users in San Diego County that can use recycled water. The lack of sizeable opportunities for groundwater recharge storage compounds this situation. Recycled water demands tend to peak during the hot summer months and drop off during the winter months when landscape irrigation demands are low. Projects that serve a large portion of irrigation demands, like the majority of the projects in the Water Authority's service area, often use only half of their annual production capacity due to these seasonal demand patterns. The costs of these projects tend to be higher than those of projects that serve year-round demands, since the project facilities must be sized to accommodate seasonal peaking. Projects that serve mostly irrigation demands also tend to have less stable revenue bases since irrigation demands are heavily influenced by hydrologic conditions.

To be financially feasible, a project's benefits must offset or exceed its associated costs. Project benefits can take the form of: (1) revenues from the sale of recycled water; (2) increased supply reliability; (3) increased control over the cost of future water supplies; and (4) avoided water and wastewater treatment, storage, and conveyance costs. Agencies developing recycled water projects must be able to quantify these benefits in order to determine the financial feasibility of a project. In addition, financial incentives and grant funding from the Water Authority, Metropolitan, and federal and state agencies are critical to offsetting project costs and project implementation.

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Regulatory

Two state agencies have primary responsibility for regulating the application and use of recycled water: the Department of Health Services (DHS) and the California Regional Water Quality Control Board (Regional Board). Planning and implementing water recycling projects entail numerous interactions with these regulatory agencies prior to project approval.

The DHS establishes the statewide effluent bacteriological and treatment reliability standards for recycled water uses in Title 22 of the California Administrative Code. Under Title 22, the standards are established for each general type of use based on the potential for human contact with recycled water. The highest degree of standards for recycled water is for unrestricted body contact.

The Regional Board is charged with establishing and enforcing requirements for the application and use of recycled water within the state. Permits are required from the Regional Board for each water recycling operation. As part of the permit application process, applicants are required to demonstrate that the proposed recycled water operation will not exceed the ground and surface water quality objectives in the basin management plan, and that it is in compliance with Title 22 requirements.

Coordination between the regulatory agencies responsible for monitoring development of recycled water is important, along with the development of a reasonable and consistent application of regulations. Regulatory agencies also need to work closely and cooperatively with project proponents in their efforts to satisfy the regulations and still be able to develop a much needed, cost-effective water-recycling project.

A regulatory issue that may hinder development of projects is the DHS groundwater recharge rule that requires treatment prior to injection of recycled water in order to reduce the total organic carbon (TOC) concentration to less than 2.0 mg/l. This requirement may increase the cost and reduce the ability to develop the limited opportunities for groundwater recharge in San Diego County.

Institutional

The primary institutional issue related to the development of water recycling in San Diego County is interagency coordination, such as when the wastewater agency that produces the recycled water is not the water purveyor within the reuse area. At those times, effective communication and cooperation between both agencies regarding the distribution of recycled water and providing service to the water customer is vital and should begin early in the planning process.

These institutional arrangements require contracts and/or agreements between the parties and/or agencies involved, the terms of which must be established on a case-by-case basis. The agreements usually define the reporting and compliance responsibilities, the amount of recycled water deliveries, water pricing, and a financing plan that identifies which agency will receive the financial incentives.

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Public Acceptance

Without public acceptance, siting, financing, constructing, and operating a water-recycling project becomes increasingly difficult. The most successful means to obtaining public acceptance is through education and involvement. Agencies in the San Diego region have formed citizens advisory groups and held public workshops in an effort to increase public involvement in projects. In the Water Authority's service area, the Regional Public Information and Customer Marketing Program is being developed to promote the increased use of recycled water.

5.3.3 Wastewater Generation, Collection, Treatment, and Disposal

Approximately 300-mgd of wastewater is currently being generated, collected, treated, and disposed of within the Water Authority's service area. Most of the large wastewater treatment plants are located along the coast for easy and convenient access to an ocean outfall. These plants serve most of the San Diego region's highly urbanized areas. **Figure 5-3** identifies the location of the wastewater treatment plants and the associated outfall systems. The coastal location of the plants is not always conducive to development of recycled water. Most of the market for recycled water is located at higher elevations making distribution systems costly. **Table F-3**, **Appendix F** shows a detailed list of the wastewater treatment plants within the county, their capacities at various levels of treatment, and the type of disposal. In addition, approximately 10 to 15-mgd of wastewater within the Water Authority's service area is generated and disposed of through private systems, such as septic tanks.

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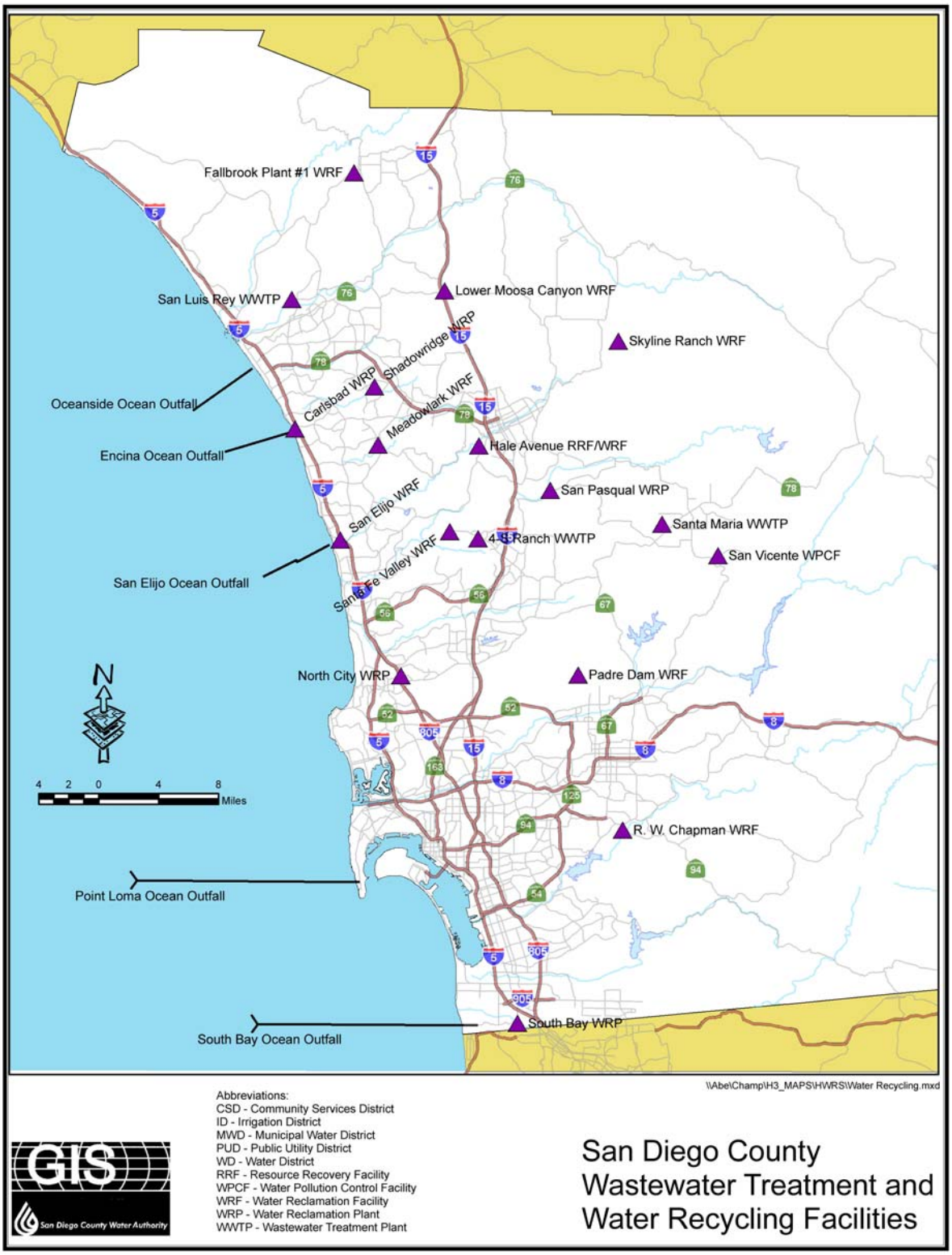
FIGURE 5-3
WASTEWATER TREATMENT AND WATER RECYCLING FACILITIES



5.3.4 Encouraging Recycled Water Development

The Act requires agencies to describe in their plan the actions, including financial incentives that agencies may take to encourage the use of recycled water. **Table 5-4** summarizes the programs used by the Water Authority's member agencies. The water recycling agencies develop some of the programs, while others are developed or funded by the water providers, such as the Water Authority, Metropolitan, and state and federal agencies.

TABLE 5-4
PROGRAMS TO ENCOURAGE RECYCLED WATER USE

Incentive Programs - Reclaimed Water Development Fund (Water Authority) Local Resources Program (Metropolitan)
Grants - Title XVI Funding Program (US Bureau of Reclamation) Proposition 13 Grant (State of California) Proposition 50 Grant (State of California)
Low Interest Loans - Financial Assistance Program (Water Authority) State Revolving Fund (State of California) Water Reclamation Loan Program (State of California) Proposition 13 Loan (State of California)
Long-Term Contracts - Ensure price and reliability
Funding assistance to State Water Resources Control Board to fund staff position to expedite water recycling projects.
Rate Discounts
Public Education/Information
Regional Planning
Model Water Reclamation Ordinance and Implementation Handbook - Dual Plumbing Standards Prohibits Specific Potable Water Uses

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Funding Programs

Another important component of a successful recycling project is securing diversified funding and establishing funding partnerships. The Water Authority has focused on providing and facilitating the acquisition of outside funding for water recycling projects.

A number of financial assistance programs available to San Diego County agencies include: the Water Authority's Financial Assistance Program (FAP) and Reclaimed Water Development Fund (RWDF); Metropolitan's Local Resources Program (LRP); the USBR Title XVI Grant Program; and the State Water Resources Control Board (SWRCB) low-interest loan programs. Together, these programs offer funding assistance for all project phases, from initial planning and design to construction and operation. Financial assistance programs administered by the Water Authority, Metropolitan, and the USBR provided $10.4 million to San Diego County agencies during FY 04. It is anticipated that approximately $7.9 million will be awarded in 2005 from these funding sources. These programs are projected to ultimately reuse approximately 54,000 AF/YR.

Financial Assistance Program. The Water Authority offers FAP funding to encourage facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports, research projects related to water recycling, groundwater development, and seawater desalination. Since its inception in June 1988, the FAP has provided local agencies with more than $1.8 million for water recycling studies, $797,000 for groundwater development studies, and over $200,000 for seawater desalination studies. Agencies may apply for FAP funding through either a loan or a grant. FAP funds are distributed on a loan basis for feasibility studies, master plans, facility plans, and environmental reports. Repayment of the loan is required when the project has satisfactorily met CEQA requirements, or when the planned project is complete. Grant funding is also distributed through the FAP for research and development projects. To receive funding as a grant, the agency must have already secured partial funding for the project from another source.

Reclaimed Water Development Fund. To aid agencies in overcoming financial constraints associated with development of water recycling projects, the Water Authority's Board of Directors adopted the RWDF program in April 1991, which provided incentive funding of up to $100/AF for beneficial reuse for recycling projects that demonstrated a financial need. Recently, the incentive level was increased to $147/AF. This incentive contribution offsets costs, especially in the early years of project start-up. In order to qualify, project expenses must exceed project revenues. To date, the Water Authority has entered into RWDF agreements with nine agencies for a combined project yield of 29,857 AF/YR. In FY 04, the Water Authority provided local agencies with $880,500 in RWDF incentives.

Local Resources Program. Metropolitan also has a program that currently underwrites local projects during the initial years of operation. The LRP provides incentives of up to $250 AF/YR for recycled water and groundwater recovery projects. Currently, fifteen water-recycling projects in San Diego County have agreements for LRP funding. Metropolitan provided $2,111,752 in FY 04, and $1,796,642 in FY 05, for LRP funding. Metropolitan also provided funding through its Groundwater Recovery Program (GRP) for two groundwater recovery projects in the amounts of $1,292,686 in FY 04, and $709,105 in FY 05.

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The Reclamation Wastewater and Groundwater Study and Facilities Act – Title XVI. The Title XVI Grant Program is a significant source of funding for San Diego area recycling projects. Title XVI of Public Law 102-575, the Reclamation Wastewater and Groundwater Study and Facilities Act, authorizes the federal government to fund up to 25 percent of the capital cost of authorized recycling projects, including the San Diego Area Water Reclamation Program, an inter-connected system of recycling projects serving the Metropolitan Sewage System service area. PL104-266, the Reclamation Recycling and Water Conservation Act of 1996, authorized two additional projects in northern San Diego County: the North San Diego County Area Water Recycling Project and the Mission Basin Brackish Groundwater Desalting Demonstration Project. To date, San Diego agencies have been authorized to receive more than $195 million under the Title XVI grant program, including more than $7.3 million obligated during Federal Fiscal Year (FFY) 04. A total of $94,591,000 has been received from this funding source to date. It is critical that funding from this program be maintained each year.

State Revolving Fund/Water Reclamation Loan Program. The SWRCB, through the Division of Financial Assistance, provides financial assistance for water recycling projects in the form of low-interest loans and/or grants for project construction and grants for project planning. The State Revolving Fund (SRF) and the Water Reclamation Loan Program (WRLP) provides agencies with low-interest construction loans for water recycling and groundwater projects. This below-market interest rate can result in substantial savings on debt service. The SRF and WRLP loans carry an interest rate equal to 50 percent of the state's general obligation bond interest rate. Approximately $42 million was appropriated to the SWRCB in FY 03 and 04 for the funding of water recycling projects. Additional funding for FY 03 from the SWRCB included $4 million from Proposition 13 and the 2000 Bond Law for San Diego area water recycling projects. In FY 04, an additional $75,000 was awarded to local water recycling projects through SWRCB funding sources. An example of funding recently awarded to one of the Water Authority's member agencies was the $1.08 million grant given to the Olivenhain Municipal Water District.

California voters passed Proposition 50, known as the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 on November 5, 2002. In spring 2005, more than $10 million was earmarked from this bond measure for San Diego area water recycling projects. It is anticipated that disbursements will begin in late-2005.

Policies, Ordinances and Guidance Documents

The Water Authority has adopted a number of policies, guidance documents, and a model ordinance to assist local agencies with water recycling project implementation. Many local agencies have adopted the Water Authority-sponsored ordinance, which includes provisions that typically require new development projects to install recycled water systems. The ordinance also states that where allowed by law and available in sufficient quantities, at a reasonable cost and quality, recycled water shall be the sole water supply delivered for non-potable uses.

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Training

The Water Authority, in partnership with other water agencies, offers a one-day course designed to provide irrigation supervisors with a basic understanding of recycled water. Completion of the Recycled Water Site Supervisor Training fulfills the training requirement as mandated by regulatory authorities. The class provides information to supervisors on the water recycling process, recycled water quality and safety issues, the duties and responsibilities of the supervisor, landscape irrigation fundamentals, maintenance and management, and cross connection control shut-down tests and inspections. Understanding similarities and differences between recycled and potable water is important to the successful operation of a recycled water system. The first class started in 1993 with 14 participants. At this time, more than 1,000 participants have been certified. Instructors include a state registered environmental health specialist, environmental assessor, water quality chemist/reclamation specialist, and landscape specialists.

Optimizing the Use of Recycled Water – Regional Perspective

While local agencies typically expand and develop their respective recycled water projects independently based on local interests, the Water Authority is conducting studies that will identify opportunities to expand the region's use of recycled water. These studies, namely, the San Diego County Water Authority Regional Recycled Water System Study, completed in March 2002, and the Regional Recycled Water Study – Phase II, scheduled for completion in December 2005, have taken a regional approach to water recycling project planning and development. Primary tasks to be completed under the Regional Recycling Water Study – Phase II include: developing strategies to overcome identified obstacles to water recycling; developing a marketing plan and regional strategies to market recycled water to target industries and customers; investigating and examining to what extent - and levels - TDS in source water affect the use and application of recycled water for local end-users; researching and identifying the impediments to the implementation of water repurification projects; and funneling planning grant funding to regional agencies to further expand the use of recycled water.

The Water Authority also participated in the California Recycled Water Task Force. This legislated task force identified constraints, impediments, and opportunities for the increased use of recycled water, and report its findings to the California Legislature by July 1, 2003. Many of the recommendations identified in the completed report entitled, "Water Recycling 2030: Recommendations of California's Recycled Water Task Force," dated June 2003, have been regionally supported and adopted. Six of the key issue areas identified in the report are currently being addressed via the Phase II Study efforts and through legislative means either supported or initiated by the Water Authority. These areas include: (1) Funding for water recycling; (2) Public dialogue/Public outreach; (3) Plumbing Code/Cross-connection control; (4) Regulations and permitting; (5) Economics of water recycling; and (6) Science and health/Indirect potable reuse.

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5.3.5 Projected Recycled Water Use

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned recycled water projects. **Table 5-5** shows the estimated annual yield from the projects in 5-year increments, based on the implementation schedules provided by the member agencies and the likelihood of development,. These projected supply yields will be included in the reliability analysis found in **Section 8** of this 2005 Plan. **Table F-4, Appendix F** contains a detailed list of the projects and projected supplies.

TABLE 5-5
PROJECTED RECYCLED WATER USE
(Normal Year - AF/YR)

2005 [a]	*2010*	*2015*	*2020*	*2025*	*2030*
11,479	33,668	40,662	45,548	46,492	47,584

[a] Based on FY 2005 totals.

The increase in recycled water use shown in **Table 5-5**, from the current use of 11,479 AF/YR, is primarily from the expansion of existing facilities. The City of Carlsbad is constructing a new treatment and distribution system to deliver close to 3,000 AF/YR of recycled water. The Otay Water District is constructing a distribution system to deliver an estimated 5,000 AF/YR of recycled water by 2030 purchased from the City of San Diego's South Bay Water Recycling Plant.

Regional Water Recycling Goal

Maximizing recycled water development is critical to diversifying the region's water supply portfolio. Beyond the verifiable yield included in **Table 5-5**, the member agencies are considering development of an additional 6,829 AF/YR by 2030. These projects are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-4, Appendix F** contains a list of the projects. When development of these projects becomes more certain, they will be included in future updates of the Water Authority's 2005 Plan. In order to highlight the importance of maximizing recycled water use within the region, a regional water recycling water goal has been established. In combination with the figures shown in **Table 5-5**, the regional water-recycling goal is 54,413 AF/YR by 2030.

5.4 SUMMARY OF MEMBER AGENCY SUPPLIES

Table 5-6 shows the projected supply figures for existing and projected local resources for the Water Authority's service area based on input from the member agencies. These supplies are considered verifiable and will be used in the regional reliability analysis included in **Section 8**. The Water Authority – Carlsbad Agreement provides the City of Carlsbad the opportunity to receive up to 5,000 AF/YR of supply from the project; at this time, however, the annual delivery amount for the City of Carlsbad has not been determined. (Refer to **Section 4.3**.)

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TABLE 5-6
PROJECTED MEMBER AGENCY LOCAL SUPPLIES
(Normal Year - AF/YR)

Local Supply	*2005* [a]	*2010*	*2015*	*2020*	*2025*	*2030*
Surface Water	45,521	59,649	59,649	59,649	59,649	59,649
Groundwater	17,844	28,575	30,345	31,175	31,175	31,175
Recycled Water	11,479	33,668	40,662	45,548	46,492	47,584
TOTAL MEMBER AGENCY SUPPLIES	74,844	121,892	130,656	136,372	137,316	138,408

[a] Based on FY 2005 totals.

The estimates for projected member agency local supplies included in **Table 5-6** could be even greater with increased funding opportunities, technological advances, and by successfully addressing regulatory and environmental issues. Maximizing groundwater and recycled water development can provide further diversification of regional supplies. In order to highlight the importance of maximizing these supplies, a local resources goal has been established. In combination with the figures shown in **Table 5-6**, the total regional local resources goal, excluding supply from conjunctive use projects using imported or recycled water, is 164,683 AF/YR by 2030.

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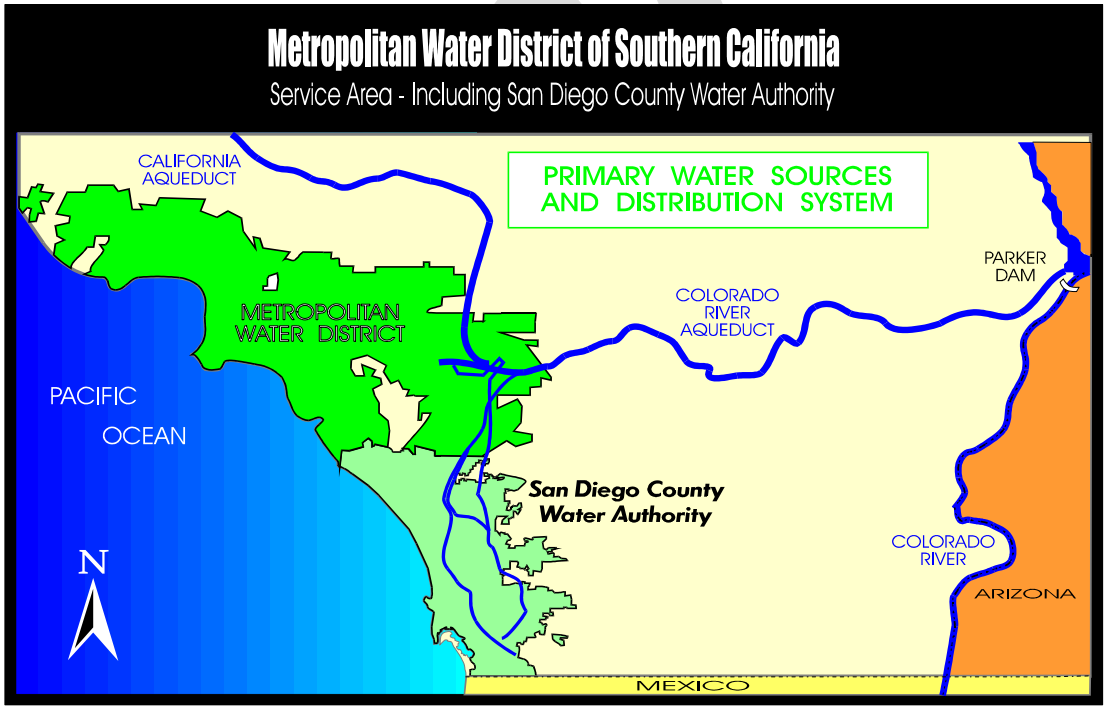
SECTION 6 – METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

6.1 DESCRIPTION

Metropolitan was formed in 1928 to develop, store, and distribute supplemental water in Southern California for domestic and municipal purposes. Metropolitan supplies water to approximately 18 million people in a service area that includes portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. The Metropolitan service area, shown in **Figure 6-1**, covers a 70-mile-wide strip of the Southern California coastal plain, extending from the city of Oxnard on the north to the Mexican border. Close to half of the water used in this 5,200-square-mile region is supplied by Metropolitan, and about 90 percent of its population receives at least some of its water from Metropolitan. The Water Authority, one of 27 Metropolitan member agencies, is the largest agency in terms of deliveries, purchasing about 25 percent of all the water Metropolitan delivered in FY 04. The extent to which Metropolitan's member agencies rely upon Metropolitan supplies varies by the amount of local supplies available.

FIGURE 6-1
METROPOLITAN SERVICE AREA

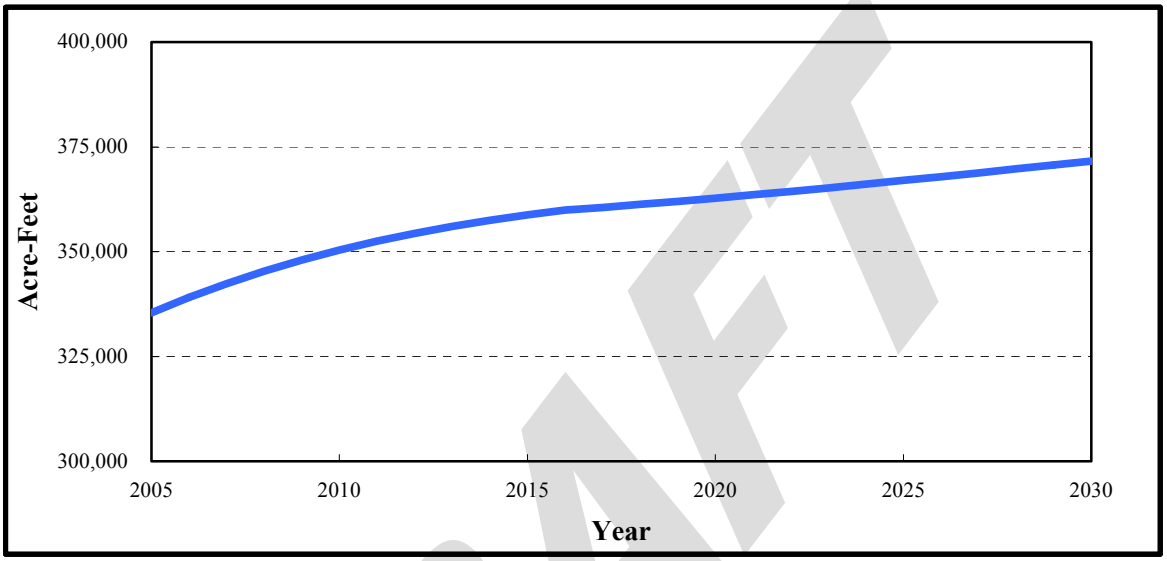


6.1.1 Metropolitan Act Section 135; Preferential Right to Water

Under Section 135 of the Metropolitan Act, preferential rights are determined by each agency's total historic payments to Metropolitan from property taxes, stand-by charges, readiness-to-serve charges, and other revenue. Revenue resulting from the purchase of Metropolitan water is excluded, even though a portion of such revenues is used to pay for capital projects. While the

Water Authority had a preferential right to 15.8 percent of Metropolitan's water in FY 04, it purchased about 25 percent of Metropolitan's available supply. At any time under preferential rights rules, Metropolitan may allocate water without regard to historic water use or dependence on Metropolitan. **Figure 6-2** shows the Water Authority's projected preferential rights for the years 2005 through 2030.

FIGURE 6-2
PROJECTED WATER AUTHORITY PREFERENTIAL RIGHT



To seek clarification regarding the current application and legality of Section 135, the Water Authority board of directors voted in April 2004 to appeal an appellate court ruling that preserves Metropolitan's preferential right process. In July 2004, the State Supreme Court denied the Water Authority's appeal of an appellate court decision that Metropolitan might continue to exclude water purchases from the preferential rights calculation. The decision makes clear how much water the Water Authority may count on from Metropolitan should a member agency invoke its preferential right.

Metropolitan stated, consistent with Section 4202 of its Administrative Code, that it is prepared to provide the Water Authority's service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. When, and as additional water resources are required to meet increasing needs, Metropolitan stated that it will be prepared to deliver such supplies. In their draft 2005 Regional Urban Water Management Plan (RUWMP), Section II.4, Metropolitan also states that as a result of investments made in supply and storage, that they have identified a resource management plan that should result in 100 percent reliability for non-discounted non-interruptible demands through 2025.

6.1.2 Metropolitan's Integrated Resources Plan

The Integrated Resources Plan (IRP) identifies a mix of resources (imported and local) that when implemented will provide 100 percent reliability for full-service demands through the attainment

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of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers. The 2004 update to the IRP now includes a planning buffer supply to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not over-developing supplies. If managed properly, the planning buffer will help ensure that the southern California region, including San Diego County, will have adequate supplies to meet future demands. Specific information on Metropolitan's IRP and Water Surplus and Drought Management Plan (WSDM Plan) are expected to be contained in their 2005 RUWMP.

6.2 METROPOLITAN'S WATER SUPPLIES

Metropolitan obtains its water from two sources: the CRA, which it owns and operates, and the SWP. **Figure 6-3** shows these imported water supply sources, and they are described below. Detailed documentation on Metropolitan's supplies can be found in its 2005 RUWMP.

6.2.1 Colorado River

Metropolitan was formed to import water from the Colorado River. During the 1930s, Metropolitan built the CRA to convey this water. Metropolitan's member agencies received the first deliveries in 1941. The aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has capacity to deliver up to 1.3 million acre-feet per year (MAF/YR). **Figure 6-3** shows the location of the aqueduct.

Reliability Issues

Before 1964, Metropolitan had a firm annual allocation of 1.212 million acre-feet (MAF) of Colorado River water through contracts with the U.S. Department of the Interior, which was enough to keep Metropolitan's aqueduct full. However, as a result of the U.S. Supreme Court decision in Arizona vs. California, Metropolitan's firm supply fell to 550,000 AF. Due to growth in demand from the other states and drought conditions, since 2003, Metropolitan's deliveries have been limited to their base apportionment plus water from a conservation program with IID.

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FIGURE 6-3
MAJOR WATER CONVEYANCE FACILITIES
SERVING SAN DIEGO COUNTY

Water availability from the Colorado River is governed by a system of priorities and water rights that has been established over many years. The Colorado River Lower Basin states (California, Arizona, and Nevada) have an annual apportionment of 7.5 MAF of water divided as follows: (1) California, 4.4 MAF; (2) Arizona, 2.8 MAF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established California's priorities for water. As shown in as shown in **Table 6-1**, Metropolitan's 4th priority of 550,000 AF is junior to that of the first three priorities, 3.85 MAF to California agricultural agencies. Water used to satisfy priorities 5(a)-6(b) must come from unused allocations within California, Arizona, or Nevada or from surplus.

TABLE 6-1
SEVEN PARTY AGREEMENT PRIORITIES

PRIORITY	DESCRIPTION	ACRE-FEET/YEAR
1	Palo Verde Irrigation District	Priorities 1, 2, and 3 shall not exceed 3,800,500
2	Yuma Project Reservation Division	Same as above
3 (a)	Imperial Irrigation District and lands in Imperial and Coachella valleys to be served by All-American Canal	Same as above
3 (b)	Palo Verde Irrigation District	Same as above
4	Metropolitan Water District	550,000
5 (a)	Metropolitan Water District	550,000
5 (b)	City/County of San Diego[1]	112,000
6 (a)	Imperial Irrigation District	300,000
6 (b)	Palo Verde Irrigation District	
	TOTAL	5,362,000

[1] In 1946, San Diego's rights were merged with and added to the rights of Metropolitan as one condition of the Water Authority's annexation to Metropolitan.

In recent years, Arizona and Nevada have increased water demand to near-apportionment levels, limiting the availability of unused apportionments to Metropolitan. Arizona's demand has been substantially increased by deliveries to an in-state groundwater banking program. Nevada began banking water under an interstate water banking rule established by the Department of Interior in 1999, which allows Nevada to bank water in Arizona for Nevada's future use.

Five consecutive years of drought conditions throughout the Colorado River Basin were somewhat relieved during the winter of 2004-05, and water storage levels in the main reservoirs rebounded from a rapid and steep decline. Inflow into Lake Powell was above average for water year 2005 and for the first time since 1999, the water surface elevation in Lake Powell increased. As of the end of June 2005, storage in Lake Powell was 51 percent

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of capacity; storage in Lake Mead was 59 percent of capacity. The draft U.S. Bureau of Reclamation Annual Operating Plan for Colorado River System Reservoirs anticipates a "partial domestic surplus" condition for calendar year 2006, which provides limited surplus water for Metropolitan. However, since the Interim Surplus Guidelines were implemented in 2001, Metropolitan has not taken any surplus water, and instead has left those supplies as system storage in Lake Mead. It is not yet clear whether Metropolitan will take any available surplus water in calendar year 2006.

Environmental Considerations

In 1994, the U.S. Fish and Wildlife Service (USFWS) designated 1,980 miles of the Colorado River and its tributaries in Colorado, Utah, New Mexico, Arizona, California, and Nevada as critical habitat for four endangered species of native fish. In response to the 1994 designation, the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was formed. The program is a partnership of federal agencies; state and local agencies in Arizona, California, and Nevada, including the Water Authority; Native American tribes; and other non-federal participants. The partnership is responding to the need to balance the legal use of lower Colorado River water resources and the conservation of threatened and endangered species and their habitats in compliance with the federal Endangered Species Act (ESA). Taking over ten years to develop, the LCR MSCP was approved in April 2005. The program is designed to benefit at least 26 species and restore a range of habitats along the lower Colorado River, including 8,132 acres of riparian, marsh, and backwater habitat. The $626 million program will be cooperatively funded and implemented by the partnership over the next 50 years. By meeting the needs of fish and wildlife under the ESA and preventing the listing of additional species, the program provides greater certainty of continued water and power supplies from the river for Nevada, California, and Arizona.

Current Supplies

Metropolitan currently has a firm supply from two sources: its fourth priority of 550,000 AF, and the yield of a conservation program that Metropolitan completed with IID in 1988. This program currently yields about 106,000 AF, giving Metropolitan a total supply of approximately 656,000 AF. Under certain conditions, however, Metropolitan must provide 50,000 AF of the conservation program water to the Coachella Valley Water District (CVWD). Thus, Metropolitan's firm supply is now about 606,000 AF. The remaining 600,000 AF of water needed to fill the CRA must come from the unused apportionments of other states or from surplus water.

Quantification Settlement Agreement and Future Supplies

The Water Authority, together with CVWD, IID, and Metropolitan, entered into the QSA in October 2003. The QSA resolved longstanding disputes regarding Colorado River water use among the agencies, and established a water budget for the agricultural agencies. This permitted the implementation of several water conservation and transfer agreements, including the Water Authority's transfer agreement with IID.

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Transfers from IID began in late 2003 with the signing of the QSA. The Water Authority will receive up to 200,000 AF of water per year after an initial 19-year ramp-up in the water deliveries. Other supplies include about 77,700 AF from conservation projects to line the AAC and CC, located in Imperial and Coachella valleys.

6.2.2 STATE WATER PROJECT

Metropolitan's other water source, the SWP, is owned by the State of California and operated by the DWR. The project stretches more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Sacramento-San Joaquin River Delta (Delta). In the north Delta, water is pumped into the North Bay Aqueduct for delivery to Napa and Solano counties. In the south Delta, water is diverted into the SWP's Banks Pumping Plant, where it is lifted into the 444 mile-long California Aqueduct. Some of this water flows into the South Bay Aqueduct to serve areas in Alameda and Santa Clara counties. The remainder flows southward to cities and farms in central and southern California. In the winter, when demands are lower, water is stored at the San Luis Reservoir located south of the Delta. SWP facilities provide drinking water to 23 million Californians and 755,000 acres of irrigated farmland. **Figure 6-3** shows the California Aqueduct.

Reliability Issues

The reliability of SWP supplies is limited by both the level of SWP supply development and pumping restrictions due to state and federal environmental regulations. Actions taken by the CALFED Bay-Delta Program have improved the situation. (See below for more on the impact of CALFED on SWP supplies.) When approved by the voters in the 1960s, the SWP was planned to deliver 4.2 MAF to 32 contracting agencies. Subsequent contract amendments reduced total contracted deliveries to 4.13 MAF and the number of contracting agencies to 29. Metropolitan's contracted entitlement is 2,011,500 AF, or almost 49 percent of the total. It is important to note that when voters approved construction of the SWP in 1960, state planners did not expect the full amount of contracted water to be needed for at least the first 20 years of the project. As such, the planners anticipated that the facilities needed to produce the full contracted amount would be constructed over time as demands on the system increased. However, decisions about these additional facilities were repeatedly deferred as public attitudes and environmental regulations changed and costs increased. New state and federal environmental laws put some potential water supply sources off limits to development. More stringent water quality standards adopted by the SWRCB to protect the San Francisco Bay/Sacramento-San Joaquin River Delta (Bay-Delta) have also reduced the amount of water available for diversion. At the same time, California's population and water demand continued to grow.

By the late 1980s, the SWP could not meet contractor demands during drought periods. During the initial years of the 1987 – 1992 drought, DWR maintained SWP deliveries using water stored at Lake Oroville and the San Luis Reservoir. In 1991, however, the SWP

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delivered only 549,113 AF of entitlement water. Of this amount, Metropolitan received 381,070 AF, or about 20 percent of its entitlement.

DWR's *Draft 2005 State Water Project Delivery Reliability Report* projected average SWP deliveries to increase slightly, and multiple dry-year deliveries to remain generally unchanged. Minimum SWP deliveries may be as low as 4% to 5% of the full Table A basic contract amount in the single driest year (1977 hydrology). However, DWR has suggested that adjustments would be made to reflect more realistic operations where carryover storage and other provisions would enhance SWP dry-year deliveries to a level that is comparable in quantity to the previous reliability report from DWR.

Environmental Considerations

In recent years, actions taken to protect the ecosystem of the Bay-Delta have placed additional restrictions on SWP operations. The Bay-Delta is the largest estuary on the west coast and supports more than 750 plant and animal species. However, 150 years of human activity, dating back to 19th century gold mining, has taken its toll on the Bay-Delta ecosystem and the fish that live there. Between 1989 and 1999, the winter-run Chinook salmon was designated, or "listed," as an endangered species under the federal ESA and the Delta smelt, steelhead trout, and spring-run Chinook salmon were placed on the list of threatened species.

The degradation of the Bay-Delta ecosystem and the decline of Delta fisheries can be traced to numerous factors, including habitat loss, water diversions, pollution, over-fishing, and the introduction of non-native species. Regulatory protection efforts have nevertheless tended to focus on the operations of the SWP and the federal Central Valley Project (CVP). For example, in 1999, the SWP was forced to reduce pumping by about 500,000 AF to protect Delta smelt and spring-run Chinook salmon. These pumping reductions were in addition to fish protection measures built into the water quality standards established by the SWRCB. Actions taken by CALFED have stabilized this situation over the past four years, but this situation is temporary unless further actions are taken to extend it over the longer term.

Water Quality Considerations

Please see **Section 7** for water quality information.

Current Supplies

SWP delivery contracts were amended in 1995 to reflect principles developed under the December 1994 Monterey Agreement. Under the Monterey amendments, all SWP supplies are allocated to contractors in proportion to their contractual entitlements. Metropolitan's approximately 49 percent share of total SWP contract entitlements, entitles it to a proportionate share of SWP supplies. According to the November 2005 draft of Metropolitan's RUWMP, Metropolitan received an average of 1.04 million AF/YR from the SWP from 1995-2004. From 2000-2004, the annual average was 1.46 MAF.

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DWR's implementation of the Monterey Agreement was successfully challenged in court by the Planning and Conservation League and others. On September 15, 2000, the Third District Court of Appeal reversed a trial court ruling for DWR and ordered a new environmental impact report (EIR) and a trial on the validity of the agreement. DWR is conducting the new environmental review, which is due for completion in 2005.

Future Supplies and the CALFED Bay-Delta Program

Metropolitan's Integrated Water Resources Plan Update (IRP Update), adopted by the Metropolitan Board of Directors in July 2004, indicates that Metropolitan's SWP target for a dry year (based on 1977 hydrology) is 463,000 AF in 2010, and 650,000 AF in 2020. The IRP Update also estimates that in the 2020-2025 period, Metropolitan's annual supply range from the SWP will be between 418,000 AF and 1.74 MAF. This figure does not include another 75,000 to 200,000 AF estimated from San Luis Reservoir carryover storage, 200,000 AF from planned CALFED projects, and 45,000 AF from the Sacramento Valley Water Management Agreement (the latter two programs are still in development and subject to change). The November 2005 RUWMP draft estimates that the SWP will be capable of serving 1.5 MAF to Metropolitan through 2030 in an average year.

Work being done by the CALFED Bay-Delta Program, which is administered by the California Bay-Delta Authority, is expected to provide the greatest opportunity for SWP supply reliability and water quality improvements. However, the outcome of this process remains uncertain. The state and federal governments organized the CALFED Program in 1995 to develop and implement a balanced, comprehensive, and long-term plan to restore the Bay-Delta's ecological health and improve water management for beneficial uses of the estuary. CALFED is working in four inter-related, over-arching categories: ecosystem restoration, levee stability, water quality improvement, and water supply reliability. The CALFED Program made the transition from planning to implementation in 2000 with the release of the Record Of Decision, final programmatic environmental EIS/EIS and *California's Water Future: A Framework for Action*.

The elements of the CALFED Program that have the greatest potential for increasing the reliability and quality of SWP supplies are included in the Delta Improvements Package (DIP), approved by the California Bay-Delta Authority in 2004 as the first major action by CALFED to implement its long-term Bay-Delta plan. Among the activities in the DIP, the most important are improvements to the existing Delta conveyance system, including expansion of the permitted capacity of the SWP pumping plant from its current level of 6,680 cfs to 8,500 cfs (and ultimately to 10,300 cfs subject to certain conditions). The conveyance system improvements would improve the reliability and quality of SWP supplies by allowing the SWP to increase pumping during those times of the year when additional water is available and when water quality is highest, and they would reduce pumping when endangered fish are migrating through the Delta. The improvements will also increase the amount of pumping capacity available for other purposes, such as water transfers.

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The ability of CALFED to work with its member agencies to implement the DIP and other projects was called into question by a state appellate court decision issued on October 7, 2005, concerning CALFED's programmatic environmental impact report (PEIR), which served as the foundation of the Bay-Delta Program record of decision. While the court upheld the PEIR on a number of issues in the case, it concluded that the PEIR should have analyzed an alternative that reduced water exports from the Delta. The court also found that the PEIR inadequately discussed the environmental impacts of diverting water to meet CALFED's goals and did not include sufficient information about the Environmental Water Account. The state attorney general has asked the court for a rehearing of its ruling. If the decision stands, CALFED will have to draft a supplement to its PEIR that considers the "reduced exports" alternative, at the very least. It is currently unclear how much the ruling may affect programs and projects involving the Bay-Delta that are being undertaken by CALFED member agencies.

Another essential element of the CALFED Program is the Environmental Water Account (EWA), a pilot program that provides water at critical times to meeting ecosystem needs while minimizing water supply impacts on water-users. In addition, new surface and groundwater storage could also enhance the reliability and quality of SWP supplies. The CALFED framework calls for the construction of up to 4.75 MAF of new surface and groundwater storage over the life of the CALFED Program; however, it is not known whether any of the new storage would be constructed as part of the SWP.

The amount of water produced through the proposed conveyance improvements will depend on how the individual facilities are operated and on the level of assurances provided by the state and federal regulatory agencies. The EWA provides the SWP and CVP with regulatory assurances intended to ensure that the projects will not face additional water supply impacts due to regulatory actions taken under the federal ESA or other federal or state laws or regulations. However, while the EWA has been extended as a pilot program through 2007, it has not yet been made permanent. If CALFED succeeds in its mission of restoring stability to the Bay-Delta system, and the EWA, and the regulatory assurances, are extended beyond the initial four-year period, then the improvements described in the DIP have the potential to increase Metropolitan's share of average SWP supplies by between 93,000 and 168,000 AF/YR. If CALFED is not successful, and the Bay-Delta system continues to decline, Metropolitan's SWP supplies could even decrease in size and quality relative to existing levels.

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SECTION 7 – WATER QUALITY

The Act requires that the 2005 Plan include information, to the extent practicable, on the quality of existing supply sources and the manner in which water quality affects water supply reliability. This section summarizes water quality issues associated with supplies serving the San Diego region. Information on Colorado River and SWP supplies came in part from Metropolitan's draft 2005 RUWMP.

7.1 COLORADO RIVER

High salinity levels and perchlorate contamination represent two areas of concern regarding the quality of Colorado River supplies. In Moab, Utah, a pile of radioactive waste near the Colorado River is also considered to be a potential threat to the Colorado River's water quality. Research on the potential impact to water quality is inconclusive, but removal of the radioactive waste is being investigated.

Salinity

The salts in the Colorado River System are indigenous and pervasive, mostly resulting from saline sediments in the basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system. Agricultural development and water diversions over the past 50 years increase the already high naturally occurring levels of TDS.

Water imported via the CRA has a TDS averaging around 650 mg/l during normal water years. During the high water flows of 1983-1986, salinity levels in the CRA dropped to a historic low of 525 milligrams per liter (mg/l). However, during the 1987-1990 drought, higher salinity levels returned. During an extreme drought, CRA supplies could exceed 900 mg/l. High TDS in water supplies leads to high TDS in wastewater, which lowers the usefulness of the water and increases the cost of recycled water. (Refer to **Section 7.5** for details on salinity impacts to water recycling.) In addition to the link between water supply and water quality, high levels of TDS in water supplies can damage water delivery systems and home appliances.

To reduce the affects of high TDS levels on water supply reliability, Metropolitan approved a Salinity Management Policy in April 1999. One of the policy goals is to blend Colorado River supplies with lower-salinity water from the SWP to achieve delivered water salinity levels less than 500 mg/l TDS. In addition, to foster interstate cooperation on this issue, the seven basin states formed the Colorado River Basin Salinity Control Forum (Forum). To lower TDS levels in Colorado River supplies, the Forum develops programs designed to prevent a portion of the abundant salt supply from moving into the river system. The Colorado River Basin Salinity Control Program targets the interception and control of non-point sources, such as surface runoff, as well as wastewater and saline hot springs.

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Perchlorate

Ammonium perchlorate is used as the main component in solid rocket propellant, and it can also be found in some types of munitions and fireworks. Ammonium perchlorate and other perchlorate salts are readily soluble in water, dissociating into the perchlorate ion, which does not readily interact with the soil matrix or degrade in the environment. The primary human health concern related to perchlorate is its effects on the thyroid. Perchlorate has been detected at low levels in Metropolitan's CRA water supply.

Because of the growing concerns over perchlorate levels in drinking water, in 2002 Metropolitan adopted a Perchlorate Action Plan. Objectives include expanded monitoring and reporting programs and continued tracking of remediation efforts in the Las Vegas Wash. Metropolitan has been conducting monthly monitoring of Colorado River supplies. The perchlorate originates in the Las Vegas Wash, and the most likely source was a chemical manufacturing site located in Henderson, Nevada. The Nevada Department of Environmental Protection manages a comprehensive groundwater remediation program in the Henderson area. As of December 2004, the amount of perchlorate entering the Colorado River system from Henderson has been reduced from approximately 900 pounds per day (lb/day) to less than 150 lb/day.

7.2 STATE WATER PROJECT

The quality of SWP water as a drinking water source is affected by a number of factors, most notably seawater intrusion and agricultural drainage from peat soil islands in the Delta. SWP water contains relatively high levels of bromide and total organic carbon, two elements that are of particular concern to drinking water agencies. Bromide and total organic carbon combine with chemicals used in the water treatment process to form disinfection by-products that are strictly regulated under the federal Safe Drinking Water Act (SDWA). Wastewater discharges from cities and towns surrounding the Delta also add salts and pathogens to Delta water, and they reduce its suitability for drinking and recycling.

Water agencies treat all water to meet stringent state and federal drinking water standards before delivering it to customers. However, source water of poor quality will make it increasingly expensive and difficult to meet such standards. The California Urban Water Agencies (CUWA) retained the assistance of a panel of drinking water quality and treatment experts to evaluate the source water quality necessary to allow agencies treating Delta water to comply with future drinking water regulations under a plausibly conservative regulatory scenario. The expert panel identified target bromide and total organic carbon concentrations of 50 parts per billion (ppb) and 3 parts per million (ppm), respectively. These targets were written into the Record Of Decision (ROD) adopted by CALFED in 2000.

The ROD states that CALFED will either achieve these targets at Clifton Court Forebay and drinking water intakes in the south and central Delta, or it will achieve an "equivalent level of public health protection using a cost-effective combination of alternative source waters, source control, and treatment technologies." CALFED did not establish a similar target for the salinity of Delta water, a particular concern in Southern California, because of the high

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salinity levels in Colorado River water, but the 2004 CALFED Drinking Water Quality Program Plan lists two "numeric targets," less than 220 ppm over a 10-year average and less than 440 ppm as a monthly average.

Actions to protect Delta fisheries have exacerbated existing water quality problems by forcing the SWP to shift its diversions from the springtime to the fall, when salinity and bromide levels are higher. Closure of the Delta Cross-Channel gates to protect migrating fish has also degraded SWP water quality by reducing the flow of higher quality Sacramento River water to the SWP pumps at critical times.

Water supplies from the SWP have significantly lower TDS levels than the Colorado River, averaging 250 mg/l in water supplied through the East Branch and 325 mg/l on the West Branch. Because of this lower salinity, Metropolitan blends SWP water with high salinity CRA water to reduce the salinity levels of delivered water. However, both the supply and the TDS levels of SWP water can vary significantly in response to hydrologic conditions in the Sacramento-San Joaquin watersheds.

The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns, and they pose an additional problem to blending as a management tool to lower the higher TDS from the CRA supply. For example, in the 1977 drought, the salinity of SWP water reaching Metropolitan increased to 430 mg/l, and supplies became limited. During this same event, salinity at the Banks pumping plant exceeded 700 mg/l. Under similar circumstances, Metropolitan's 500 mg/l salinity objectives could only be achieved by reducing imported water from the CRA. Thus, it may not be possible to maintain both salinity standards and water supply reliability unless salinity levels of source supplies can be reduced.

The CALFED Bay-Delta Program's EIS/EIR, Technical Appendix, July 2000 Water Quality Program Plan, identified targets that are consistent with TDS objectives in Article 19 of the SWP Water Service Contract: a ten-year average of 220 mg/l and a maximum monthly average of 440 mg/l. These objectives were set in the 1960s when Metropolitan expected to obtain a greater proportion of its total supplies from the SWP. Because of reductions in expected SWP deliveries, Metropolitan's Board believes that this standard is no longer appropriate, so it has adopted a statement of needs from the Bay-Delta. Under the drinking water quality and salinity targets element, the Board states its need "to meet Metropolitan's 500 mg/l salinity-by blending objective in a cost-effective manner while minimizing resource losses and ensuring the viability of recycling and groundwater management programs."

7.3 SURFACE WATER

The region's water quality is influenced by a variety of factors depending on its source. As stated above, water from the Colorado River and from Northern California are vulnerable to a number of contributors to water quality degradation. Regional surface and groundwater are primarily vulnerable to increasing urbanization in the watershed, agriculture, recreational uses, wildlife, and fires.

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Source water protection is fundamentally important to all of California. The DHS requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to examine possible sources of drinking water contamination. The survey includes suggestions for how to protect water quality at the source.

A similar requirement from United States Environmental Protection Agency (EPA) calls for utilities to complete a Source Water Assessment (SWA). Information collected in SWAs is used to evaluate changes in potential sources of contamination and to help determine if more protection measures are needed. EPA requires utilities to complete a SWA that uses information collected in the sanitary surveys. The SWA is also used to evaluate the vulnerability of water sources to contamination and also helps determine whether more protective measures are needed.

The monitoring of key constituents in source waters is critical in helping to identify constituents that should be controlled at the source and to determine the best ways to operate the water system so as to improve the quality of water delivered to the consumer. The effect of urban runoff on receiving water quality is a recently recognized problem. Most of the work up to the present has centered on characterizing urban runoff: measuring concentrations of various constituents, attempting to relate these concentrations to such factors as land use type and rainfall intensity, and studying the effects of these constituents on street surfaces. It appears that considerable quantities of contaminants, heavy metals in particular, may enter the receiving waters through urban runoff. The federal Water Pollution Control Act Amendments of 1972 stress future "control of treatment of all-point and non-point sources of pollution." Thus, the federal government has concluded that non-point sources, such as urban runoff, are indeed harmful to the aquatic environment and that measures should be taken to control such emissions.

There are four basic approaches to controlling pollution from urban runoff: (1) prevent contaminants from reaching urban land surfaces; (2) improve street cleaning and cleaning of other areas where contaminants may be present; (3) treat runoff prior to discharge to receiving waters; and (4) control land use and development. Which approach or combination of approaches is most effective or economical has not yet been studied extensively. Thus, only the basic characteristics of each approach can be discussed. In addition to these direct approaches, measures to reduce the volume of runoff from urban areas are also available.

The fourth approach, control land use and development, is used to encourage controls on urbanization in order to reduce the volume of runoff. The usual pattern is that increased urbanization leads to higher runoff coefficients, reflecting the many impervious surfaces associated with development. Roof drains to storm sewers, paved parking lots and streets, installation of storm sewers, filling of natural recharge areas, and increased efficiency in realigned and resurfaced stream channels all are characteristics of urban growth. Development near streams and on steep slopes harms water resources. It is less disruptive to develop the lower portions of a watershed than the headwater areas, both

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from the standpoint of the length of channel affected and the extent of channel enlargement necessary to convey storm water. Use of porous pavements and less reliance on roof connections to storm drains and more emphasis on local recharge would reduce the peak volume of runoff from storms. An area's mass emissions of urban drainage constituents should be quantified. Urban planning should be more cognizant of land constraints to permit greater natural recharge where possible and feasible, and to discourage intensive development of steep land, particularly in headwater areas.

To address the issues associated with surface water quality, the Water Authority, the City of San Diego, and the County of San Diego have formed a Regional Water Management Group to coordinate development of an Integrated Regional Water Management Plan (IRWMP) for the San Diego region. An important element in the IRWMP is to protect and enhance the region's local surface water quality. As part of this process, projects will be identified and implemented to assist in watershed protection, and thereby, protect the quality of surface water supplies.

In the past, regional surface water quality has been considered good to excellent. Water quality can vary with imported water inflows and surface water contamination. Source water protection is considered a key element in regional water quality. The Water Authority and its member agencies are working together to improve watershed awareness and management. Currently, the most significant water quality issue that affects the public is algae blooms, which can create taste and odor problems.

In San Diego County, DHS has primacy over the implementation of the SDWA. The SDWA regulates source water protection to ensure public health through the multiple barrier approach, an approach that anticipates that the public will participate in source water protection. Member agencies in the Water Authority's service area that have surface water have a good, long-standing, working relationship with DHS.

7.4 GROUNDWATER

Two water quality parameters that can affect reliability of groundwater resources in San Diego County are contamination from high salinity levels and Methyl Tertiary Butyl Ether (MTBE).

Salinity

Increased TDS in groundwater basins occurs either when basins near the ocean are over drafted, leading to seawater intrusion, or when agricultural and urban return flows add salts to the basins. Much of the water used for agricultural or urban irrigation infiltrates into the aquifer, so where high TDS irrigation water is used or where the water transports salts from overlying soil, the infiltrating water will increase the salinity of the aquifer. Using this resource requires costly demineralization projects. (Refer to **Section 5.2.1** for discussion on groundwater recovery projects.)

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To protect the quality of these basins, the Regional Board often places restrictions on the salinity levels of water used for basin recharge or for irrigation of lands overlying the aquifers. Where these restrictions are in place, water reuse and aquifer recharge may be restricted, or expensive mitigation measures may be required.

Methyl Tertiary Butyl Ether

Until recently, MTBE was the primary oxygenate in virtually all the gasoline used in California. In January 2004, the Governor's executive order to remove MTBE from gasoline became effective, and now ethanol is the primary oxygenate. Relative to other organic compounds, MTBE is very soluble in water and has low affinity for soil particles, thus allowing the chemical to move quickly in the groundwater. MTBE is also resistant to chemical and microbial degradation in water, making treatment more difficult than the treatment of other gasoline components.

MTBE presents a significant potential problem to local groundwater basins. Leaking underground storage tanks and poor fuel-handling practices at local gas stations may provide a large source of MTBE. Improved underground storage tank requirements and monitoring, and the phase-out of MTBE as a fuel additive, will probably decrease the likelihood of MTBE groundwater problems in the future.

7.5 RECYCLED WATER

Water quality, as it pertains to high salinity supplies, is a significant implementation issue for recycled water projects. High TDS source water poses a special problem for water recycling facilities because conventional treatment processes are designed to remove suspended particles, but not dissolved particles. TDS removal, or demineralization, requires an advanced treatment process, which can increase project costs significantly.

Residential use of water typically adds 200 to 300 mg/l of TDS to the wastewater stream. Self-regenerating water softeners can add another 60 to 100 mg/l. Infiltration of brackish groundwater into sewer lines can also cause an increase in TDS. If an area receives a water supply with TDS of more than 700 mg/l, and residents add 300 mg/l or more through normal use, the recycling facility will produce recycled water with a TDS concentration of 1,000 mg/l or higher. **Figure 7-1** shows the average TDS at several of the existing and projected water recycling treatment plants. In general, TDS concentrations over 1,000 mg/l become problematic for irrigation and industrial reuse customers. This problem greatly limits the potential uses and marketability of recycled water, particularly for agricultural purposes, because certain crops and nursery stock cannot be irrigated with high-TDS water.

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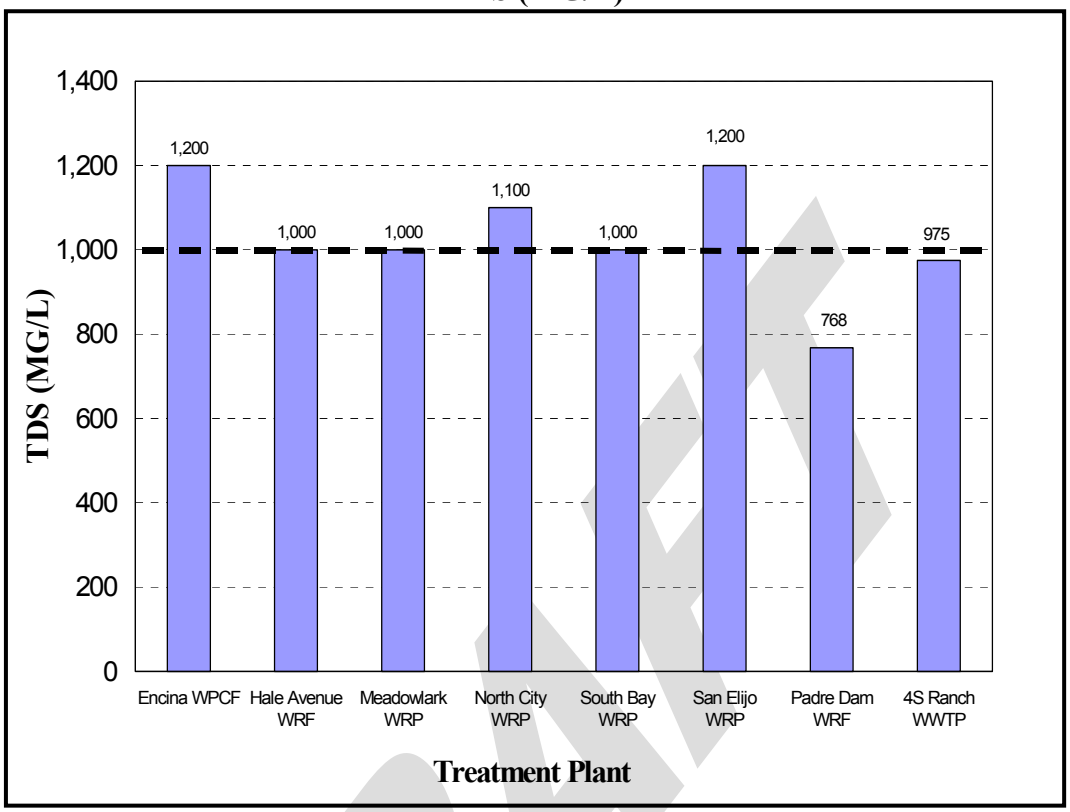
FIGURE 7-1
TREATMENT PLANT AVERAGE EFFLUENT
TDS (MG/L)



7.6 SEAWATER DESALINATION

The feedwater source for the proposed regional seawater desalination project at the Encina Power Station in Carlsbad is the Pacific Ocean. The salinity of the Pacific Ocean in San Diego County is fairly stable, with a TDS concentration around 34,000 mg/l. To address TDS concentrations at this level, the desalination facility will use a RO membrane treatment process to reduce the TDS to less than 350 mg/l resulting in approximately 99 percent removal of TDS and a supply that meets drinking water standards.

Prior to the RO process, the feedwater will be pretreated to remove suspended solids, including organic material. The RO process will then remove the dissolved solids. Next, the product water will be post-treated to prevent corrosion in the distribution system and improve the aesthetic quality of the water. This process generally involves adding alkalinity to the treated water. The final step, a disinfection process, provide disinfection residual in the treated water.

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A single-pass RO process of seawater generally results in about 50 percent recovery of treated water. The remaining 50 percent is discharged as concentrate, with about twice the salinity of the original feedwater. The concentrate will be diluted with cooling water from the power station to avoid negative impacts to the marine environment from the elevated salinity levels at the point of discharge.

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SECTION 8 – WATER SUPPLY RELIABILITY

As stated in the Act, every urban water supplier shall include, as part of its plan, an assessment of the reliability of its water supply. The water supply and demand assessment must compare the total projected water use with the expected water supply over the next 20 years in 5-year increments. This reliability assessment is required for normal, single dry-year and multiple dry water years. The assessment contained in the 2005 Plan projects reliability through the next 25 years to correspond with the growth forecast developed by SANDAG and ensure compliance with Senate Bills 610 and 221. In addition to the expected mix of resources utilized in the reliability assessment, a resources goal has been established. The goal includes the expected supplies plus other potential projects which are important to maximizing development of local resources, but are still in the conceptual phase. This section presents a summary of the water demands and supplies within the Water Authority's service area along with the reliability assessment and resources goal.

8.1 DEVELOPMENT OF PROJECTED WATER RESOURCES MIX

In summary, development of the projected mix of resources to meet future demands was based on the following factors:

- Local agency information on projected water recycling, groundwater, and surface water supplies (discussed in **Section 5**);
- Update of the Water Authority's 2000 Plan to reflect Board action taken over the last five years related to the following items:
  - Adoption of QSA related agreements (**Section 6.2.1**);
  - Fourth Amendment to the Transfer Agreement (**Section 4.1**);
  - Agreement between Metropolitan and the Water Authority regarding assignment of agreements related to the ACC and CC Lining Projects (**Section 4.2**); and
  - Commencement of Water Authority Seawater Desalination Program (**Section 4.3**)
    - Addition of regional seawater desalination project to Water Authority's CIP; and
    - Agreement with Carlsbad to establish a framework for cooperation regarding the development of a regional seawater desalination project at the Encina Power Station.

8.2 NORMAL WATER YEAR ASSESSMENT

Table 8-1 shows the normal year assessment, summarizing the total water demands for the Water Authority through the year 2030 along with the supplies necessary to meet demands under normal conditions. **Section 2** contains a discussion of the normal year water demands in the Water Authority's service area. If the Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area in a normal year through 2030.

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TABLE 8-1
NORMAL WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AF/YR)

	2010	2015	2020	2025	2030
Water Authority Supplies					
Regional Seawater Desalination at Encina	0	56,000	56,000	56,000	56,000
IID Water Transfer	70,000	100,000	190,000	200,000	200,000
ACC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Sub-Total	147,700	233,700	323,700	333,700	333,700
Member Agency Supplies					
Surface Water	59,649	59,649	59,649	59,649	59,649
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	17,175	18,945	19,775	19,775	19,775
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Sub-Total	121,892	130,656	136,372	137,316	138,408
Metropolitan Water District Supplies	445,858	378,544	311,438	324,624	356,922
TOTAL PROJECTED SUPPLIES	715,450	742,900	771,510	795,640	829,030
TOTAL ESTIMATED DEMANDS w/ Conservation	715,450	742,900	771,510	795,640	829,030

8.3 DRY WATER YEAR ASSESSMENT

In addition to a normal water year assessment, the Act requires an assessment to compare supply and demands under single dry and multiple dry water years over the next 20 years, in five-year increments. **Section 2** describes the derivation of the dry water year demands. **Table 8-2** shows the single dry-year assessment. The projected groundwater and surface water yields shown in the table are based on historic 1991 supplies during the 1987-1992 drought years. The supplies available from projected recycling and groundwater recovery projects are assumed to experience little, if any, reduction in a dry-year. The Water Authority's existing and planned supplies from the IID transfer, canal lining projects, and seawater desalination are also considered "drought-proof" supplies as discussed in **Section 4**. Therefore, estimated normal yields from these supplies are also included in the analysis.

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TABLE 8-2
SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE YEAR INCREMENTS
(AF/YR)

	2010	2015	2020	2025	2030
Water Authority Supplies					
Regional Seawater Desalination at Encina	0	56,000	56,000	56,000	56,000
IID Water Transfer	70,000	100,000	190,000	200,000	200,000
ACC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Sub-Total	147,700	233,700	323,700	333,700	333,700
Member Agency Supplies					
Surface Water	22,284	22,284	22,284	22,284	22,284
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	10,838	10,838	10,838	10,838	10,838
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Sub-Total	78,190	85,184	90,070	91,014	92,106
Metropolitan Water District Supplies	541,760	477,086	411,790	423,896	457,224
TOTAL PROJECTED SUPPLIES	767,650	795,970	825,560	848,610	883,030
TOTAL ESTIMATED DEMANDS w/ Conservation	767,650	795,970	825,560	848,610	883,030

In accordance with the Act, **Tables 8-3, 8-4, 8-5, 8-6,** and **8-7** show the multiple dry water year assessments in five-year increments. The member agencies' surface and groundwater yields shown in these tables are reflective of supplies available during the 1987-92 drought in years 1990, 1991 and 1992.

MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT
FIVE-YEAR INCREMENTS
(AF/YR)

TABLE 8-3

	2006	**2007**	**2008**
Water Authority Supplies	40,000	71,500	71,500
Member Agencies	56,670	60,230	80,900
Metropolitan Supplies	647,850	618,050	602,630
Total Estimated Supplies	744,520	749,780	755,030
Total Estimated Demands	744,520	749,780	755,030

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TABLE 8-4

	2011	2012	2013
Water Authority Supplies	213,700	223,700	233,700
Member Agencies	81,580	80,660	96,860
Metropolitan Supplies	476,130	472,920	452,590
Total Estimated Supplies	771,410	777,280	783,150
Total Estimated Demands	771,410	777,280	783,150

TABLE 8-5

	2016	2017	2018
Water Authority Supplies	233,700	233,700	263,700
Member Agencies	88,150	86,810	102,580
Metropolitan Supplies	479,180	486,640	446,990
Total Estimated Supplies	801,030	807,150	813,270
Total Estimated Demands	801,030	807,150	813,270

TABLE 8-6

	2021	2022	2023
Water Authority Supplies	333,700	333,700	333,700
Member Agencies	92,250	90,120	105,110
Metropolitan Supplies	404,730	412,020	402,200
Total Estimated Supplies	830,680	835,840	841,010
Total Estimated Demands	830,680	835,840	841,010

TABLE 8-7

	2026	2027	2028
Water Authority Supplies	333,700	333,700	333,700
Member Agencies	93,220	91,120	106,140
Metropolitan Supplies	431,560	440,810	432,930
Total Estimated Supplies	858,480	865,630	872,770
Total Estimated Demands	858,480	865,630	872,770

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As shown in the above tables, if the projected Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area under single dry-year or multiple dry water years through 2030. However, the Water Authority is at risk for shortages should the supplies identified in Metropolitan's IRP not be developed as planned or a Metropolitan member agency such as the City of Los Angeles invoke its Section 135, Preferential Right to Water (discussed in **Section 6.1.1**). To alleviate this risk, the Water Authority is pursuing the following options: 1) the development of additional storage; and 2) development of additional seawater desalination. Storage opportunities include local carryover storage facilities to accumulate and store water during periods of availability, as well as the acquisition of out-of-the-region conjunctive-use facilities to develop additional groundwater storage. (Refer to **Section 1.5.1** for discussion on Water Authority's proposed carryover storage project.) A combination of storage and new supply appears to provide the most reliable solution to alleviating risks during a dry-period.

8.4 RELIABILITY OF SUPPLY

The above sections identify the diverse mix of resources planned to meet future demands in both a normal and dry-year. Implementation of this regional resource mix will require development of projects and programs by the Water Authority, its member agencies, and Metropolitan. The Water Authority coordinated with its member agencies and Metropolitan during preparation of the 2005 Plan on the future demands and supplies projected for the region. The steps being taken by the member agencies and Metropolitan to develop supplies are addressed in their respective urban water management plans. **Section 4** contains the steps taken and remaining actions necessary to develop and maintain the Water Authority supplies (Colorado River transfers and seawater desalination).

The Act requires that, for any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, that the agency describe, to the extent practicable, plans to replace that source with alternative sources or water demand management measures. As stated throughout the 2005 Plan, the Water Authority and its member agencies are planning to develop a diverse supply of resources. The unavailability of any one supply source will be buffered because of the diversity of the supplies: the region is not reliant on a single source. To replace or supplement an existing supply, the Water Authority could take steps to increase development of transfers or seawater desalination. Member agencies could also further maximize development of recycled water and groundwater. With a successful conservation program already in place, the Water Authority and its member agencies could effectively implement extraordinary conservation measures to assist in ensuring reliability. Another element of reliability is Metropolitan's IRP planning buffer, described in **Section 6.1.2**, which identifies an additional increment of water that could be potentially developed if other supplies are not implemented as planned. A combination of these resources would be necessary to ensure a reliable supply.

As stated in **Section 4.3.1**, the Regional Seawater Desalination Project at Encina, identified in the resource mix, is currently in the environmental review and planning phase. Decisions relating to implementation are currently scheduled for 2006, based on a construction completion date of 2011. Because there are a number of factors that could affect implementation of seawater desalination, alternative options are being considered. This includes accelerating construction of an additional imported water conveyance pipeline, Pipeline 6, that would allow for additional supply deliveries from Metropolitan. With a regional seawater desalination project in place, Pipeline 6 would not be needed until approximately 2025. To meet demands without seawater desalination, preliminary results from Metropolitan's draft *System Overview Study* show that Pipeline 6 would be needed by 2018 and that it would take an estimated nine years to construct. A decision on implementation of a seawater desalination project prior to 2009 would allow adequate time to construct the facility. Activities associated with implementation of Pipeline 6 include the following:

* Metropolitan is currently constructing the first seven-mile portion of its approximately 18-mile section of the pipeline, with completion expected in 2006;
* An alignment for the entire approximately 30-mile pipeline was identified in the original 1993 Environmental Impact Report. Metropolitan is considering minor modifications to their alignment that will require further CEQA review;

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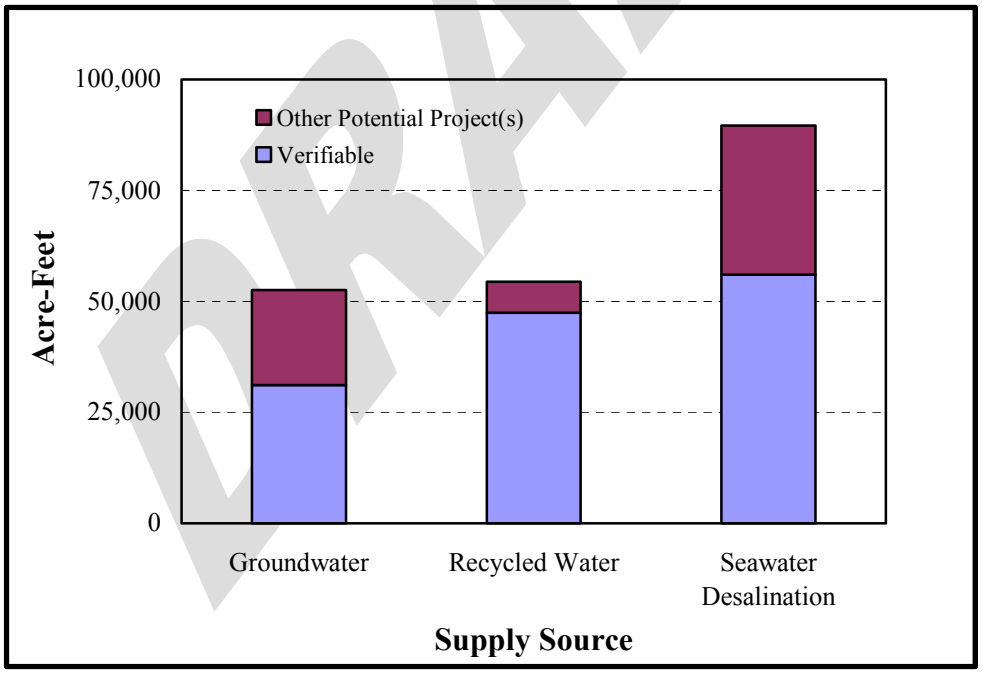
* Both Metropolitan and the Water Authority are purchasing property along the alignment; and
* Coordination between Metropolitan and Water Authority regarding construction of the pipeline are ongoing.

8.5 REGIONAL WATER SUPPLY GOALS

As stated in **Sections 4 and 5**, those projects with adequate documentation regarding implementation or existing projects already planned for expansion were considered for inclusion in the assessments discussed in **Sections 8.2 and 8.3**. In addition to these verifiable projects, the Water Authority and its member agencies have conceptually identified other potential projects. Combining the verifiable projects and these conceptual projects forms the regional water supply goals.

These supply goals are critical to the region for a number of reasons. The Water Authority and member agencies must continue to strive to develop cost-effective local resources that can further diversify the region's supplies and reduce demands for imported water from Metropolitan. They provide objectives for the region to work towards by resolving any funding, regulatory, and other constraints associated with implementation. **Figure 8-1** shows the water supply goals for recycled water, groundwater, and seawater desalination.

FIGURE 8-1
2030 WATER SUPPLY GOALS



The Water Authority worked with its member agencies to determine the verifiable supplies to be included in the assessment and those projects to be included in the supply goals. Including the verifiable supplies contained in the assessment, the regional groundwater production goal is 52,575 AF/YR by 2030. The recycled water goal is 54,413 AF/YR by 2030. The specific local projects are listed in **Table F-2** and **F-4** in **Appendix F**.

As mentioned in **Section 4.3**, the Water Authority's current CIP identifies development of up to 89,600 AF/YR of desalinated seawater within the San Diego region by 2030. The Water Authority is currently focusing its efforts on implementing a 56,000 AF/YR seawater desalination facility at the Encina Power Station. The additional increment of seawater desalination supply may be developed through potential projects at San Onofre, South County or expansion of the 50-mgd planned at Encina Power Station. The 89,600 AF/YR serves as the Water Authority's 2030 seawater desalination goal.

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SECTION 9 – SHORTAGE CONTINGENCY ANALYSIS

The Act requires that urban water agencies conduct a water shortage contingency analysis as part of their 2005 plan. This section includes the Water Authority's analysis, which addresses a catastrophic shortage situation and drought management.

9.1 CATASTROPHIC WATER SHORTAGE

A catastrophic water shortage occurs when a disaster, such as an earthquake, results in insufficient available water to meet the region's needs or eliminates access to imported water supplies. The following section describes the Water Authority's Emergency Response Plan (ERP) and the ESP, both developed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies.

9.1.1 Emergency Response Plan

The Water Authority's ERP provides staff with the information necessary to respond to an emergency that causes severe damage to the Water Authority's water distribution system or impedes the Water Authority's ability to provide reliable water service to its member agencies. The ERP describes the situations and incidents that will trigger the activation of the Water Authority's ERP and Emergency Operations Center (EOC). It also provides direction and strategies for responding to a crisis. The Water Authority's ERP includes:

- Authorities, policies, and procedures associated with emergency response activities;
- EOC activities - including EOC activation and deactivation guidelines;
- Multi-agency and multi-jurisdictional coordination, particularly between the Water Authority, its member agencies, and Metropolitan in accordance with Standardized Emergency Management System (SEMS) guidelines;
- Emergency staffing, management, and organization required to assist in mitigating any significant emergency or disaster;
- Mutual Aid Agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided;
- Pre-emergency planning and emergency operations procedures.

In addition, the Water Authority's ERP Manual uses a step-by-step approach to emergency response planning by providing such procedural tools as action checklists, resource and information lists, personnel rosters, and listings of established policies and procedures. The Water Authority's plan parallels many of the same plan components contained in the Unified San Diego County Emergency Services Organization's "Operational Area Emergency Plan" (OAEP). In turn, the OAEP serves to support and supplement the Water Authority's ERP.

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9.1.2 Water Authority's Emergency Storage Project

In June, 1998, the Water Authority's Board authorized implementation of the ESP to reduce the risk of potential catastrophic damage that could result from a prolonged interruption of imported water due to earthquake, drought, or other disasters.

The ESP is a system of reservoirs, pipelines, and other facilities that will work together to store and move water around the county in the event of a natural disaster. The facilities are located throughout San Diego County and are being constructed in phases. The entire project is expected to be complete by 2012. Its initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,364 AF Olivenhain Reservoir. When completed, the ESP will provide 90,100 AF of stored water for emergency purposes to meet the county's needs through at least 2030.

In sizing the ESP, the Water Authority assumed a 75 percent level of service to all Water Authority member agencies during an outage and full implementation of the water conservation BMPs. The following steps from the final draft of the August 2002 Emergency Water Delivery Plans show the methodology for calculating the allocation of ESP supplies to member agencies in a prolonged outage situation without imported supplies:

1. Estimate the duration of the emergency (i.e. time needed to repair damaged pipelines);
2. Determine each member agency's net demand during the emergency period by adding M&I water demands and agricultural water demands and then subtracting recycled water supplies;
3. Determine each member agency's useable local supplies during the emergency period (local supplies include surface water and groundwater);
4. Determine each member agency's level of service based on usable local supplies and net demand;
5. Adjust the allocation of ESP supplies based on a member agency's participation in the IAWP. IAWP customers will be required to take a reduction in deliveries during a water shortage due to an emergency at double the system-wide reduction up to a maximum of 90%. Water not delivered to IAWP customers will be redistributed to member agencies based on the "system-wide" level of service targets;
6. Determine the amount of local supplies that can be transferred between member agencies, with transfers occurring only after a member agency has a level of service greater than 75% based on their usable local supplies; and
7. Allocate delivery of useable ESP storage supplies and Metropolitan supplies to member agencies with the goal of equalizing the level of service among the member agencies; and

The Board of Directors may authorize that supplies from the ESP be used in a prolonged drought situation where imported and local supplies do not meet 75 percent of the Water Authority's member agencies M&I demands.

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9.2 DROUGHT MANAGEMENT PLANNING

9.2.1 Introduction

The last major drought in California occurred between 1987 and 1992 and caused severe water supply shortages throughout the state. During early March 1991, at the peak of the drought, Metropolitan's SWP supplies were reduced by 90 percent. Subsequently, Metropolitan voted to impose a 50 percent reduction in imported deliveries to the Water Authority. The results of Metropolitan's cutback would have been devastating to the Water Authority's businesses and residents except for the miracle March rainfall that occurred later that month. These rains allowed the SWP to reduce its level of cutback to 80 percent, and Metropolitan later rolled back its call for reduction from 50 to 31 percent. Even at this level the Water Authority was impacted more than other Metropolitan members because of its high dependence upon imported supplies from Metropolitan.

Since the 1987-1992 drought, the Water Authority and its member agencies have developed plans and implemented projects to reduce reliance on a single supply source. As mentioned in **Section 8**, if projected supplies are developed as planned and Metropolitan's IRP is fully implemented, no shortages are anticipated within the Water Authority's service area through 2030. While the region has plans to provide a high level of reliability, there will always be some level of uncertainty associated with maintaining and developing local and imported supplies. Therefore, the Water Authority is developing a comprehensive Drought Management Plan (DMP) in the event that the region does face supply shortages due to drought conditions. The sections below describe the process to develop the DMP, achievements to date, and the schedule for completion.

In 1999, Metropolitan adopted the Water Surplus and Drought Management Plan (WSDM Plan) to integrate planned operational actions with respect to both surplus and shortage situations. (For further details on the WSDM Plan actions, refer to Metropolitan's 2005 RUWMP.) The WSDM Plan final action, to be taken in an extreme shortage stage, is the implementation of an allocation plan. An allocation plan was not developed as part of the WSDM Plan, and it is not known when Metropolitan will consider and adopt such a plan. In developing the DMP described below, the Water Authority made assumptions regarding the Metropolitan supplies available during drought stages. The Water Authority will adjust the DMP as necessary following Metropolitan's adoption of an allocation plan.

One of the requirements of the shortage contingency analysis included in the Act is an estimate of the minimum supplies available during each of the next three years. **Table 8-3** of **Section 8.3** shows this estimate. The sections below address other requirements of the Act applicable to the Water Authority.

9.2.2 DMP Purpose

The DMP will provide the Water Authority and its member agencies with a series of actions to take when faced with a shortage of imported water supplies from Metropolitan due to drought conditions. The potential actions will help the region minimize the impacts of shortages and ensure equitable allocation of supplies.

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The DMP will include a drought response matrix containing actions to be taken by the Water Authority at different drought stages. One of the actions, if warranted, is an allocation of available supplies. The Water Authority is currently developing an allocation methodology to include in the DMP. This methodology will determine supplies available to member agencies and how local resources will be handled. A communication strategy will also be prepared to help the Water Authority and its member agencies implement the DMP actions. When ultimately faced with a supply shortage, there may be factors unknown at this time that could influence the actions taken. The DMP will provide guidance on how to move forward and minimize the impacts of a shortage situation.

9.2.3 DMP Technical Advisory Committee

Preparing and implementing a DMP for the San Diego region requires input and support from the Water Authority's member agencies. Recognizing the importance of member agency involvement, the Water Authority formed a TAC – Technical Advisory Committee – to provide input on development of the DMP. The TAC includes a representative from each of the member agencies. The meetings are facilitated to ensure full involvement from all participants.

To gain an initial understanding of the TAC members' positions on the DMP elements, each member completed a questionnaire. Results from this questionnaire provided valuable information used to develop a set of principles for preparing the DMP. The TAC will continue to meet and provide input until the DMP report is complete.

Proposed elements of the DMP that have been initially developed through the DMP TAC meetings are presented in **Sections 9.2.4, 9.2.5,** and **9.2.6**. The information contained in these sections is draft and subject to change during development and final Board of Director's approval of the DMP.

9.2.4 DMP Principles

The TAC developed principles to provide guidance to the Water Authority and its member agencies in developing and implementing the DMP. The principles are grouped below under elements of the DMP:

<u>Overall Plan</u>

1. The DMP will be developed in cooperation with the member agencies and include all aspects of drought planning – including steps to avoid rationing, drought response stages, allocation methodology, pricing, and communication strategy.

<u>Communication Strategy</u>

2. An on-going, coordinated and regional public outreach program shall be developed by the Water Authority that provides a clear and consistent message to the public regarding water

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supplies and specific conservation measures. The outreach program will also recognize and support member agency communication efforts that address specific retail level allocations.

3. A Drought Coordination Team, made up of one representative from each member agency, will be established to assist the Water Authority in implementation of the DMP. This includes items such as formulation and implementation of the public outreach program, timing of drought stages, selection of drought supply actions, and addressing potential issues surrounding implementation of the shortage allocation methodology.

4. The drought management plan should specify actions and timing of communications.

Drought Supply Augmentation

5. The Water Authority and its member agencies will work cooperatively to avoid and/or minimize rationing during droughts through supply augmentation and voluntary demand reduction measures.

6. Future Water Authority carryover storage supplies will be managed and utilized to assist in meeting demands during drought periods. Member agencies will be encouraged to develop carryover storage.

7. The Water Authority will consider securing option and/or spot water transfers to meet the reliability goal set by the Board. The cost of this regional supply will be melded into the Water Authority's supply costs for all classes of service that benefit.

8. Subject to the Water Authority's wheeling policy, if a member agency purchases transfer water from a source other than the Water Authority, the full cost of the transfer, including, but not limited to, purchase costs, wheeling costs, and administrative costs, will be borne by said member agency.

9. ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level.

10. The quantities of supplies from the ESP to be removed from storage will be based on a minimum amount necessary to meet essential health, safety, and firefighting needs, and maximum amount based on the need to ensure adequate supplies remain for a catastrophic event (e.g. earthquake).

Drought Response Stages

11. Develop drought response stages, which at a minimum, accomplish the following:

    - Can be easily communicated to the public;
    - Flexible to handle unexpected changes in demand and supply conditions;
    - Includes percent reduction (voluntary or mandatory) per stage; and
    - Includes both supply augmentation and emergency demand reduction methods.

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12. Targets for achieving the emergency demand reduction measures should take into account the region's already aggressive long-term water conservation program.

13. The decision on when, and in which sequence drought augmentation supplies will be utilized during different stages will include consideration of the following factors:

    - Location – Out-of-region supplies will be utilized in the earlier stages, prior to in-county storage, because these supplies are more vulnerable to implementation risks such as seismic events;
    - Cost – Priority will be given to maximizing supply reliability and at the same time using the most cost-effective supplies; and
    - Limitations – Potential restrictions on the use of drought augmentation supplies is a factor in determining supply availability (e.g. potential restrictions on ESP supplies).

<u>Allocation Methodology</u>

14. The allocation methodology will be equitable, easy to administer, contain financial penalties and pricing signals, and a communication strategy to ensure member agencies and the public are informed and understand the need to conserve.

15. In order to protect the economic health of the entire region, it is very important for the allocation methodology to avoid large, uneven retail impacts across the region. The methodology should include a minimum level of retail agency reliability to ensure equitable allocation among the member agencies.

16. With the exception of allocating water from the ESP, the Water Authority shall make no distinction among customers paying the same M&I rate (e.g. non-Interim Agricultural Water Program (IAWP) agriculture, residential, commercial, and industrial).

17. Additional IAWP cutbacks beyond the initial 30 percent faced by IAWP customers should be equally applied to both IAWP and M&I customers.

18. A member agency that has developed local projects and instituted conservation measures should not be penalized in the computation of allocations.

19. To help balance out the financial costs and risks associated with development of local resources, the shortage allocation methodology should provide an incentive to those member agencies that have developed local supplies.

20. The base-year, upon which allocations will be derived, will be based on historic demands. Adjustments to the base-year will be made for demographic changes, growth, local supplies, demand hardening, and supplies allocated under interruptible service programs.

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21. A member agency's base-year will be adjusted to reflect the regional financial contribution from the Water Authority for development of local projects. The adjustment will take into account the risks associated with developing the local projects.

22. A member agency will not be able to market its unused allocation to other agencies within the Water Authority's service area at a cost higher than the Water Authority's charges for those supplies.

23. Penalty rates, along with other demand reduction measures, will be used by the Water Authority to encourage conservation during a drought.

9.2.5 Drought Response Matrix

The Act requires information on the stages of action to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. To meet the requirements, the Water Authority, with input from the TAC, developed a regional drought response matrix. The matrix provides guidance to the Water Authority and member agencies in selecting potential regional actions to lessen the severity of shortage conditions. Member agencies will independently adopt retail-level actions to manage potential shortages.

As shown in **Table 9-1**, the matrix proposes three main stages and identifies potential actions available to the Water Authority at each stage. To determine the specific actions that should be taken at each stage, the Water Authority and its member agencies will evaluate conditions specific to the timing and supply availability along with other pertinent variables. Numerous variables can influence the reduction levels adopted during a drought. These variables include, but are not limited to, SWP allocation, conditions on the Colorado River, Water Authority supplies, local storage, local demands and timing.

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TABLE 9-1
DROUGHT RESPONSE MATRIX – FIRM DEMANDS

STAGES:	Voluntary	SDCWA Supply Augmentation	Mandatory Cutbacks (includes 50% cutback)
POTENTIAL SDCWA DROUGHT ACTIONS:	∗ Ongoing BMP implementation ∗ Monthly monitoring of supply conditions and storage levels ∗ Call for voluntary conservation ∗ Draw from planned SDCWA carryover storage	∗ Secure transfer option contracts ∗ Buy phase 1 spot transfers (cost at or below Tier 2 rate) ∗ Call transfer options contracts ∗ Draw from planned SDCWA carryover storage ∗ Buy phase 2 spot transfers (cost at or above Tier 2 rate)	∗ Implement allocation plan ∗ Utilize ESP supplies

Matrix Stages and Actions

Three drought stages have been identified in the matrix. The first stage is considered voluntary, where actions initiated at this stage include calling for voluntary conservation, monthly monitoring of supplies, and utilizing a prudent amount of supplies from Water Authority planned carryover storage. These actions would continue throughout the drought stages.

The second stage occurs when the reduction in Metropolitan supplies causes the Water Authority Board to take actions to augment supplies. The matrix includes suggested actions to be considered by the Board. In the event of a drought, the actual actions selected will depend on a number of conditions, including availability of supplies and cost.

The final stage follows once the Board has exhausted supply augmentation options due to lack of supplies and/or increasing costs and mandatory cutbacks are required. The actions taken at this stage include implementation of the allocation plan and potential utilization of ESP supplies. As stated in the DMP Principles, ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level. In addition, the quantities of supplies utilized from ESP storage will be based on a minimum amount necessary to meet essential health, safety, and firefighting needs, and maximum amount based on the need to ensure adequate supplies remain for a catastrophic event (e.g. earthquake).

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9.2.6 Supply Allocation Plan

With the implementation of the member agencies local projects, the Water Authority's core supplies, and potential drought supply augmentation supplies, the impact from supply shortages from Metropolitan on M&I customers will be reduced and potentially avoided. Preparing a supply allocation methodology is important in order to be prepared for situations that warrant an allocation of supplies to the member agencies. Implementing a supply allocation plan is part of the Water Authority's drought response matrix.

Starting with the accepted principles listed in **Section 9.2.3**, the Water Authority has been working with the TAC to develop a methodology that is equitable and that recognizes the investments made by agencies that have developed local supplies. The Water Authority's current rate structure notes two classes of service, M&I and IAWP. They receive different levels of service based on the rate paid and are managed separately in the allocation methodology.

IAWP customers have agreed to a reduced level of service in exchange for a discounted supply rate from Metropolitan. Metropolitan has prepared draft IAWP Reduction Guidelines that state that IAWP customers will be cut by 30 percent prior to cutbacks to M&I customers. The guidelines do not specify stages and/or levels of cutbacks beyond the 30 percent. Based on the guidelines and Principle 17, up to a 30 percent cut will be made to the IAWP base prior to M&I cutbacks. Beyond 30 percent, supplies will be allocated equally between IAWP and M&I. In preparing the allocation methodology for the DMP, the Water Authority incorporated the conditions included in the guidelines.

The Water Authority is currently developing a separate allocation methodology for those customers paying the M&I rate. They include residential, commercial, industrial, and non-IAWP agricultural customers. **Figure 9-1** provides the general approach currently proposed to allocate supplies to M&I customers in a shortage situation.

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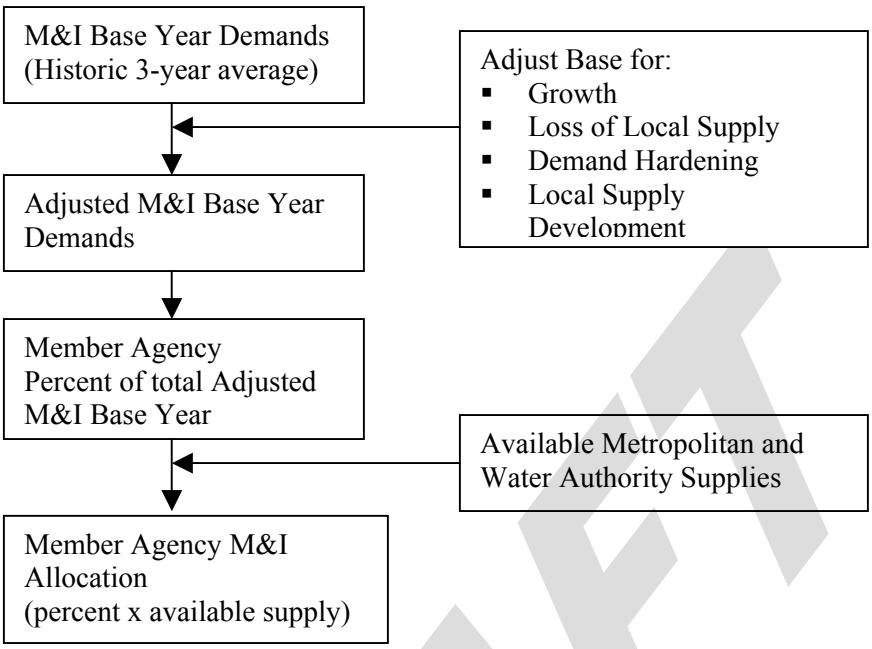
FIGURE 9-1
DRAFT M&I SUPPLY ALLOCATION METHODOLOGY



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The elements of the proposed allocation methodology:

Historical Base Year

M&I demands over the most recently completed three fiscal years prior to the year in which the decision to implement the proposed allocation methodology occurs will be averaged to determine the base year period. This base year demand is fixed for the duration of the allocation period. Based on Metropolitan's draft IAWP Reduction Guidelines, the base year for IAWP demands will be the most recently completed fiscal year.

Adjustments

The M&I base will be adjusted to ensure equity in the allocation of supplies. The M&I base will be adjusted upward for growth that may occur within the member agencies' service area from the historic base year period to the time that allocations are made. An adjustment will also be given if a member agency loses a local supply production between the historical base year and allocation period. The M&I base will also be adjusted for demand hardening that results from member agency conservation savings. A local supply development adjustment will also be provided to develop recycling and brackish groundwater recovery projects that provide a regional benefit during a drought conditions.

Adjusted Base Year

Adjustments are applied to a member agencies M&I base year to calculate an adjusted base year. No adjustments are made to the IAWP base year.

Allocation of Available Supplies

To determine the amount of the Water Authority and Metropolitan supplies that will be available to each member agency, a member agency's percent share of the total M&I adjusted base year is calculated. This percent is then applied to supplies available for M&I demands to derive an allocation for each member agency. For IAWP customers, a percent share of the total IAWP base year demands is calculated. This percent is applied to the IAWP supplies available following the initial 30 percent cutback and subsequent cutbacks to calculate an allocation of IAWP supplies for each member agency.

The Water Authority and TAC members are working to finalize the details and calculations of the allocation methodology and appropriate pricing signals associated with cutback requirements. The methodology is scheduled to be complete and adopted by the Water Authority Board in March 2006 as part of the DMP.

9.2.7 Revenue Impacts

The Water Authority has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. In FY 1990, the Water Authority created a Rate Stabilization Fund (RSF) to provide funds that would mitigate the need for rate increases in the event of an unexpected decline in water sales. The RSF is structured in accordance with Board policy to maintain a minimum balance of at least 25 percent of the Water Authority's net water sales revenue. RSF is constrained by a maximum balance of 100 percent of the average annual water sales projected over a four-year period. As a result, the RSF is a crucial water rate management tool.

Additionally, on January 1, 2003, the Water Authority implemented a new rate structure that substantially increased the percentage of water revenues generated from fixed charges. This increase replaced the previous variable "postage stamp" rate, which historically generated as much as 80 percent or more of total annual revenues, with two fixed charges, and one variable rate. These new fixed charges – Customer Service and Storage – are key components to the Water Authority's future revenue stability.

9.2.8 Adoption of DMP

The TAC and Water Authority staff is expected to have a draft DMP to the Water Authority Board for adoption in March 2006. Elements of the DMP required by the Act that are applicable to the Water Authority have been addressed in the sections above. The final DMP will provide the region a comprehensive plan on the actions to be taken by the Water Authority and its member agencies in drought situations to reduce and potentially element the impacts of shortages.

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9.3 SUMMARY

The shortage contingency analysis included in this section demonstrates that the Water Authority and its member agencies, through the ERP and ESP, are taking actions to prepare for and appropriately handle a catastrophic interruption of water supplies. The analysis also describes the coordinated development of a DMP for the San Diego region. The DMP will identify the actions to be taken by the Water Authority to minimize the impacts of a supply shortage due to a drought and include an allocation methodology to be used if cutbacks are necessary. The analysis addresses appropriate requirements of the Act that are applicable to the Water Authority.

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APPENDIX A

California Urban Water Management Planning Act

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 recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(c) 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.

(d) 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.

(e) 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.

(f) 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.

(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.

Articl 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

Water Authority Board of Directors
Resolution No. 2005 - ____

Insert
Water Authority Board of Directors
Resolution No. 2005 - ____ Here

APPENDIX C

DWR 2005 Urban Water Management Plan Checklist

DWR 2005 Urban Water Management Plan Checklist

Water Code Section	Items to Address	Sections in Plan	Page # in Plan
10620 (d)(1)(2))	**Coordination with Appropriate Agencies**		
	Participated in area, regional, watershed or basin wide plan.	1.3	1-2, 1-3
	Describe the coordination of the plan preparation and anticipated benefits.	1.3	1-2, 1-3
10620 (f)	**Describe resource maximization / import minimization plan**		
	Describe how water management tools / options maximize resources & minimize need to import water.	3, 4, 5, 8	3-1 to 3-6, 5-1 to 5-20
10621 (a)	**Plan Updated in Years Ending in Five and Zero**		
	Date updated and adopted plan received.	1.3	1-3
10621 (b)	**City and County Notification and Participation**		
	Notify any city or county within service area of UWMP of plan review & revision.	1.3	1-3
	Consult and obtain comments from cities and counties within service area.	1.3	1-3
10631 (a)	**Service Area Information**		
	Include current and projected population.	1.6.3	1-10, 1-11
	Population projections were based on data from state, regional or local agency.	1.6.3	1-10
	Describe climate characteristics that affect water management.	1.6.2	1-9, 1-10
	Describe other demographic factors affecting water management.	1.6.1	1-8

10631 (b)	**Water Sources**		
	Identify existing and planned water supply sources.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10
	Provide current water supply quantities.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10
	Provide planned water supply quantities.	4, 5, 6	4-1 to 4-11, 5-1 to 5-20, 6-1 to 6-10
10631 (b)(1-4)	**If Groundwater identified as existing or planned source**		
	Has management plan.	Water Authority does not supply groundwater. General discussion on groundwater can be found in Section 5.2.	
	Attached management plan (b)(1).		
	Description of basin(s) (b)(2).		
	Basin is adjudicated.		
	If adjudicated, attached order or decree (b)(2).		
	Quantified amount of legal pumping right (b)(2).		
	DWR identified, or projected to be, in overdraft (b)(2).		
	Plan to eliminate overdraft (b)(2).		
	Analysis of location, amount & sufficiency, last five years (b)(3).		
	Analysis of location & amount projected, 20 years (b)(4).		
10631 (c)(1-3)	**Reliability of Supply**		
	Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage.	8	8-1 to 8-7

10631 (c)	**Water Sources Not Available on a Consistent Basis**		
	Describe the reliability of the water supply due to seasonal or climatic shortages.	8	8-5 to 8-6
	Describe the vulnerability of the water supply to seasonal or climatic shortages.	8	8-5 to 8-6
	Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs.	8.4	8-5 to 8-6
10631 (d)	**Transfer or Exchange Opportunities**		
	Describe short-term and long-term exchange or transfer opportunities.	4.1	4-1 to 4-6
10631 (e)(1)(2)	**Water Use Provisions**		
	Quantify past water use by sector.	2.3	2-2 to 2-3
	Quantify current water use by sector.	2.3	2-2 to 2-3
	Project future water use by sector.	2.4	2-4 to 2-6
	Identify and quantify sales to other agencies.	2.3	2-2, 2-3
10631 (f)	**2005 Urban Water Management Plan "Review of DMMs for Completeness" Form**	Included in Appendix D	

10631 (g)	**Planned Water Supply Projects and Programs, including non-implemented DMMs**		
	No non-implemented / not scheduled DMMs.	See Section 3 and Appendix D	
	Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors).		
	Cost-Benefit analysis includes total benefits and total costs.		
	Identifies funding available for Projects with higher per-unit-cost than DMMs.		
	Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners.		
10631 (h)	**Planned Water Supply Projects and Programs**		
	Detailed description of expected future supply projects & programs.	4, 5, 8	4-1 to 4-11, 5-1 to 5-20, 8-1 to 8-7
	Timeline for each proposed project.	4, 5, 8, Appendix F	F-1, F-2, F-3, F-4
	Quantification of each project's normal yield (AFY).	8.2	8-1, 8-2
	Quantification of each project's single dry-year yield (AFY).	8.3	8-2, 8-3
	Quantification of each project's multiple dry-year yield (AFY).	8.3	8-3, 8-4
10631 (i)	**Opportunities for development of desalinated water**		
	Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	4.3, 5.2	4-6 to 4-11, 5-5 to 5-10

10631 (j)	**District is a CUWCC signatory**		
	Agency is a CUWCC member.	3.2	3-1
	2003-04 annual updates are attached to plan.	Appendix D	
	Both annual updates are considered completed by CUWCC website.	3.2, Appendix D	3-1, Appendix D
10631 (k)	**If Supplier receives or projects receiving water from a wholesale supplier**		
	Agency receives, or projects receiving, wholesale water.	1.3	1-3
	Agency provided written demand projections to wholesaler, 20 years.	8.2, 8.3	8-1 to 8-4
	Wholesaler provided written water availability projections, by source, to agency, 20 years.	6.1.1	6-1, 6-2
	Reliability of wholesale supply provided in writing by wholesale agency.	6.1.1	6-1, 6-2
10632	**Water Shortage Contingency Plan Section**		
	Water shortage contingency plan section.	9	9-1 to 9-12
10632 (a)	**Stages of Action**		
	Provide stages of action.	9	9-1 to 9-12
	Provide the water supply conditions for each stage.	9	9-1 to 9-12
	Includes plan for 50 percent supply shortage.	9	9-1 to 9-12
10632 (b)	**Three-Year Minimum Water Supply**		
	Identifies driest 3-year period.	8.3	8-3
	Minimum water supply available by source for the next three years.	8.3	8-3

10632 (c)	**Preparation for catastrophic water supply interruption**		
	Provided catastrophic supply interruption plan.	9.1	9-1 to 9-2
10632 (d)	**Prohibitions**		
	List the mandatory prohibitions against specific water use practices during water shortages.	Not Applicable to Water Authority	
10632 (e)	**Consumption Reduction Methods**		
	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.	9-2	9-3 to 9-12
10632 (f)	**Penalties**		
	List excessive use penalties or charges for excessive use.	Not Applicable to Water Authority	
10632 (g)	**Revenue and Expenditure Impacts**		
	Describe how actions and conditions impact revenues.	9.2.7	9-11
	Describe how actions and conditions impact expenditures.	9.2.7	9-11
	Describe measures to overcome the revenue and expenditure impacts.	9.2.7	9-11
10632 (h)	**Water Shortage Contingency Ordinance/Resolution**		
	Attach a copy of the draft water shortage contingency resolution or ordinance.	Pending as part of Drought Management Plan	
10632 (i)	**Reduction Measuring Mechanism**		
	Provided mechanisms for determining actual reductions.	Pending as part of Drought Management Plan	
10633	**Recycling Plan Agency Coordination**		
	Describe the coordination of the recycling plan preparation information to the extent available.	5.3	5-10 to 5-19

10633 (a)	**Wastewater System Description**		
	Describe the wastewater collection and treatment systems in the supplier's service area.	5.3.3	5-13
	Quantify the volume of wastewater collected and treated.	Appendix F	F-3
10633 (a - d)	**Wastewater Disposal and Recycled Water Uses**		
	Describes methods of wastewater disposal.	5.3.3, Appendix F	5-13, F-3
	Describe the current type, place and use of recycled water.	Appendix F	F-4
	Describe and quantify potential uses of recycled water.	5.3.5, Appendix F	5-19, F-4
	Determination of technical and economic feasibility of serving the potential uses.	5.3.2	5-11 to 5-13
10633 (e)	**Projected Uses of Recycled Water**		
	Projected use of recycled water, 20 years.	5.3.5, Appendix F	5-19, F-4
	Compare UWMP 2000 projections with UWMP 2005 actual.	5.3.2	5-11
10633 (f)	**Plan to Optimize Use of Recycled Water**		
	Describe actions that might be taken to encourage recycled water uses.	5.3.4	5-15 to 5-18
	Describe projected results of these actions in terms of acre-feet of recycled water used per year.	5.3.4	5-15 to 5-17
	Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses).	5.3.4	5-15 to 5-17
10634	**Water quality impacts on availability of supply**		
	Discusses water quality impacts (by source) upon water management strategies and supply reliability.	7	7-1 to 7-8

10635 (a)	**Supply and Demand Comparison to 20 Years**		
	Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments.	8.2	8-1 to 8-2
10635 (a)	**Supply and Demand Comparison: Single-dry Year Scenario**		
	Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments.	8.3	8-2 to 8-3
10635 (a)	**Supply and Demand Comparison: Multiple-dry Year Scenario**		
	Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years.	8.3	8-3
	Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years.	8.3	8-4
	Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years.	8.3	8-4
	Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years.	8.3	8-4
	Provision of Water Service Reliability section to cities/counties within service area.	1.3, 8.2, 8.3	8-1 to 8-4
	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.	Appendix B	
10642	**Does the Plan Include Public Participation and Plan Adoption**		
	Attach a copy of adoption resolution.	Appendix B	
	Encourage involvement of social, cultural & economic community groups.	1.3	1-2 to 1-3
	Plan available for public inspection.	1.3	1-2 to 1-3
	Provide proof of public hearing	Appendix B	
	Provided meeting notice to local governments.	Appendix B	

10643	**Review of implementation of 2000 UWMP**		
	Reviewed implementation plan and schedule of 2000 UWMP.	1	1-1
	Implemented in accordance with the schedule set forth in plan.	1	1-1
10644 (a)	**Provision of 2005 UWMP to local governments**		
	Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption.	Appendix B	
10645	**Does the plan or correspondence accompanying it show where it is available for public review**		
	Does UWMP or correspondence accompanying it show where it is available for public review.	1.3	1-3

APPENDIX D

CUWCC BMP Reports

BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit: **San Diego County Water Authority**

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	NO	106.1%	No	NO
2000	99-00	NO	97.9%	No	NO
2001	01-02	YES	99.6%	No	NO
2002	01-02	YES	101.3%	No	NO
2003	03-04	YES	99.8%	No	NO
2004	03-04	YES	100.2%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit: **San Diego County Water Authority**

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: **San Diego County Water Authority**

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 11 Coverage: Conservation Pricing

Reporting Unit: **San Diego County Water Authority**

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 longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Non Conserving Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit: **Alameda County Water District**

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	3
2000	99-00	YES	3
2001	01-02	YES	3
2002	01-02	YES	3
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 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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)	589289
b. Determine other system verifiable uses (AF)	0
c. Determine total supply into the system (AF)	591441
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	1.00

3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? — yes

4. Did your agency complete a full-scale audit during this report year? — no

5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? — yes

6. Does your agency operate a system leak detection program? — yes

a. If yes, describe the leak detection program:

AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. Since the program was initiated in 1990, no section of inspected pipeline has failed.

B. Survey Data

1. Total number of miles of distribution system line. — 279

2. Number of miles of distribution system line surveyed. — 29.2

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	610000	610000
2. Actual Expenditures	700000	

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

Note on #2. Metered deliveries include previously purchased water in storage sold to member agencies.

BMP 07: Public Information Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

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	2
b. Public Service Announcement	yes	1
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	10
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	53252	53252
2. Actual Expenditures	53252	

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:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	0	0	0
Grades 4th-6th	yes	0	0	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 9/1/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	410628	410628
2. Actual Expenditures	411806	

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

The Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. The Program is available to over 400 elementary schools, over 80 middle schools, as well as over 60 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2001

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	20000	7125	8	yes	410628	411806
2	No	0	0	9	yes	100000	111203
3	No	610000	700000	10	yes	805775	726007
4	No			11	No		
5	yes	50000	31682	12	No		
6	yes	50000	50000	13	No		
7	No	53252	53252	14	yes	600000	428152

2. Technical Support

a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness?	yes
b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements?	yes
c. Has your agency conducted or funded workshops addressing:	
1) ULFT replacement	yes
2) Residential retrofits	yes
3) Commercial, industrial, and institutional surveys	yes
4) Residential and large turf irrigation	yes
5) Conservation-related rates and pricing	yes

3. Staff Resources by BMP

Qualified	No. FTE	Qualified	No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	**8**	yes	3
2	No	0	**9**	yes	1
3	yes	18	**10**	yes	1
4	yes	1	**11**	yes	1
5	yes	1	**12**	yes	1
6	yes	1	**13**	yes	1
7	yes	1	**14**	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	**8**	yes
2	No	**9**	yes
3	yes	**10**	yes
4	yes	**11**	yes
5	yes	**12**	yes
6	yes	**13**	yes
7	yes	**14**	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	805775	981186
2. Actual Expenditures	726007	

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

A.1. Costs associated to programs were included, but not staffing costs (except BMP7 which is staffing costs) A.3. Conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are support staff such as Management Analyst, and Quality Control staff. Each program manager has several programs to manage. However, consultant's time was not included since all consultants work on a variety of programs. Therefore, staff resources is a conservative number for overall conservation effort.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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	$0
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	$0
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	$256966097

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$99287528

B. Conservation Pricing Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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 ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
   - a. What percent is this conservation coordinator's position? 100%
   - b. Coordinator's Name Bill Jacoby
   - c. Coordinator's Title Water Resources Manager
   - d. Coordinator's Experience and Number of Years 18 years in program implementation and policy making
   - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	97307
2. Actual Expenditures	97307	

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 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**100% Complete**	**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) — 659244

   b. Determine other system verifiable uses (AF) — 0

   c. Determine total supply into the system (AF) — 650695

   d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. — 1.01

3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? — yes

4. Did your agency complete a full-scale audit during this report year? — no

5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? — yes

6. Does your agency operate a system leak detection program? — yes

   a. If yes, describe the leak detection program:

   AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. Since the program was initiated in 1990, no section of inspected pipeline has failed.

B. Survey Data

1. Total number of miles of distribution system line. — 279

2. Number of miles of distribution system line surveyed. — 54.5

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	610000	610000
2. Actual Expenditures	965000	

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

Note on #2. Metered deliveries include previously purchased water in storage sold to member agencies.

BMP 07: Public Information Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
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.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

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	4
b. Public Service Announcement	yes	4
c. Bill Inserts / Newsletters / Brochures	yes	12
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	1
f. Special Events, Media Events	yes	2
g. Speaker's Bureau	yes	15
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	53252	53252
2. Actual Expenditures	53252	

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:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
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	0	0	0
Grades 4th-6th	yes	0	0	0
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 9/1/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	410628	461256
2. Actual Expenditures	411806	

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

The Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. The Program is available to over 400 elementary schools, over 80 middle schools, as well as over 60 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2002

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	20000	6353	8	yes	410628	411806
2	No			9	yes	100000	105715
3	No	610000	965000	10	yes	981186	913368
4	No			11	No		
5	yes	45000	24387	12	No		
6	yes	100000	107639	13	No		
7	yes	53252	53252	14	yes	600000	611582

2. Technical Support

a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness?	yes
b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements?	yes
c. Has your agency conducted or funded workshops addressing:	
1) ULFT replacement	yes
2) Residential retrofits	yes
3) Commercial, industrial, and institutional surveys	yes
4) Residential and large turf irrigation	yes
5) Conservation-related rates and pricing	yes

3. Staff Resources by BMP

Qualified	No. FTE	Qualified	No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	**8**	yes	3
2	No	0	**9**	yes	1
3	yes	18	**10**	yes	1
4	yes	1	**11**	yes	1
5	yes	1	**12**	yes	1
6	yes	1	**13**	yes	1
7	yes	1	**14**	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	**8**	yes
2	No	**9**	yes
3	yes	**10**	yes
4	yes	**11**	yes
5	yes	**12**	yes
6	yes	**13**	yes
7	yes	**14**	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	981186	990000
2. Actual Expenditures	913368	

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

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**100% Complete**	**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	$0
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	$0
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	$285092217

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources $94946607

B. Conservation Pricing Program Expenditures

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

C. "At Least As Effective As"

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

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

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**100% Complete**	**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 ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
   - a. What percent is this conservation coordinator's position? 100%
   - b. Coordinator's Name Bill Jacoby
   - c. Coordinator's Title Water Resources Manager
   - d. Coordinator's Experience and Number of Years 19 years in program implementation and policy making
   - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	98728
2. Actual Expenditures	97307	

C. "At Least As Effective As"

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

D. Comments

BMP 12: Conservation Coordinator

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
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 ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
   - a. What percent is this conservation coordinator's position? 100%
   - b. Coordinator's Name Bill Jacoby
   - c. Coordinator's Title Water Resources Manager
   - d. Coordinator's Experience and Number of Years 19 years in program implementation and policy making
   - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	97307	98728
2. Actual Expenditures	97307	

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 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Unit:
San Diego County Water Authority

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	NO	106.1%	No	NO
2000	99-00	NO	97.9%	No	NO
2001	01-02	YES	99.6%	No	NO
2002	01-02	YES	101.3%	No	NO
2003	03-04	YES	99.8%	No	NO
2004	03-04	YES	100.2%	No	NO

BMP 3 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 07 Coverage: Public Information Programs

Reporting Unit:
San Diego County Water Authority

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: **San Diego County Water Authority**

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 11 Coverage: Conservation Pricing

Reporting Unit:
San Diego County Water Authority

Reporting Period:
03-04

MOU Exhibit 1 Coverage Requirement

No exemption request filed

Agency indicated "at least as effective as" implementation during report period? No

An agency must meet one condition to comply with BMP 11.

Agency shall maintain rate structure consistent with BMP 11's definition of conservation pricing. Implementation methods shall be at least as effective as eliminating non-conserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

a) Non-conserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which the unit price decreases as the quantity used increases (declining block rates);rates that involve charging customers a fixed amount per billing cycle regardless of the quantity used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the longrun marginal cost or the cost of adding the next unit of capacity to the system.

Test for Condition 1

Year	Report Period	RU Employed Non Conserving Rate Structure	RU Meets BMP 11 Coverage Requirement
1999	99-00	NO	YES
2000	99-00	NO	YES
2001	01-02	NO	YES
2002	01-02	NO	YES
2003	03-04	NO	YES
2004	03-04	NO	YES

BMP 11 COVERAGE STATUS SUMMARY:
Water supplier is meeting coverage requirements for this BMP.

BMP 12 Coverage: Conservation Coordinator

Reporting Unit: **Triunfo Sanitation District**

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

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	3
2001	01-02	YES	3
2002	01-02	YES	3
2003	03-04	YES	1
2004	03-04	YES	1

BMP 12 COVERAGE STATUS SUMMARY:

Water supplier is meeting coverage requirements for this BMP.

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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) — 614939
   - b. Determine other system verifiable uses (AF) — 0
   - c. Determine total supply into the system (AF) — 615892
   - d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. — 1.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? — yes
4. Did your agency complete a full-scale audit during this report year? — no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? — yes
6. Does your agency operate a system leak detection program? — yes
   - a. If yes, describe the leak detection program:

     AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. This systematic maintenance and repair program prevents leaks. Since the program was initiated in 1990, no section of inspected pipeline has failed

B. Survey Data

1. Total number of miles of distribution system line. — 300
2. Number of miles of distribution system line surveyed. — 53.9

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	797500	869100
2. Actual Expenditures	885294	

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 07: Public Information Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

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	4
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	6
f. Special Events, Media Events	yes	5
g. Speaker's Bureau	yes	80
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	53252	56736
2. Actual Expenditures	53252	

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:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	153	23204	0
Grades 4th-6th	yes	910	44486	94
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 09/01/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	473717	563810
2. Actual Expenditures	492505	

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

The Water Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. Classroom presentations reach over 44,000 students in the San Diego County, and almost 100 workshops are provided for local teachers. The Program is available to over 417 elementary schools, over 90 middle schools, as well as over 71 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Water Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	26000	12650	8	yes	473717	492505
2	No			9	yes	150000	108288
3	No	610000	610000	10	yes	985435	945040
4	No			11	No		
5	yes	45000	33523	12	No		
6	yes	150000	194985	13	No		
7	yes	53252	58577	14	yes	550000	595593

2. Technical Support

a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness?	yes
b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements?	yes
c. Has your agency conducted or funded workshops addressing:	
1) ULFT replacement	yes
2) Residential retrofits	yes
3) Commercial, industrial, and institutional surveys	yes
4) Residential and large turf irrigation	yes
5) Conservation-related rates and pricing	yes

3. Staff Resources by BMP

Qualified	No. FTE	Qualified	No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	**8**	yes	3
2	No	0	**9**	yes	1
3	yes	18	**10**	yes	1
4	yes	1	**11**	yes	1
5	yes	1	**12**	yes	1
6	yes	1	**13**	No	
7	yes	1	**14**	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	**8**	yes
2	No	**9**	yes
3	yes	**10**	yes
4	No	**11**	yes
5	yes	**12**	yes
6	yes	**13**	No
7	yes	**14**	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	373680	394526
2. Actual Expenditures	373680	

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

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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	$274280932
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$96009705

2. Commercial

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

3. Industrial

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

4. Institutional / Government

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

5. Irrigation

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

6. Other

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources $

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

1.a. Unbundled. Choice not available.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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 ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
   - a. What percent is this conservation coordinator's position? 100%
   - b. Coordinator's Name Bill Jacoby
   - c. Coordinator's Title Water Resources Manager
   - d. Coordinator's Experience and Number of Years 20 years in program implementation & policy making
   - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	98728	119574
2. Actual Expenditures	98728	

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 03: System Water Audits, Leak Detection and Repair

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
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) — 642659

   b. Determine other system verifiable uses (AF) — 0

   c. Determine total supply into the system (AF) — 641086

   d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. — 1.00

3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? — yes

4. Did your agency complete a full-scale audit during this report year? — no

5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? — yes

6. Does your agency operate a system leak detection program? — yes

   a. If yes, describe the leak detection program:

   AQUEDUCT PROTECTION PROGRAM. The Water Authority strategically shuts down and drains sections of its entire pipeline. Engineers enter the pipeline and inspect them internally. When deterioration is discovered, the Water Authority repairs or replaces the affected sections of pipe before they can fail. This systematic maintenance and repair program prevents leaks. Since the program was initiated in 1990, no section of inspected pipeline has failed

B. Survey Data

1. Total number of miles of distribution system line. — 300

2. Number of miles of distribution system line surveyed. — 59.1

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	869100	869100
2. Actual Expenditures	2211419	

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

Note: Substantial increase in Actual Expenditures reflects aggressive preventative maintenance on pipeline

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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.

The Authority's Public Affairs Department promotes water awareness through ongoing interaction with the media, participation in community events, and the publication of numerous educational materials. As a water wholesaler, the San Diego County Water Authority's partners with its 23 member agencies by hosting Joint Public Information Committee meetings, providing a Speaker's Bureau, training, and an Educational Program which offers a wide array of education opportunities and materials for students from kindergarten through high school.

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	4
b. Public Service Announcement	yes	2
c. Bill Inserts / Newsletters / Brochures	yes	10
d. Bill showing water usage in comparison to previous year's usage	no	
e. Demonstration Gardens	yes	6
f. Special Events, Media Events	yes	5
g. Speaker's Bureau	yes	80
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	56736	56736
2. Actual Expenditures	56736	

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:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Has your agency implemented a school information program to promote water conservation? yes

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	yes	153	23204	0
Grades 4th-6th	yes	910	44486	94
Grades 7th-8th	yes	0	0	0
High School	yes	0	0	0

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

4. When did your Agency begin implementing this program? 09/01/1990

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	563810	563810
2. Actual Expenditures	492505	

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

The Water Authority's regional School Program is an established program with a renowned reputation throughout the region. The Program offers students from kindergarden through high school, a wide array of educational opportunities including the Splash Mobile, water testing kits, and computer programs. Classroom presentations reach over 44,000 students in the San Diego County, and almost 100 workshops are provided for local teachers. The Program is available to over 417 elementary schools, over 90 middle schools, as well as over 71 high schools. Teachers are offered classroom presentations, mini-grants, and curriculum materials including videos, workbooks and other informational handouts. Since this Program reflects educational activity to all retail agencies, the number of class presentations, students reached, and teacher workshops are recorded in each of the Authority's member agencies BMP Report. However, the Water Authority has recorded overall expenditures in this wholesale report.

BMP 10: Wholesale Agency Assistance Programs

Reporting Unit:
San Diego County Water Authority

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Financial Support by BMP

BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded	BMP	Financial Incentives Offered?	Budgeted Amount	Amount Awarded
1	yes	26000	13437	8	yes	492505	563810
2	No			9	yes	150000	108289
3	No	610000	610000	10	yes	851500	938685
4	No			11	No		
5	yes	45000	31692	12	No		
6	yes	237000	275962	13	No		
7	yes	58500	64434	14	yes	393500	461991

2. Technical Support

a. Has your agency conducted or funded workshops addressing CUWCC procedures for calculating program savings, costs and cost-effectiveness?	yes
b. Has your agency conducted or funded workshops addressing retail agencies' BMP implementation reporting requirements?	yes
c. Has your agency conducted or funded workshops addressing:	
1) ULFT replacement	yes
2) Residential retrofits	yes
3) Commercial, industrial, and institutional surveys	yes
4) Residential and large turf irrigation	yes
5) Conservation-related rates and pricing	yes

3. Staff Resources by BMP

Qualified	No. FTE	Qualified	No. FTE

BMP	Staff Available for BMP?	Staff Assigned to BMP	BMP	Staff Available for BMP?	Staff Assigned to BMP
1	yes	1	**8**	yes	3
2	No		**9**	yes	1
3	yes	18	**10**	yes	1
4	yes	1	**11**	yes	1
5	yes	1	**12**	yes	1
6	yes	1	**13**	No	
7	yes	1	**14**	yes	1

4. Regional Programs by BMP

BMP	Implementation/ Management Program?	BMP	Implementation/ Management Program?
1	yes	**8**	yes
2	No	**9**	yes
3	yes	**10**	yes
4	No	**11**	yes
5	yes	**12**	yes
6	yes	**13**	No
7	yes	**14**	yes

B. Wholesale Agency Assistance Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	851500	851500
2. Actual Expenditures	938685	

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

Internal conservation staff consists of one Water Resources Manager, two WR Specialists, one Assistant WR Specialist. In addition, there are several support staff such as a Management Analyst and Quality Control staff. Each program manager is responsible for more than one program, however, consultant time is not added to the above table. The number of FTE shown in BMP 10 (wholesale agency) are the same FTE that are reflected in various BMPs.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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	$289577982
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$74935351

2. Commercial

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

3. Industrial

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

4. Institutional / Government

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

5. Irrigation

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$

6. Other

a. Water Rate Structure	
b. Sewer Rate Structure	
c. Total Revenue from Volumetric Rates	$

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources $

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

6. Other. Unbundled. No such choice available.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
San Diego County Water Authority	**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 ?
4. Partner agency's name: NA
5. If your agency supplies the conservation coordinator:
   - a. What percent is this conservation coordinator's position? 100%
   - b. Coordinator's Name Bill Jacoby
   - c. Coordinator's Title Water Resources Manager
   - d. Coordinator's Experience and Number of Years 21 years in program implementation & policy making
   - e. Date Coordinator's position was created (mm/dd/yyyy) 11/15/1988
6. Number of conservation staff, including Conservation Coordinator. 5

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	119574	119574
2. Actual Expenditures	119574	

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

APPENDIX E

Documentation on Water Authority Colorado River Transfers

Documentation on Water Authority Colorado River Transfers

Written Contracts or Other Proof

Imperial Irrigation District (IID) - Written Contracts or other Proof

The supply and costs associated with the transfer are based primarily on the following documents:

Agreement for Transfer of Conserved Water by and between IID and the Water Authority (April 29, 1998). This Agreement provides for a market-based transaction in which the Water Authority would pay IID a unit price for agricultural water conserved by IID and transferred to the Water Authority.

Revised Fourth Amendment to Agreement between IID and the Water Authority for Transfer of Conserved Water (October 10, 2003). Consistent with the executed Quantification Settlement Agreement (QSA) and related agreements, the amendments restructure the agreement and modify it to minimize the environmental impacts of the transfer of conserved water to the Water Authority.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the transfer water to the Water Authority.

Environmental Cost Sharing, Funding, and Habitat Conservation Plan Development Agreement among IID, Coachella Valley Water District (CVWD), and Water Authority (October 10, 2003). This Agreement provides for the specified allocation of QSA-related environmental review, mitigation, and litigation costs for the term of the QSA, and for development of a Habitat Conservation Plan.

Quantification Settlement Agreement Joint Powers Authority Creation and Funding Agreement (October 10, 2003). The purpose of this agreement is to create and fund the QSA Joint Powers Authority and to establish the limits of the funding obligation of CVWD, IID, and Water Authority for environmental mitigation and Salton Sea restoration pursuant to SB 654 (Machado).

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Federal, State, and Local Permits/Approvals

Federal Endangered Species Act Permit. The U.S. Fish and Wildlife Service (USFWS) issued a Biological Opinion on January 12, 2001, that provides incidental take authorization and certain measures required to offset species impacts on the Colorado River regarding such actions.

State Water Resources Control Board (SWRCB) Petition. SWRCB adopted Water Rights Order 2002-0016 concerning IID and Water Authority's amended joint petition for approval of a long-term transfer of conserved water from IID to the Water Authority and to change the point of diversion, place of use, and purpose of use under Permit 7643.

Environmental Impact Report (EIR) for Conservation and Transfer Agreement. As lead agency, IID certified the Final EIR for the Conservation and Transfer Agreement on June 28, 2002.

U. S. Fish and Wildlife Service Biological Draft Biological Opinion and Incidental Take Statement on the Bureau of Reclamation's Voluntary Fish and Wildlife Conservation Measures and Associated Conservation Agreements with the California Water Agencies (12/18/02). The USFWS issued the biological opinion/incidental take statement for water transfer activities involving the Bureau of Reclamation and associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

Addendum to EIR for Conservation and Transfer Agreement. IID as lead agency and Water Authority as responsible agency approved addendum to EIR in October 2003.

Environmental Impact Statement (EIS) for Conservation and Transfer Agreement. Bureau of Reclamation issued a Record of Decision on the EIS in October 2003.

CA Department of Fish and Game California Endangered Species Act Incidental Take Permit #2081-2003-024-006). The CDFG issued this permit (10/22/04) for potential take effects on state-listed/fully protected species associated with IID/other California water agencies' actions on listed species in the Imperial Valley and Salton Sea (per the June 28, 2002 EIR).

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California Endangered Species Act Permit. A CESA permit was issued by California Department of Fish and Game (CDFG) on April 4, 2005, providing incidental take authorization for potential species impacts on the Colorado River.

All-American Canal (AAC) and Coachella Canal (CC) Lining - Written Contracts or other Proof

The expected supply and costs associated with the lining projects are based primarily on the following documents:

U.S. Public Law 100-675 (1988). Authorized the Department of the Interior to reduce seepage from the existing earthen AAC and CC. The law provides that conserved water will be made available to specified California contracting water agencies according to established priorities.

California Department of Water Resources - Metropolitan Funding Agreement (2001). Reimburse Metropolitan for project work necessary to construct the lining of the CC in an amount not to exceed $74 million. Modified by First Amendment (2004) to replace Metropolitan with the Authority. Modified by Second Amendment (2004) to increase funding amount to $83.65 million, with addition of funds from Proposition 50.

California Department of Water Resources - IID Funding Agreement (2001). Reimburse IID for project work necessary to construct a lined AAC in an amount not to exceed $126 million.

Metropolitan - CVWD Assignment and Delegation of Design Obligations Agreement (2002). Assigns design of the CC lining project to CVWD.

Metropolitan - CVWD Financial Arrangements Agreement for Design Obligations (2002). Obligates Metropolitan to advance funds to CVWD to cover costs for CC lining project design and CVWD to invoice Metropolitan to permit the Department of Water Resources to be billed for work completed.

Allocation Agreement among the United States of America, The Metropolitan Water District of Southern California, Coachella Valley Water District, Imperial Irrigation District, San Diego County Water Authority, the La Jolla, Pala, Pauma, Rincon, and San Pasqual Bands of Mission Indians, the San Luis Rey River Indian Water Authority, the City of Escondido, and Vista Irrigation District (October 10, 2003). This agreement includes

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assignment of Metropolitan's rights and interest in delivery of 77,700 AF of Colorado River water previously intended to be delivered to Metropolitan to the Water Authority. Allocates water from the AAC and CC lining projects for at least 110 years to the Water Authority, the San Luis Rey Indian Water Rights Settlement Parties, and IID, if it exercises its call rights.

Amended and Restated Agreement between Metropolitan and Water Authority for the Exchange of Water (October 10, 2003). This agreement was executed pursuant to the QSA and provides for delivery of the conserved canal lining water to the Water Authority.

Agreement between Metropolitan and Water Authority regarding Assignment of Agreements related to the ACC and CC Lining Projects. This agreement was executed in April 2004 and assigns Metropolitan's rights to the Water Authority for agreements that had been executed to facilitate funding and construction of the ACC and CC lining projects:

Assignment and Delegation of Construction Obligations for the Coachella Canal Lining Project under the Department of Water Resources Funding Agreement No. 4600001474 from the San Diego County Water Authority to the Coachella Valley Water District, dated September 8, 2004.

Agreement Regarding the Financial Arrangements between the San Diego County Water Authority and Coachella Valley Water District for the Construction Obligations for the Coachella Canal Lining Project, dated September 8, 2004.

Agreement No. 04-XX-30-W0429 Among the United States Bureau of Reclamation, the Coachella Valley Water District, and the San Diego County Water Authority for the Construction of the Coachella Canal Lining Project Pursuant to Title II of Public Law 100-675, dated October 19, 2004.

California Water Code Section 12560 et seq. This Water Code Section provides for $200 million to be appropriated to the Department of Water Resources to help fund the canal lining projects in furtherance of implementing California's Colorado River Water Use Plan.

California Water Code Section 79567. This Water Code Section identifies $20 million as available for appropriation by the California Legislature from the Water Security, Clean Drinking Water, Coastal, and Beach Protection Fund of 2002 (Proposition 50) to DWR for grants for canal lining and related projects necessary to reduce Colorado River water use. According to the Allocation Agreement, it is the intention of the agencies that those funds

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will be available for use by the Water Authority, IID, or CVWD for the AAC and CC lining projects.

Federal, State, and Local Permits/Approvals

AAC Lining Project Final EIS/EIR (March 1994). A final EIR/EIS analyzing the potential impacts of lining the AAC was completed by the Bureau of Reclamation (Reclamation) in March 1994. A Record of Decision was signed by Reclamation in July 1994, implementing the preferred alternative for lining the AAC. A re-examination and analysis of these environmental compliance documents by Reclamation in November 1999 determined that these documents continued to meet the requirements of the NEPA and the CEQA and would be valid in the future.

CC Lining Project Final EIS/EIR (April 2001). The final EIR/EIS for the CC lining project was completed in 2001. Reclamation signed the Record of Decision in April 2002. An amended Record of Decision has also been signed to take into account revisions to the project description.

Mitigation, Monitoring, and Reporting Program for Coachella Canal Lining Project, SCH #1990020408; prepared by Coachella Valley Water District, May 16, 2001.

Environmental Commitment Plan for the Coachella Canal Lining Project, approved by the US Bureau of Reclamation (Boulder City, NV) on March 4, 2003.

Environmental Commitment Plan and Addendum to the All-American Canal Lining Project EIS/EIR California State Clearinghouse Number SCH 90010472 (June 2004, prepared by IID).

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APPENDIX F

Member Agency Local Supply Projections

FINAL DRAFT - Table F-1 - FINAL DRAFT

Surface Water Projections for 2005 UWMP

Member Agency	Reservoir	Annual Member Agency Planned Local Use (AF)	Basis for Yield Determination (information provided by member agencies)
Escondido, City of	Henshaw / Wholford	7,260	25-year average
Helix WD	Cuyamaca / El Capitan	6,439	66-year (average based on the filling of El Capitan (1934-2000))
San Diego, City of	Barrett El Capitan Hodges Lower Otay Morena San Vicente Sutherland Sub-Total	29,000	Median yield based on Reservoir Management Plan
Sweetwater Authority	Loveland Sweetwater Sub-total	5,400	Planned local use is the 50th percentile of usable runoff for Loveland and Sweetwater Reservoirs. Years used were 1926 through 2004
San Dieguito W.D./ Santa Fe I.D.	San Dieguito / Hodges	5700 [a]	Per Agreement. The split is SDWD 42.67% and SFID 57.33%
Vista I.D.	Henshaw	5,850	Median for the years 1960 - 2004
	Total	59,649	

[a] Surface water projection for San Dieguito/Hodges is 7,500 AF/YR until the Hodges/Olivenhain Pipeline and Pump Station are complete in 2008.

FINAL DRAFT - Table F-2 - FINAL DRAFT

Groundwater Projections for 2005 UWMP

Existing and Projected Groundwater Yield Projects

Member Agency	Project Type	Groundwater Basin or Location	Projected Verifiable Projects (AF/YR)[1]						Regional Groundwater Goal (AF/YR) *Includes Verifiable Projects and Other Potential Projects*				
			2005	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
Fallbrook PUD	Conjunctive-Use Project	Lower Santa Margarita River Basin	-	-	-	-	-	-	6,400	6,400	6,400	6,400	6,400
Helix WD	Pump & Blend	El Monte Basin	127	200	200	200	200	200	200	200	200	200	200
Oceanside, City of	Brackish Recovery	Mission Basin (Lower San Luis Rey River Valley)	2,227	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Padre Dam MWD (Lakeside & Riverview WD)	Pump & Treat	Santee Basin (San Diego River Basin)	-	775	775	775	775	775	775	775	775	775	775
MCB Camp Pendleton	Pump & Treat (Conjunctive Use)	South System: Lower Santa Margarita & Las Flores Basins	8,800	8,800	8,800	8,800	8,800	8,800	11,600	11,600	11,600	11,600	11,600
	Pump & Treat	North System: San Mateo & San Onofre Basins	2,000	2,000	3,770	4,600	4,600	4,600	2,000	3,770	4,600	4,600	4,600
San Diego, City of	Brackish Recovery	San Pasqual Valley [3]	-	-	-	-	-	-	5,000	5,000	5,000	5,000	5,000
	Brackish Recovery	Mission Valley (Alluvial Aquifer / San Diego River) [4]	-	-	-	-	-	-	1,600	1,600	1,600	1,600	1,600
	Brackish Recovery	San Diego Formation [5]	-	-	-	-	-	-	2,800	2,800	5,600	5,600	5,600
Sweetwater Authority	Brackish Recovery	L. Sweetwater R. Basin Brackish GW Treatment	1,974	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
	Pump & Treat	National City Well Field / San Diego Formation	1,793	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Yuima MWD	Pump & Blend	Pauma Basin (Upper San Luis Rey River Valley)	923	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
		Total	17,844	28,575	30,345	31,175	31,175	31,175	47,175	48,945	52,575	52,575	52,575

Projected Imported or Recycled Water Conjunctive Use Projects

Oceanside, City of	Conjunctive-Use Project	Lower San Luis Rey River / Mission Basin	-	-	-	-	-	-	-	3,500	3,500	3,500	3,500
Olivenhain MWD	Conjunctive-Use Project	Lower San Dieguito River Basin	-	-	-	-	-	-	-	100	100	150	150
Otay WD and San Diego, City of	Conjunctive-Use Project	Tijuana Valley/San Diego Formation	-	-	-	-	-	-	3,800	3,800	3,800	3,800	3,800
San Diego, City of	Conjunctive-Use Project	San Pasqual Valley	-	-	-	-	-	-	10,000	10,000	10,000	10,000	10,000
		Total	-	-	-	-	-	-	13,800	17,400	17,400	17,450	17,450

[1] Projected verifiable projects are included in the Water Authority's 2005 UWMP reliability analysis.

FINAL DRAFT - Table F-3 - FINAL DRAFT

San Diego Wastewater Treatment and Water Recycling Facilities Plant Capacity (Million Gallons/Day)

Operating Agency	Treatment Facility Name	Planned Treatment Capacity						Effluent Quality for TDS (mg/L)	Disposal Method
		2010			2040				
		P	S	T	P	S	T		
Carlsbad, City of	Carlsbad WRF	-	-	4.0	-	-	16.0	1,000	Irrigation
Encina Joint Powers Authority	Encina WPCF	32.0	32.0	-	36.0	36.0	-	1,300	Outfall-Reuse
Escondido, City of	Hale Avenue RRF	18.0	18.0	9.0	21.0	21.0	9.0	1,000	Reuse-Outfall-Stream
Fairbanks Ranch Comm. Ser. D	Fairbanks Ranch WPCF	0.3	0.3	0.3	0.3	0.3	0.3	960	Percolation
Fallbrook PUD	Fallbrook Plant #1	2.0	2.0	2.0	4.6	4.6	2.0	720	Reuse-Outfall
Leucadia CWD	Gafner WRF	2.0	2.0	2.0	2.0	2.0	2.0	1,300	Reuse-Outfall
Oceanside, City of	La Salina WWTP	5.5	5.5	-	5.5	5.5	-	897	Outfall
Oceanside, City of	San Luis Rey WWTP	13.5	13.5	5.0	17.4	17.4	10.0	874	Reuse-Outfall-Percolation
Olivenhain MWD	4-S Ranch WTP	2.0	2.0	2.0	2.0	2.0	2.0	925	Reuse-Outfall
Otay WD	Ralph W Chapman WRF	1.3	1.3	1.3	1.3	1.3	1.3	850	Reuse- Outfall
Padre Dam MWD	Padre Dam WRF	4.0	4.0	4.0	14.0	14.0	4.0	900	Reuse- Outfall
Ramona MWD	Santa Maria WPCF	1.5	1.5	0.4	1.5	1.5	1.5	867	Reuse-Stream
Ramona MWD	San Vicente WWTP	0.8	0.8	0.8	0.8	0.8	0.8	612	Reuse-Stream
Rancho Santa Fe Com. Service District	Santa Fe Valley WRF	-	-	0.5	-	-	0.5	1,000	Irrigation
Rancho Santa Fe Com. Service District	Rancho Santa Fe WPCF	0.6	0.6	-	0.8	0.8	-	900	Percolation
San Diego, City of	North City WRP	30.0	30.0	24.0	40.0	40.0	30.0	1,000	Reuse- Outfall
San Diego, City of	Point Loma WWTP	240.0	-	-	240.0	-	-	1,850	Outfall
San Diego, City of	South Bay WRP	15.0	15.0	13.5	21.0	21.0	15.0	1,000	Reuse-Outfall
San Elijo Joint Powers Authority	San Elijo WRF	3.7	3.7	3.7	3.7	3.7	3.7	1,151	Reuse-Outfall
U.S. Marine Corps	Camp Pendleton WWTP #01	1.1	1.1	-	1.5	1.5	-	1,030	Effluent sent to CP #02
U.S. Marine Corps	Camp Pendleton WWTP #02	0.9	0.9	-	0.9	0.9	-	960	Reuse
U.S. Marine Corps	Camp Pendleton WWTP #03	0.9	0.9	-	1.1	1.1	-	980	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #09	0.4	0.4		0.7	0.7	-	890	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #11	1.4	1.4	-	3.2	3.2	-	755	Percolation
U.S. Marine Corps	Camp Pendleton WWTP #12	0.4	0.4	-	0.4	0.4	-	600	GW-Recharge
U.S. Marine Corps	Camp Pendleton WWTP #13	2.0	2.0	-	2.5	2.5	-	895	GW-Recharge
Vallecitos WD	Meadowlark WRP	3.0	3.0	3.0	3.0	3.0	3.0	1,000	Reuse-Land
Valley Center MWD	Lower Moosa Canyon WRF	0.40	0.40	0.40	1.00	1.00	1.00	1,000	Percolation/Irrigation
Valley Center MWD	Central Valley Area (North) WRF	-	-	-	0.22	0.22	0.22	1,000	Irrigation
Valley Center MWD	Lilac Ranch WRF	-	-	-	0.09	0.09	0.09	1,000	Irrigation
Valley Center MWD	Live Oak Ranch WRF	-	-	-	0.04	0.04	0.04	1,000	Irrigation
Valley Center MWD	Orchard Run WRF	0.08	0.08	0.08	0.08	0.08	0.08	1,000	Irrigation
Valley Center MWD	Woods Valley Ranch WRF	0.15	0.15	0.15	0.15	0.15	0.15	1,000	Irrigation
Valley Center MWD	Skyline Ranch WRF	0.02	0.02	-	0.02	0.02	-	1,000	Percolation
Whispering Palms CSD	Whispering Palms WPCF	0.4	0.4	-	0.4	0.4	0.4	963	Reuse-Percolation
		383.34	143.34	76.05	427.13	187.13	103.04		

CSD - Community Services District
MWD - Municipal Water District
RRF - Resource Recovery Facility
WPCF - Water Pollution Control Facility
WRF - Water Reclamation/Recycling Facility
WRP - Water Reclamation Plant
WWTP - Wastewater Treatment Plant

P - Primary Treatment
S - Secondary Treatment
T - Tertiary Treatment

FINAL DRAFT - Table F-4 - FINAL DRAFT
Recycled Water Projections

Purveyor	Supply Source Treatment Plant/Agency	Type of Reuse [1]	Projected Verifiable Reuse (AF/YR) [2]						Regional Water Recycling Goal (AF/YR) *Includes Verifiable Projects and Other Potential Projects*				
			2005	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
Carlsbad MWD	Carlsbad WRP/Carlsbad MWD	Landscape, Agriculture	-	2,419	2,707	2,707	2,707	2,707	2,419	2,707	2,707	2,707	2,707
	Gafner WRF/Leucadia CWD	Landscape, Agriculture	245	265	-	-	-	-	265	-	-	-	-
	Meadowlark WRF/Vallecitos WD	Landscape, Agriculture	1,097	2,656	2,658	2,658	2,658	2,658	2,656	2,658	2,658	2,658	2,658
	Mahr Reservoir/Vallecitos WD	Landscape, Agriculture	-	-	-	-	-	-	151	151	151	151	151
		Sub-total	**1,342**	**5,340**	**5,365**	**5,365**	**5,365**	**5,365**	**5,491**	**5,516**	**5,516**	**5,516**	**5,516**
Del Mar, City of	San Elijo WRF/San Elijo JPA	Landscape	**54**	**80**	**140**	**150**	**150**	**150**	**80**	**140**	**150**	**150**	**150**
Escondido, City of	Hale Avenue RRF/WRF/City of Escondido	Landscape, Agriculture, Industrial	**57**	**1,500**	**3,000**	**3,000**	**3,000**	**3,000**	**1,500**	**3,000**	**3,000**	**3,000**	**3,000**
Fallbrook PUD	Fallbrook Plant #1/Fallbrook PUD	Landscape, Agriculture	**315**	**480**	**530**	**590**	**600**	**600**	**480**	**530**	**590**	**600**	**600**
Oceanside, City of	San Luis Rey WWTP/City of Oceanside	Landscape	**110**	**550**	**550**	**1,500**	**1,500**	**1,500**	**550**	**550**	**1,500**	**1,500**	**1,500**
Olivenhain MWD	4-S Ranch WWTP/Olivenhain MWD	Landscape	443	1,600	1,800	1,800	1,800	1,800	1,600	1,800	1,800	1,800	1,800
	City of SD North City Reclamation Facility	Golf Course Irrigation	-	400	100	100	100	100	400	100	100	100	100
	Santa Fe Valley WRF/Olivenhain MWD	Landscape, Golf Course Irrigation	-	120	150	200	200	200	120	150	200	200	200
	Meadowlark WRF/Vallecitos WD	Landscape	-	1,000	1,200	1,200	1,200	1,200	1,000	1,200	1,200	1,200	1,200
		Sub-total	**443**	**3,120**	**3,250**	**3,300**	**3,300**	**3,300**	**3,120**	**3,250**	**3,300**	**3,300**	**3,300**
Otay WD	R. W. Chapman WRF	Landscape, Environmental	1,038	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456	1,456
	South Bay WRP/City of SD	Landscape, Environmental	-	2,584	3,228	3,974	4,838	5,840	2,584	3,228	3,974	4,838	5,840
		Sub-total	**1,038**	**4,040**	**4,684**	**5,430**	**6,294**	**7,296**	**4,040**	**4,684**	**5,430**	**6,294**	**7,296**
Padre Dam MWD	Padre Dam WRF/Padre Dam MWD	Landscape, Industrial, Agriculture, Environmental	**652**	**800**	**800**	**800**	**800**	**800**	**1,350**	**1,425**	**1,500**	**1,500**	**1,500**
Pendleton	Camp Pendleton WWTPs/USMC	Landscape	**1,881**	**3,800**	**4,450**	**4,450**	**4,450**	**4,450**	**3,800**	**4,450**	**4,450**	**4,450**	**4,450**
Poway, City of	NC WRP & San Pasqual WRP/City of SD	Landscape, Agriculture	**-**	**425**	**425**	**425**	**425**	**425**	**600**	**650**	**650**	**650**	**650**
Ramona MWD	Santa Maria WWTP/Ramona MWD	Landscape, Recreational Impound, Development	175	230	230	230	230	230	830	830	830	830	830
	San Vicente WPCF/Ramona MWD	Landscape (Golf Course), Agriculture (Orchard)	676	650	650	650	650	650	650	650	650	650	650
		Sub-total	**851**	**880**	**880**	**880**	**880**	**880**	**1,480**	**1,480**	**1,480**	**1,480**	**1,480**
Rincon	Hale Avenue RRF/WRF/City of Escondido	Landscape, Industrial	**52**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**	**4,074**
San Diego, City of	North City WRP/City of San Diego	Landscape, Industrial	3,323	6,325	10,000	13,000	13,000	13,000	6,325	10,000	13,000	13,000	13,000
	South Bay WRP/City of San Diego	Landscape, Industrial	-	200	200	200	200	200	550	550	550	550	550
		Sub-total	**3,323**	**6,525**	**10,200**	**13,200**	**13,200**	**13,200**	**6,875**	**10,550**	**13,550**	**13,550**	**13,550**
San Dieguito WD	San Elijo WRF/San Elijo JPA	Landscape	**593**	**810**	**830**	**850**	**870**	**870**	**810**	**830**	**850**	**870**	**870**
Santa Fe ID	San Elijo WRF/San Elijo JPA	Landscape	**408**	**800**	**1,000**	**1,025**	**1,040**	**1,100**	**800**	**1,000**	**1,025**	**1,040**	**1,100**
Sweetwater	South Bay WRP/City of San Diego	Landscape, Industrial	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3,500**	**3,500**	**3,500**	**3,500**
Valley Center MWD	Lower Moosa Canyon WRF/VC MWD	Percolation	332	360	400	425	460	490	560	840	1,120	1,120	1,120
	Skyline Ranch WRF/VCMWD	Landscape Irrigation	28	28	28	28	28	28	28	28	28	28	28
	Woods Valley Ranch WRF/VCMWD	Landscape Irrigation	-	56	56	56	56	56	126	168	210	252	252
	Orchard Run WRF/VCMWD	Landscape Irrigation	-	-	-	-	-	-	28	56	84	84	84
	Central Valley Area (North) WRF/VCMWD	Landscape Irrigation/Grove Irrigation	-	-	-	-	-	-	84	126	168	210	252
	Live Oak Ranch WRF/VCMWD	Landscape Irrigation/Grove Irrigation	-	-	-	-	-	-	14	28	42	42	42
	Lilac Ranch WRF/VCMWD	Landscape Irrigation	-	-	-	-	-	-	21	42	63	99	99
		Sub-total	**360**	**444**	**484**	**509**	**544**	**574**	**861**	**1,288**	**1,715**	**1,835**	**1,877**
		Total	**11,479**	**33,668**	**40,662**	**45,548**	**46,492**	**47,584**	**35,911**	**46,917**	**52,280**	**53,309**	**54,413**

[1] Does not include recycled water used for environmental enhancement.

[2] Projected verifiable projects are included in the Water Authority's 2005 UWMP reliability analysis.