
BAY-DELTA HEARINGS

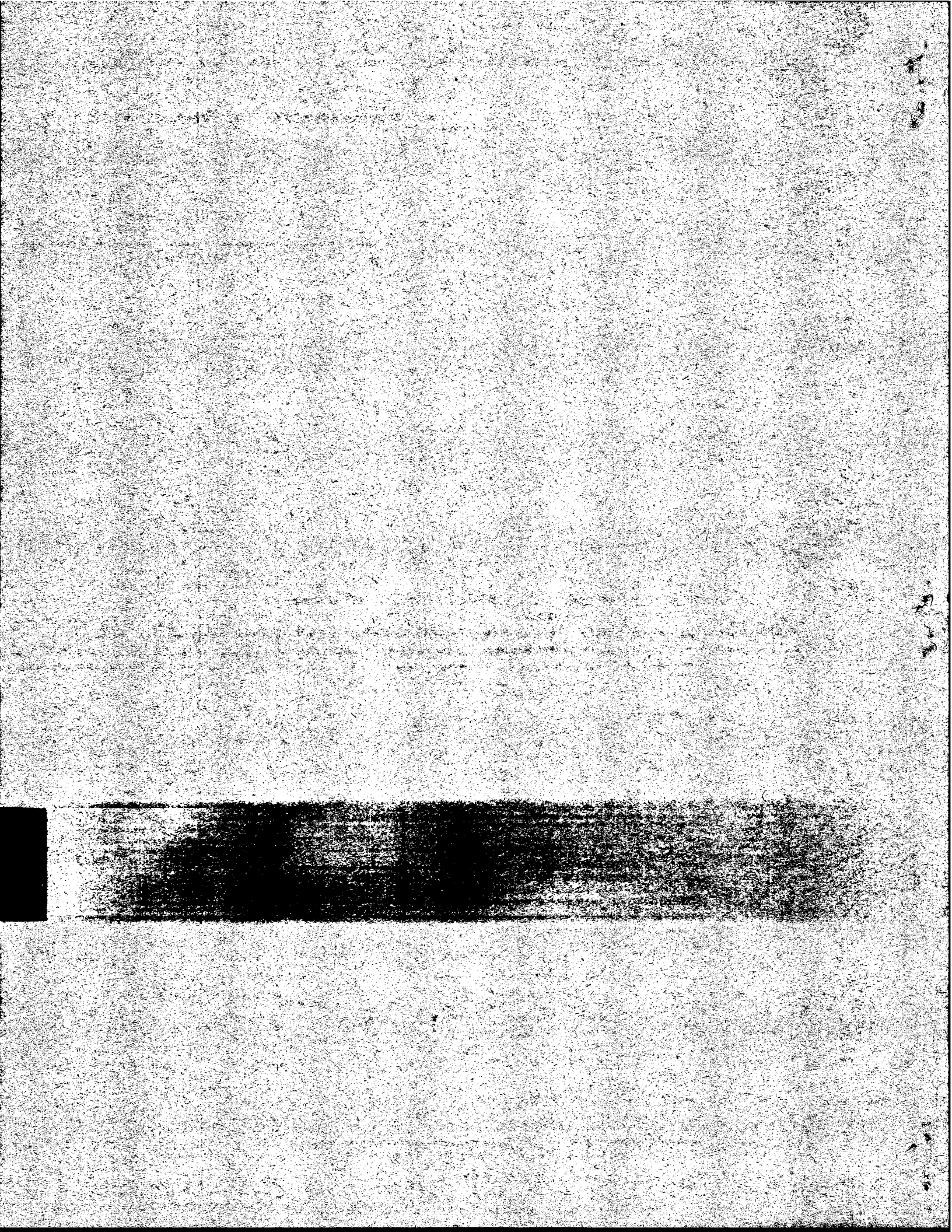
404

**EFFORTS TO CONSERVE, MANAGE, REUSE
AND OBTAIN ADDITIONAL WATER SUPPLIES
FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA SERVICE AREA**

JUNE 1992

INTERIM HEARING

**STATE WATER
CONTRACTORS**



INTERIM HEARING

WRINT SWC EXHIBIT 10

EFFORTS TO CONSERVE, MANAGE, REUSE AND OBTAIN ADDITIONAL
WATER SUPPLIES FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA SERVICE AREA

JUNE 1992 UPDATE

STATE WATER CONTRACTORS
GEORGE R. BAUMLI
555 CAPITOL MALL, SUITE 725
SACRAMENTO, CALIFORNIA 95814
(916) 447-7357

WRINT SWC EXHIBIT 10

EFFORTS TO CONSERVE, MANAGE, REUSE AND OBTAIN ADDITIONAL
WATER SUPPLIES FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA SERVICE AREA

JUNE 1992 UPDATE

TABLE OF CONTENTS

<u>Topic Heading</u>	<u>Page</u>
Preface	1
Local Water Supplies	2
Groundwater	2
Chino Basin	4
San Gabriel Basin	6
San Jacinto Basin	6
Groundwater Quality	7
Groundwater Recovery Program	8
Wastewater Reuse	13
Metropolitan's Local Projects Program	13
Existing Reclamation Projects	13
New Reclamation Projects	17
Seawater Desalination	18
Water Conservation	20
Best Management Practices	21
Water Conservation Implementation	24
Conservation Credits Program	28
Water Wise Program	29
Southern California Water/Energy Partnership	30

TABLE OF CONTENTS
(continued)

<u>Topic Heading</u>	<u>Page</u>
Water Supply Management	30
Regional Urban Water Management Plan	31
Drought Contingency Plan	31
Seasonal Storage Service	32
Surface Reservoir Storage Agreements	34
Drought Groundwater Storage Agreements	35
Arvin-Edison/Metropolitan Water Storage and Exchange Program	36
Eastside Reservoir Project	38
State Water Project	39
Colorado River	41
Coachella Groundwater Storage	41
Surplus Water	42
Conceptual Approach for Reaching Basin States' Agreement on Interim Operation of Colorado River System Reservoirs, California's Use of Colorado River Water above its Basic Apportionment and Implementation of an Interstate Water Bank	43
Demonstration Program on Interstate Underground Storage of Colorado River Water	46
Water Unused by Arizona and Nevada	47
Water Unused by California Agricultural Agencies	48

TABLE OF CONTENTS
(continued)

<u>Topic Heading</u>	<u>Page</u>
East Mesa Groundwater Storage	49
Proposal for Phase II Water Conservation Program with IID	50
Modified Irrigation Practice and Land Fallowing Proposal	52
All American Canal and Coachella Canal Lining	53
Colorado River Banking	56
Precipitation Management Demonstration Program	57
Metropolitan Actions to Cope with 1991-92 Water Supply Shortfall	58
Incremental Interruption and Conservation Plan	58
1991 Drought Emergency Water Bank	62
1992 Drought Emergency Water Bank	63

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1	Groundwater Contamination	9
2	Superfund and CERCLIS Sites with Groundwater Wells	10
3	Ultra-Low-Flush Toilet Replacement (BMP 16) Projected Water Savings Requirements vs. Achieved Water Savings, Metropolitan Service Area	27

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
1	Approved Groundwater Recovery Program Projects	12
2	May 1992 Status of Metropolitan's Local Projects Program	14
3	Reclaimed Water Survey Estimates (Existing Wastewater Reuse Projects)	16
4	Existing and New Wastewater Reuse Projects in Metropolitan's Service Area	16
5	Best Management Practices	23
6	Incremental Interruption and Conservation Plan	60

EFFORTS TO CONSERVE, MANAGE, REUSE AND OBTAIN ADDITIONAL
WATER SUPPLIES FOR THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA SERVICE AREA

JUNE 1992 UPDATE

PREFACE

During Phase I of the Bay-Delta hearings, State Water Contractors (SWC) submitted four exhibits describing efforts within the Southern California State Water Project (SWP) service area to conserve, manage, reuse, and obtain additional water supplies. These are SWC Exhibit 15 on water conservation, SWC Exhibit 19 on water supply management, SWC Exhibit 17 on wastewater reuse, and SWC Exhibit 85 on efforts to obtain additional water supplies.

This exhibit provides updated information for the Interim Hearing (WRINT) on the efforts to conserve, manage, reuse, and obtain additional water supplies for The Metropolitan Water District of Southern California (Metropolitan) service area.

To avoid future water shortages, it will be necessary for the Department of Water Resources (DWR) to fulfill the State's contractual obligations to its water service contractors by providing facilities and measures necessary to increase the SWP's yield. Completion of these facilities and export of additional water from the Sacramento-San Joaquin

Delta (Delta) is necessary even though Metropolitan is continuing its extensive efforts to conserve, manage, reuse, and obtain additional water supplies through all feasible means as well.

LOCAL WATER SUPPLIES

GROUNDWATER

Metropolitan has no jurisdiction over groundwater resources within its service area. Many of Metropolitan's member agencies or subagencies, however, do operate their own groundwater wells and/or recharge facilities. Because increased use of local supplies by Metropolitan's member agencies results in decreased demand for water from Metropolitan, and because use of groundwater basins for conjunctive use increases supplies in Metropolitan's service area, Metropolitan has historically supported its member agencies' efforts to protect and improve the use of local groundwater resources. Aquifers provide valuable storage of local and imported water vital to meeting seasonal, drought, and emergency demands. Metropolitan's current activities focus on accomplishing the following objectives:

- improve water supply reliability through conjunctive use of available imported water and groundwater storage,
- increase groundwater production capacity,
- protect and improve groundwater quality,
- reduce peaking demands on Metropolitan, and
- recover groundwater lost to contamination.

Metropolitan is currently implementing a multifaceted approach to accomplishing these groundwater objectives. Since the 1950s, Metropolitan has supported conjunctive management of groundwater basins with its imported supplies through establishment of classes of service for groundwater replenishment. Currently, under Metropolitan's seasonal storage class of service, water may be used for groundwater recharge through direct and in-lieu means. Direct recharge is accomplished through spreading operations. In-lieu recharge is accomplished when agencies take delivery of imported water in-lieu of pumping groundwater, thereby leaving annual yield in storage.

Metropolitan participates in research and development of new groundwater technology. Also, Metropolitan is participating with member and local agencies in numerous cooperative studies planning maximum utilization of groundwater resources. These studies typically address technical, financial, and institutional issues regarding improved storage and production of groundwater and often lead to new projects such as the City of Pomona's new nitrate-removal plant.

Metropolitan is pursuing the further use of groundwater basins for storage of its imported water. Under the conjunctive-use concept, Metropolitan's water would be stored in a groundwater basin when supplies are sufficient for use during periods of shortage and high summer demands. Metropolitan, in cooperation with its member agencies, is evaluating expansion of existing conjunctive-use projects in the Chino, San Gabriel, and San Jacinto basins. None of these projects can be successful unless a sufficient supply of imported water is available above consumptive needs in some years to accumulate storage that would be withdrawn in years of shortfall.

Chino Basin

Metropolitan has participated in several programs for storing imported water in the Chino Groundwater Basin. These

include a 100,000 acre-foot cyclic storage program in which imported water to be used for groundwater replenishment is delivered in advance, when sufficient water supplies are available, and stored for subsequent use during shortfalls. Metropolitan has also participated in additional agreements for the exchange of imported water for local groundwater. Under these exchanges, over 43,000 acre-feet of groundwater was stored for use during shortfalls. Over the last six years of drought through May 1992, about 105,000 acre-feet of water was withdrawn and sold for local use from these cyclic and exchange groundwater storage accounts.

Currently, Metropolitan is negotiating provisions for a new 50,000 acre-foot conjunctive-use demonstration project which would store imported water in the Chino Basin through spreading, exchange, and injection operations. This project would allow Metropolitan to store imported water during periods of availability and subsequently pump up to 30,000 acre-feet per year into its distribution system to improve regional water service reliability during droughts and peak demand periods. Metropolitan is also participating with local agencies in developing a comprehensive water management plan to address existing water quality degradation in the basin and develop strategies to maximize the basin's use as a local and regional resource.

San Gabriel Basin

Metropolitan currently has two contracts with the Main San Gabriel Basin Watermaster for cyclic storage of up to 167,000 acre-feet of imported water for subsequent transfer to two member agencies, Upper San Gabriel Valley Municipal Water District and Three Valleys Municipal Water District. Over the last six years of drought through May 1992, about 106,000 acre-feet of water was withdrawn and sold for local use from this cyclic storage program. Additionally, Metropolitan is negotiating development of a large conjunctive-use project which would be compatible with the U.S. Environmental Protection Agency's Superfund cleanup program for the basin. The conjunctive-use program would consist of a well field and groundwater treatment plant in the Baldwin Park area to pump and recover groundwater that is presently contaminated. The program could provide Metropolitan with up to 500,000 acre-feet of storage and provide up to 100,000 acre-feet of supply per year during periods of shortage.

San Jacinto Basin

Under a pilot demonstration project with Eastern Municipal Water District of Riverside County (Eastern MWD),

Metropolitan stored about 2,000 acre-feet of imported water by spreading its SWP water for the first time in 1990 in the San Jacinto Basin. Eastern MWD recently purchased most of that water to supplement its drought supply and is planning to store additional imported water in the basin following this successful demonstration of the physical, regulatory, and institutional aspects of conjunctive use. Additionally, a local pumpers' association has been formed to develop plans to maximize the use of the local San Jacinto and Hemet basins. Metropolitan is assisting Eastern MWD in several ongoing technical studies aimed at optimizing the use of these basins.

Groundwater Quality

As indicated in WRINT SWC Exhibit 8, approximately 90 percent of the local water supplies used in Metropolitan's service area are provided by groundwater. The groundwater basins themselves provide storage for imported supplies, and transmit water from recharge areas to user withdrawal points. Using information drawn from over one million pieces of data for about 3,000 wells, groundwater conditions in Metropolitan's service area have been evaluated.

Using a 14-year analysis period from 1974 to 1989, approximately 39 percent of the wells with data exceeded at

least one regulated chemical Maximum Contaminant Level (MCL) as illustrated in Figure 1. Further, an additional 35 percent of the wells were found to be impacted by at least one regulated chemical at levels below the MCL. Major regional groundwater problems include: nitrate concentrations impacting 48 percent of the wells; total dissolved solids (TDS) concentrations impacting 31 percent; and volatile organic compounds (VOC) concentrations impacting 25 percent.

In general, groundwater contamination is increasing as the long-lasting residual impacts of industrial, dairy, agricultural, and municipal activities spread. For example, Figure 2 shows the location of federal Superfund-type cleanup sites, which include facilities such as landfills and factories, and groundwater production wells. Thus, at the same time that groundwater basins are being more intensively used to further stretch limited imported supplies, this critical resource will be increasingly stressed due to historical and current waste-disposal practices.

Groundwater Recovery Program

Because of the previously described groundwater contamination problem, Metropolitan has embarked on a

Figure 1
GROUNDWATER CONTAMINATION

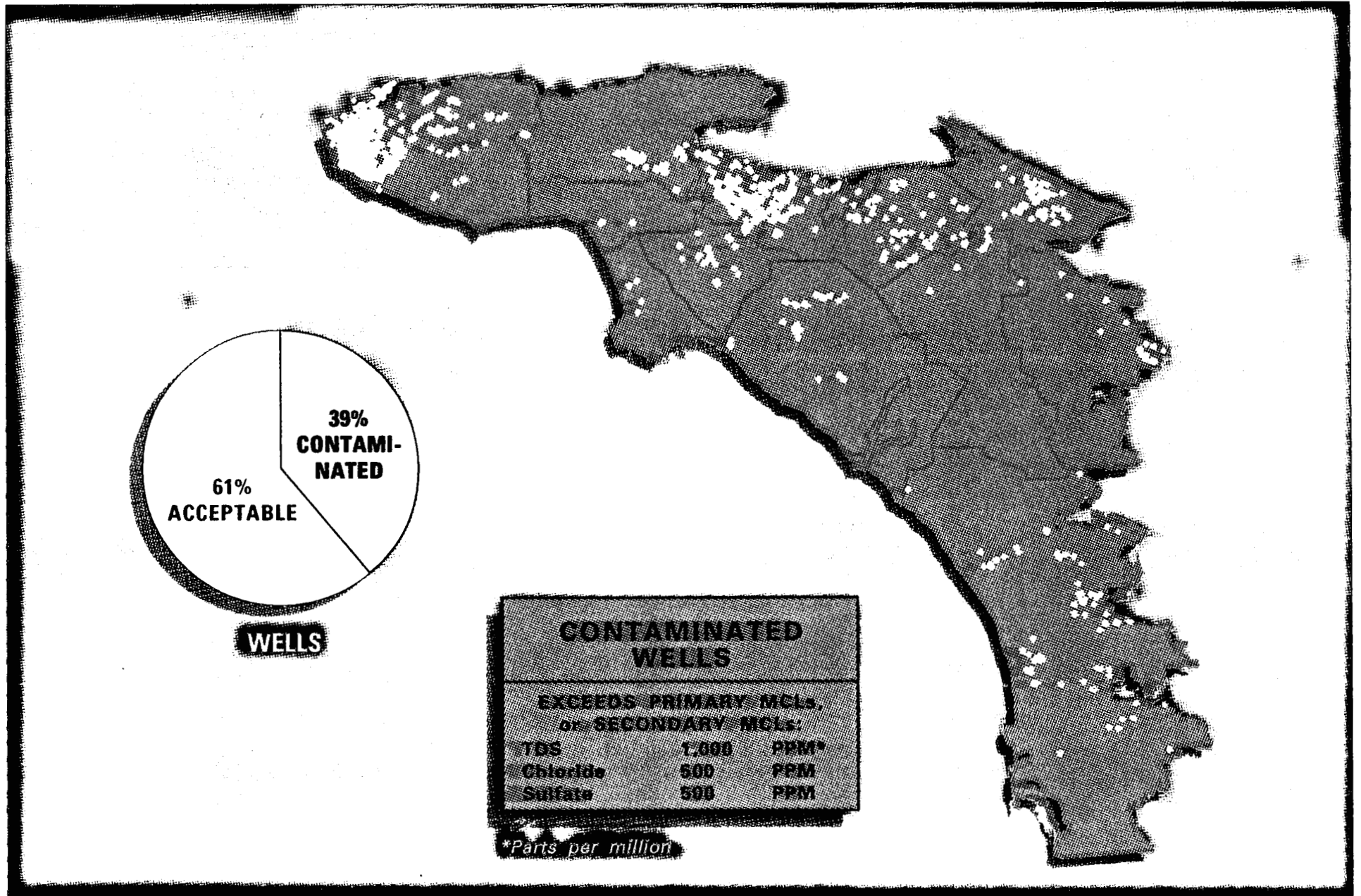




Figure 2
**SUPERFUND AND
CERCLIS* SITES WITH
GROUNDWATER WELLS**

- CERCLIS* SITE
- NATIONAL PRIORITY LIST SITE (SUPERFUND)
- GROUNDWATER WELL

* Comprehensive Environmental Response
Compensation and Liability Information System

large-scale program to improve regional water supply reliability through reclamation of groundwater degraded by minerals and other contaminants. Under its Groundwater Recovery Program, Metropolitan will provide financial assistance to local agencies of up to \$250 per acre-foot to recover contaminated groundwater for potable use. Over 40 projects at a cost to Metropolitan of about \$30 million per year are expected by the year 2000.

Currently, Metropolitan has approved participation in five Groundwater Recovery Program projects shown on Table 1, which will collectively produce 15,200 acre-feet per year when fully operational in a few years. Ultimately, in about the year 2000, the Groundwater Recovery Program is expected to recover 200,000 acre-feet per year. However, only about 100,000 acre-feet of this ultimate annual production will be untapped local yield or new supplies. The remainder will require replenishment from Metropolitan and reclaimed water sources to avoid basin overdraft. Metropolitan will benefit from the projects requiring replenishment through a conjunctive-use concept. In order to participate, each project must have sufficient storage reserves to sustain production during a three-year drought without receiving replenishment service from Metropolitan.

Table 1

Approved Groundwater Recovery Program Projects

<u>Agency</u>	<u>Project</u>	<u>Production</u> (acre-feet per year)
City of Oceanside	Desalter	2,000
City of Tustin	Desalter	3,200
Irvine Ranch Water District	Desalter	6,700
City of Santa Monica	Volatile Organic Compound Removal Plant	1,800
West Basin Municipal Water District	Desalter	<u>1,500</u>
Total		15,200

WASTEWATER REUSE

Metropolitan's Local Projects Program

Metropolitan is continuing its efforts to encourage the expanded use of reclaimed water through its Local Projects Program, by providing a financial incentive of \$154 per acre-foot of reclaimed water produced by its member agencies. Since the submittal of SWC Exhibit 17, 21 projects with an ultimate yield of 115,000 acre-feet per year have been added to the Local Projects Program. That brings the total participation in the Local Projects Program to 27 projects with a combined ultimate yield of about 139,800 acre-feet annually, as shown in Table 2. This ultimate yield is projected to be reached in the year 2000.

Existing Reclamation Projects

In the summer and fall of 1990, the State Water Resources Control Board through its Reclaimed Water Sub-work Group and the State Water Conservation Coalition through its Reclamation/Reuse Task Force, initiated a joint effort to obtain information and produce a report estimating potential reclaimed water use throughout the State. The purpose of that

Table 2

May 1992 Status of Metropolitan's
Local Projects Program

<u>Approved Projects</u>	<u>Ultimate Project Yield (acre-feet per year)</u>
South Laguna Reclamation Project	860
Las Virgenes Reclamation Project	2,700
Arlington Basin Groundwater Desalter Project	6,100
Long Beach Reclamation Project	1,700
Irvine Reclamation Project	10,000
Santa Margarita Water Reclamation Expansion Project	3,600
Glenwood Nitrate Water Reclamation Project	1,600
Lakewood Water Reclamation Project	440
Green Acres Reclamation Project	7,000
South Laguna Reclamation Expansion Project	700
Fallbrook Sanitary District Water Reclamation Project	1,200
Calabasas Reclaimed Water System Extension Project	700
Glendale Water Reclamation Expansion Project	600
Trabuco Canyon Reclamation Expansion Project	800
Shadowridge Water Reclamation Project	375
Los Angeles Greenbelt Project	1,610
Santa Maria (Ramona) Water Reclamation Project	1,600
Moulton Niguel Water Reclamation Project	8,000
San Clemente Water Reclamation Project	4,000
Rancho California Reclamation Expansion Project	6,000
Walnut Valley Water Reclamation Expansion Project	500
San Pasqual Water Reclamation Project	1,100
Oceanside Water Reclamation Project	300
Century Reclamation Program	5,500
Oak Park/North Ranch Reclaimed Water Distribution System	1,300
West Basin Water Reclamation Program	70,000
Otay Water Reclamation Project Phase I	<u>1,500</u>
Total	139,785

report was to provide information for the State Water Resources Control Board Bay-Delta hearing process. The result of that survey was published in a report entitled "Water Recycling 2000: California's plan for the future, September 1991." That report focuses on the reclaimed water yield that displaces a freshwater demand and excludes the amount of incidental reuse which may occur from the disposal of wastewater into a stream or impoundment such as takes place along the Santa Ana River.

In October 1990, Metropolitan conducted a survey of existing reclamation projects in its service area. The information obtained from that survey, the Water Recycling 2000 report, and various studies has been compiled in a Water Reclamation Databank. Metropolitan is continually updating the Databank. Currently, there are 61 existing reclamation projects that will ultimately deliver about 402,000 acre-feet by the year 2010 for reuse as shown in Table 3. About one third, or about 135,000 acre-feet per year, of that is used for irrigation and industrial purposes, and the remaining 67 percent is used for groundwater replenishment or seawater barriers. In 1991, wastewater reuse in Metropolitan's service area totaled 250,000 acre-feet.

This latest estimate shows a substantial increase in the ultimate reclamation yield in Metropolitan's service

Table 3

Reclaimed Water Survey Estimates
(Existing Wastewater Reuse Projects)

(acre-feet per year)

	<u>Groundwater Recharge</u>	<u>Irrigation/ Industrial</u>	<u>Total Ultimate Yield</u>
1992 Estimate	267,000	135,000	402,000
1986 Survey	<u>104,378</u>	<u>50,856</u>	<u>155,234</u>
Increase (1986 to 1992)	162,622	84,144	246,766

Table 4

Existing and New Wastewater Reuse
Projects in Metropolitan's Service Area

(million acre-feet)

<u>Wastewater Reuse Projects</u>	<u>Year</u>		
	<u>1995</u>	<u>2000</u>	<u>2010</u>
Existing	0.28	0.34	0.40
New	<u>0.04</u>	<u>0.19</u>	<u>0.28</u>
Total	0.32	0.53	0.68

area since the November 1986 survey reported in SWC Exhibit 17. As shown in Table 3, the estimate of reclaimed water use ultimate annual yield from existing projects in Southern California has increased by about 247,000 acre-feet from the 155,000 acre-feet in 1986 to 402,000 acre-feet in 1992. The projected yield of existing projects is shown in Table 4.

New Reclamation Projects

Since the completion of the Water Recycling 2000 report and Metropolitan's 1990 survey, a number of major wastewater reuse projects have been planned. More than 40 new wastewater reuse projects are in various stages of feasibility study, design, or construction. The projected yield from new wastewater reuse projects is also shown in Table 4. Under optimal conditions, total use of reclaimed water (direct use and groundwater recharge) would reach about 676,000 acre-feet per year by 2010, which is 360,500 acre-feet greater than that indicated in SWC Exhibit 17. Table 4 updates information provided in Table 2 of SWC Exhibit 17.

The projections for expansion of wastewater reuse within Metropolitan's service area are subject to several limiting constraints. The most important constraints are

capital, operation, and maintenance funding. Because of the treatment, pumping, and extensive dual-piping distribution systems required, reclamation projects are expensive. Other constraints to reclamation include receiving regulatory approvals, overcoming institutional factors, and gaining public acceptance.

SEAWATER DESALINATION

Metropolitan has participated in several studies to evaluate the feasibility of seawater desalination and is pursuing the development of seawater desalination technologies. The first study included a determination of potential sites for a demonstration desalting unit at existing power plants along the coast, the environmental concerns that would be associated with such a facility, potential project partners, and funding and design requirements.

In a second study, Metropolitan participated in a joint study to evaluate the feasibility of constructing and operating a facility to produce up to 100 million gallons (307 acre-feet) per day of desalted water and 500 megawatts of electricity along the Pacific Coast near Tijuana, Mexico. The proposed Baja Desalination Project would fulfill the

electricity and water needs of northern Baja California with excess water and electricity for Southern California utilities. The costs and security issues associated with developing this water supply for Southern California precluded further development of this project.

In a third study, Metropolitan and San Diego County Water Authority (SDCWA) conducted an investigation of the feasibility of building a seawater desalination plant in combination with the repowering of San Diego Gas and Electric Company's South Bay Power Plant. The results of the study indicated that a 30 million gallon (92 acre-feet) per day reverse osmosis desalination facility may be economically viable as part of the South Bay repowering project. SDCWA is investigating this option further.

Metropolitan is currently planning to build, operate, and test a seawater desalination plant to provide a means for conducting research and development of advanced desalination processes. The demonstration plant would employ multi-effect distillation technologies to process 5 million gallons (15 acre-feet) per day of seawater using heat from an existing adjacent coastal power plant. The results from operation of the demonstration plant would be used to evaluate the viability

of a full-scale desalination plant with a capacity of 50 to 100 million gallons (154 to 307 acre-feet) per day. A full-scale desalination project can only feasibly be built in conjunction with renovation of coastal powerplants scheduled around the year 2000.

WATER CONSERVATION

Over the last decade, water agencies in Southern California have demonstrated that they are Statewide leaders in the field of water conservation. As a result of established ongoing regional conservation programs and anticipated savings from the implementation of Urban Water Conservation Best Management Practices in Metropolitan's service area, water savings of 542,000 acre-feet per year are projected by the year 2000, and 831,000 acre-feet per year are projected by the year 2010. It is estimated that current water conservation programs reduced demands by 223,000 acre-feet in 1990.

SWC Exhibit 15 showed that Southern Californians were saving 196,900 acre-feet in 1987 through water conservation efforts. SWC Exhibit 15 also indicated that by the year 2010 the area would be saving 448,600 acre-feet per year through conservation. Due to the success of current conservation

programs and the implementation of the Urban Water Conservation Best Management Practices, water savings are now projected to be 831,000 acre-feet per year by the year 2010, which is an increase of 382,400 acre-feet per year or 85 percent.

BEST MANAGEMENT PRACTICES

After the release of the 1988 Draft Water Quality Control Plan in the Bay-Delta hearing process, hearing participants recognized the need to identify feasible water conservation measures and to quantify justifiable estimates of conservation savings. Southern California water agencies joined forces with representatives from other urban water agencies, the environmental community, and other public interest groups to participate in a State Water Resources Control Board-encouraged conservation work group and to form the State Water Conservation Coalition (Coalition). The Coalition began negotiations to resolve differing estimates on achievable water conservation goals.

At the end of the work group process, the Coalition reached unanimous consensus on a process to address the urban water conservation issues in the Bay-Delta hearing process. That process has come to be known as "Best Management

Practices" (BMP). All of the parties agreed that the State Water Resources Control Board should rely in the Bay-Delta hearing process on the BMP results as estimates for urban water conservation.

Under the BMP process, participating urban water agencies commit to use "good-faith efforts" to implement proven water conservation measures, develop new measures, and implement them as they become feasible. In return for this commitment, the environmental and public interest groups participating in the BMP development process have agreed that BMP implementation provides the best available methods for water conservation implementation and that the State Water Resources Control Board should only use reliable estimates of conservation savings that have been developed through the BMP process. Metropolitan signed a memorandum of understanding in December 1991 stating its commitment to implement 16 BMPs over the next ten years. A list of the 16 BMP measures is shown in Table 5.

With the advent of the BMP process, Metropolitan and its member agencies will continue their commitment to and implementation of water conservation programs. Metropolitan's conservation budget for fiscal year 1992-93 is \$21 million.

Table 5

Best Management Practices

1. Interior and exterior water audits and incentive programs for single-family residential, multi-family residential, and governmental/institutional customers.
2. Plumbing - new and retrofit:
 - a. enforcement of requirement for ultra-low-flush toilets in all new construction beginning January 1, 1992;
 - b. support of State and federal legislation prohibiting sale of toilets using more than 1.6 gallons per flush; and
 - c. plumbing retrofit.
3. Distribution system water audits, leak detection and repair.
4. Metering with commodity rates for all new connections and retrofit of existing connections.
5. Large landscape water audits and incentives.
6. Landscape water conservation requirements for new and existing commercial, industrial, institutional, governmental, and multi-family developments.
7. Public information.
8. School education.
9. Commercial and industrial water conservation.
10. New commercial and industrial water use review.
11. Conservation pricing.
12. Landscape water conservation for new and existing single-family homes.
13. Water waste prohibition.
14. Water conservation coordinator.
15. Financial incentives.
16. Ultra-low-flush toilet replacement.

Other urban water agencies in Southern California also have committed to water conservation by becoming signatories to the Urban Water Conservation BMP memorandum of understanding. In the future, these water agencies will meet their commitment to the BMP process by expanding existing programs and by implementing additional programs. Regional implementation of the majority of BMPs is ahead of the schedule required in the memorandum of understanding. Examples of conservation program expansion are Metropolitan's Commercial and Industrial Water Conservation program which includes water agency training courses, industry specific technical workshops, publications, and a telephone hotline. It is anticipated that Metropolitan will spend in excess of \$1 million in fiscal year 1992-93 on this particular program. These same agencies will also expand their efforts in the outdoor landscaping arena. On a reconnaissance level, these agencies commissioned a detailed satellite survey of vegetation to determine where their efforts should most effectively be concentrated. This initial vegetation survey assists these agencies in designing future outdoor landscaping programs.

WATER CONSERVATION IMPLEMENTATION

In SWC Exhibit 15, the SWC in Southern California reported that they were spending approximately \$6.5 million

annually on water conservation measures. These expenditures were made on programs that included: residential plumbing retrofit, industrial conservation, public information, education, landscape conservation, demonstration gardens, and conservation pricing structures.

Since the submission of SWC Exhibit 15, Metropolitan and its member agencies have dramatically increased their conservation efforts. An example of this increased commitment is the fact that in fiscal year 1991-92, the cost of various conservation programs to Metropolitan was more than \$19 million. Metropolitan provided funding to its member agencies for twelve ultra-low-flush toilet retrofit programs, three residential water audit programs, one distribution system leak-detection program, and a number of pilot programs and water savings effectiveness studies.

A major BMP included in the memorandum of understanding is BMP 16, Ultra-low-flush toilet replacement. This BMP calls for "...replacement of existing high-water-using toilets with ultra-low-flush toilets (1.6 gallons or less) in residential, commercial, and industrial buildings. Such programs will be at least as effective as offering rebates of up to \$100 for each replacement that would not have occurred without the rebate, or requiring replacement at the time of

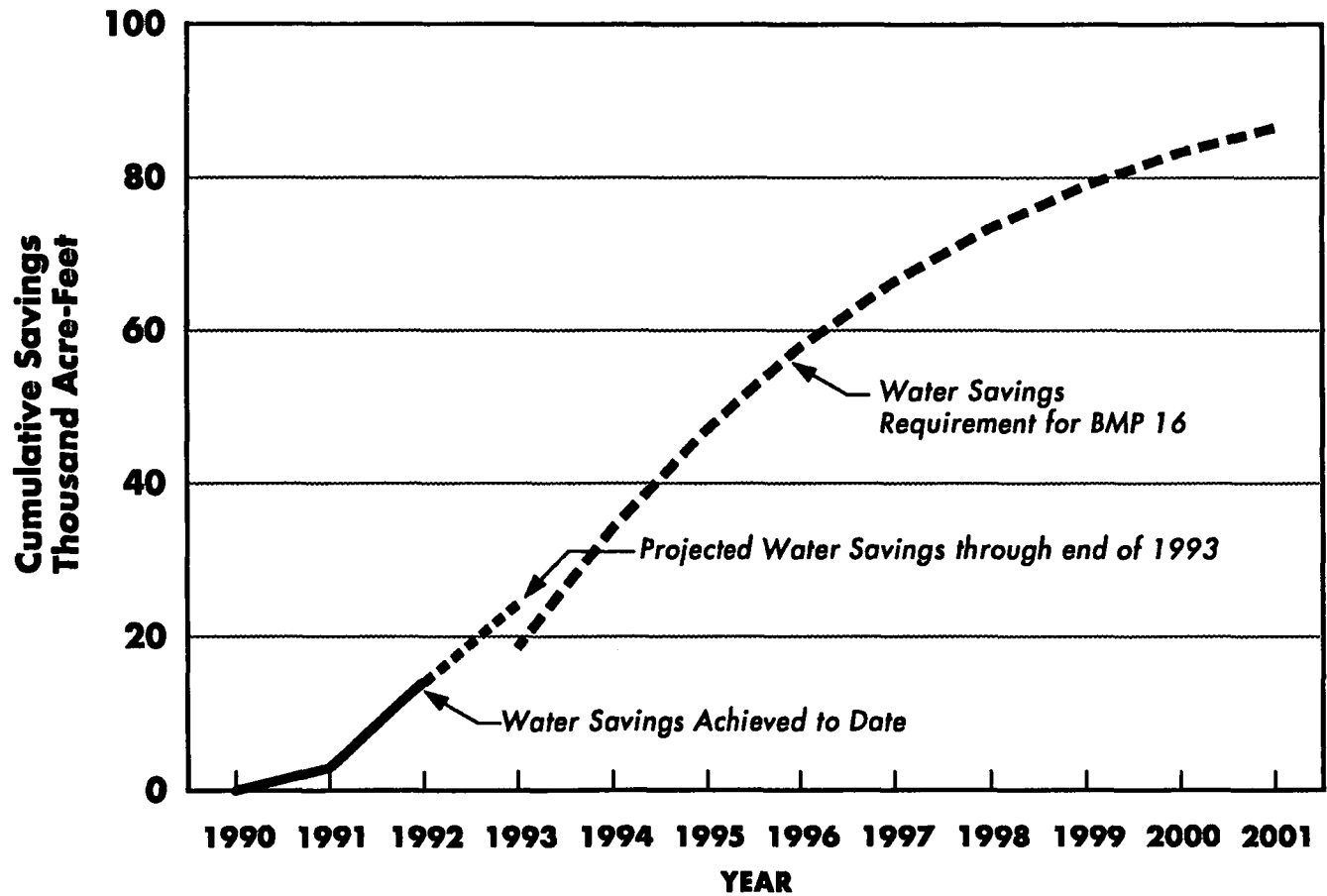
resale, or requiring replacement at the time of change of service."

The California Urban Water Conservation Council, as mandated by the memorandum of understanding, was formed and is composed of signatories to the memorandum. The California Urban Water Conservation Council authorized the formation of a committee to recommend a methodology to quantify the water savings resulting from implementation of BMP 16. This committee has finalized its recommendation and has forwarded it to the California Urban Water Conservation Council for approval.

Metropolitan supports this recommended methodology for determining the implementation requirements for BMP 16. The memorandum of understanding calls for the start of implementation of BMP 16 in 1993, the second year of the ten-year period covered by the memorandum. The memorandum of understanding terminates in the year 2001. It is estimated that the water savings requirement for BMP 16 in the Metropolitan service area is 86,500 acre-feet in the year 2001.

Figure 3 shows the water saving requirements for BMP 16 in the Metropolitan service area through the year 2001. Also shown in Figure 3 is the water savings attributable to the

Figure 3
ULTRA-LOW-FLUSH TOILET REPLACEMENT (BMP 16)
PROJECTED WATER SAVINGS REQUIREMENTS VS. ACHIEVED WATER SAVINGS
Metropolitan Service Area



ultra-low-flush toilets retrofitted to date, and for those projected to be retrofitted in fiscal year 1992-93. As illustrated in Figure 3, Metropolitan and its member agencies are already exceeding the water saving requirements for BMP 16. The BMP calls for a savings of 18,500 acre-feet by the end of 1993. Metropolitan projects that savings attributable to ultra-low-flush toilet retrofit programs will reach 24,000 acre-feet by the end of 1993.

To date, water agencies in Southern California have retrofitted 321,267 toilets with ultra-low-flush toilets. Metropolitan has contributed \$11.1 million toward the retrofit of 201,267 toilets in the region. The total cost to water agencies in Southern California to retrofit 321,267 ultra-low-flush toilets has been approximately \$40 million to date. It is projected that a minimum of 200,000 toilets will be retrofitted in fiscal year 1992-93. Analysis of the retrofit effort indicates that water savings are on average, 33 gallons-per-household per day for single-family residences and 31 gallons-per-household per day for multi-family residences.

Conservation Credits Program

The cornerstone of these regional conservation programs is Metropolitan's Conservation Credits Program.

Under the Conservation Credits Program, Metropolitan provides a financial incentive to its member agencies for the implementation of conservation programs that have a demonstrated ability to save water. Metropolitan's incentive payment is based on the lesser of \$154 per acre-foot of water saved over the life of the program, or one-half the cost of the proposed program. Many of the programs described in this exhibit have been funded under the Conservation Credits Program. It is also anticipated that a significant portion of the future BMP implementation will be accomplished through the Conservation Credits Program. Since the inception of the Conservation Credits Program in 1988, Metropolitan has provided incentives totalling \$23.3 million.

Water-Wise Program

During the summer of 1991, Metropolitan conducted the Water-Wise program in response to the fifth year of drought. Under the Water-Wise program, Metropolitan spent \$9 million to distribute over 1 million flow-reducing showerheads within an eight-month period. The Water-Wise program was a unique cooperative program that involved water agencies and major corporate sponsors in Southern California who played a major role in distributing the showerheads. Some of the corporate sponsors that participated in Water-Wise were: The Broadway

Department Stores, Ralph's Grocery Company, McDonalds, Southern California Edison Company, Chevrolet, Procter and Gamble, and Northrop Corporation.

Southern California Water/Energy Partnership

Metropolitan has also joined forces with Southern California Edison Company, Southern California Gas Company, the Los Angeles Department of Water and Power, the cities of Anaheim, Burbank, Glendale, and Pasadena, and the Sanitation District of Orange County to form the Southern California Water/Energy Partnership (Partnership). Through the Partnership, Metropolitan is working with these regional utilities to implement joint conservation programs to save both water and energy that will eliminate duplication of efforts.

WATER SUPPLY MANAGEMENT

A number of water supply management programs in which Metropolitan participates were described in SWC Exhibit 19. These include a number of water exchanges and surface and groundwater storage agreements. Metropolitan has also established a new seasonal water rate structure to encourage conjunctive use of water.

REGIONAL URBAN WATER MANAGEMENT PLAN

In November 1990, Metropolitan completed a revised Regional Urban Water Management Plan to assist its member agencies in the preparation of their own plans and for use in Metropolitan's planning process. Metropolitan was not legally required to prepare the plan at the time because it is a wholesale, rather than a retail, supplier of water. The Regional Urban Water Management Plan includes a description of those water conservation and water management activities that Metropolitan conducted at the time or may conduct in the 1990s on a regional basis in cooperation with its member agencies.

DROUGHT CONTINGENCY PLAN

In February 1992, Metropolitan completed a Drought Contingency Plan to amend its Regional Urban Water Management Plan. In accordance with Section 10631 of the California Water Code, Metropolitan submitted the Drought Contingency Plan to DWR. The Drought Contingency Plan discussed past, current, and projected water use and supplies, management of water shortages, and revenue impacts and measures to overcome revenue shortfalls.

SEASONAL STORAGE SERVICE

The seasonal storage program was instituted with the fiscal year 1989-90 water rate structure. This was in response to requests to develop a permanent version of Metropolitan's temporary in-lieu program, first implemented in 1978 as a pilot storage program. The three principal goals of seasonal storage service are: to achieve greater conjunctive use of imported and local supplies, encourage construction of additional local production facilities, and reduce member agencies' dependence on Metropolitan's deliveries during the summer months. Regional benefits include enhancing Metropolitan's ability to deliver available imported water for storage and improving the capability of the region to produce more groundwater and to draft local surface reservoirs during sustained droughts and emergencies. These programs are consistent with historic practices of Metropolitan, pricing groundwater replenishment service as low as economically practicable to encourage management of groundwater storage to meet regional storage needs.

Seasonal storage service is generally available between October 1 and April 30, whenever and so long as Metropolitan determines that water and system capacity are available, and at other times of the year at Metropolitan's

discretion. Fifteen of the 27 member agencies have qualified for participation in the seasonal storage program since its inception.

Member agencies are encouraged to take delivery of seasonal water through a discounted rate offered by Metropolitan. This economic incentive allows local agencies to invest in new water production, storage, and treatment facilities. These facilities are needed to restore and increase local agencies' capability to produce local water as well as store Metropolitan's water during periods of availability. This rate is currently \$130 per acre-foot for untreated water and \$154 per acre-foot for treated water, or approximately 60 percent of the noninterruptible rates.

Seasonal water can be classified in several ways: shift or long-term storage, reservoir storage or groundwater replenishment by spreading or injection, and in-lieu or direct deliveries. Shift seasonal storage is that water delivered in the winter period and produced from storage in the summer. A member agency's total annual purchases of Metropolitan water are unchanged from a baseline operation. Long-term storage is that water which an agency leaves in storage for a duration of time extending past the end of the fiscal year (June 30). Under this scenario, total purchases from Metropolitan increase

by the amount of seasonal storage water which qualifies for long-term storage. During fiscal year 1989-90, over 183,000 acre-feet of seasonal storage water was sold. Of this amount, 126,000 acre-feet was shift seasonal storage and 57,000 acre-feet was long-term seasonal storage.

Either type of water may be taken by in-lieu or direct means for reservoir storage or groundwater replenishment. In-lieu delivery consists of delivery of Metropolitan water to a member agency's distribution system in place of that member agency producing water from its local sources, causing additional water to accumulate in local storage for use at some future time. The quantity of seasonal storage service taken for storage by in-lieu means is measured as the difference between: (1) the assumed quantity of water that an agency would have produced locally in the October 1 through April 30 period, without any incentive from Metropolitan; and (2) the actual local water production by the agency during the same period.

SURFACE RESERVOIR STORAGE AGREEMENTS

Over the recent past, Metropolitan has maintained various surface reservoir storage agreements with its member agencies and their subagencies. The purpose of such agreements

is to deliver additional water to surface reservoirs, generally during periods of temporary surplus supply conditions. These supply conditions typically occur during the winter off-peak demand period, between October and April. This water delivered in advance is then purchased and utilized by the respective member agency at a later date, generally corresponding to a period of reduced supply availability. This typically occurs during the summer-peak demand period between June and September. Due to the persistence of the current drought in California, and the resulting reduced supplies allocated from the SWP, many of the surface reservoir storage agreements have not been utilized in recent years. Currently, Metropolitan has one active agreement, with the City of Los Angeles, for the storage of up to 60,000 acre-feet of water in reservoirs along the Los Angeles Aqueduct or within the city limits, depending on available storage capacity. In 1991, approximately 28,000 acre-feet of water was delivered in advance under this storage agreement. All of this water was subsequently purchased by the City of Los Angeles in April 1992.

DROUGHT GROUNDWATER STORAGE AGREEMENTS

Metropolitan has executed Drought Storage Agreements with the City of Anaheim, Santa Ana, Municipal Water District of Orange County, Pasadena, and City of Los Angeles for the

storage of water by in-lieu and/or direct means in the Orange County, Raymond and San Fernando groundwater basins. These agreements will expand the conjunctive use of each of the basins. The term of each agreement is three years, and approximately 50,000 acre-feet was delivered under these agreements during fiscal year 1991-92. Metropolitan has the right to offset future delivery requests with the water stored under the agreements.

ARVIN-EDISON/METROPOLITAN WATER STORAGE AND EXCHANGE PROGRAM

Under the Arvin-Edison/Metropolitan Water Storage and Exchange Program, Metropolitan would deliver a portion of its SWP entitlement, not needed to meet service area demands, to Arvin-Edison Water Storage District (Arvin-Edison) for storage. In years in which Metropolitan needs additional water, Arvin-Edison's Central Valley Project water would be delivered through the SWP to Metropolitan. Arvin-Edison would, in turn, pump Metropolitan's stored groundwater. There has been progress made toward implementation of the Arvin-Edison/Metropolitan Water Storage and Exchange Program since submittal of SWC Exhibit 85 in 1987. First, concerns about negative impacts to other State water service contractors have been resolved. Operational studies performed by DWR have shown conclusively that impacts of the program on deliveries of

water to other State water service contractors would be negligible. Additionally, Metropolitan has agreed to modify its scheduled delivery of water should such deliveries adversely impact the delivery of State Water Contract Article 12(d) water to other State water service contractors. During 1991, DWR approved the point-of-diversion at the Tupman Turnout on the California Aqueduct.

Metropolitan has implemented interim agreements with Arvin-Edison, the Kern-Tulare Irrigation District and the Rag Gulch Irrigation District to allow temporary storage for Metropolitan. Additionally, Metropolitan has initiated negotiations for long-term agreements with Arvin-Edison and the remaining Cross Valley Canal Exchangers. Agreements with the Cross Valley Canal Exchangers are necessary to secure capacity for the exchange in the Cross Valley Canal.

The Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the water storage and exchange program has been issued for public comment and the public comment period has ended. Metropolitan is currently addressing comments received during this period. Metropolitan will be meeting with the various federal and State resource agencies to formulate final mitigation plans.

Despite early assurances of support for the exchange, the Environmental Defense Fund has filed a protest with the State Water Resources Control Board protesting the U.S. Bureau of Reclamation (Reclamation) petition for change-in-use permits. Additional protests to the change-in-use permits have been filed by the California Department of Fish and Game and the California Sportfishing Protection Alliance. Preliminary negotiations with the protestants have not been conclusive, and a hearing before the State Water Resources Control Board appears imminent.

Water exchanges and transfers from agricultural to urban uses are necessary to meet future urban water demands. However, implementation of such programs is difficult and the process time consuming. While agreements were essentially completed among the major participants in the Arvin-Edison/Metropolitan program in little more than two years, it has taken more than four years to complete the draft EIR/EIS for the project and additional regulatory requirements may substantially further delay implementation of the program.

EASTSIDE RESERVOIR PROJECT

In October 1991, Metropolitan certified the final environmental impact report for the Eastside Reservoir

Project. Final design and land acquisition activities for the reservoir which will be located in the Domenigoni Valley in western Riverside County south of Hemet are proceeding.

The Eastside Reservoir Project, in combination with comprehensive groundwater management, will: (1) maximize groundwater storage by regulating the supplies of imported water for conjunctive-use programs, (2) provide emergency water reserves for use following facility damage resulting from major seismic or other events, (3) provide supplies to reduce water shortages during droughts, (4) meet seasonal operating requirements, including seasonal peak demands, and (5) preserve the operating reliability of Metropolitan's distribution system. The Eastside Reservoir Project, together with groundwater storage, is intended to provide two years of drought or carryover storage for meeting demands above Metropolitan's normal projection.

STATE WATER PROJECT

The Governor's April 1992 water policy statement outlined a comprehensive program to meet the water needs of urban, agricultural, and environmental interests in California. In the policy statement, the Governor recognized the need to implement several currently planned SWP facilities

along with the need for timely completion of the environmental documentation for selection of a comprehensive Delta solution.

The completion of the specific SWP facilities referenced by the Governor, the South Delta Water Management Program, Kern Water Bank, Los Banos Grandes Reservoir, and a Delta transfer facility would significantly increase the water supplies provided by the SWP. These facilities would allow diversion and storage of additional water from the Delta for use by Metropolitan and other SWP contractors. By 1995, it is expected that the initial phase of the Kern Water Bank Fan Element would be operational. Based on DWR studies, the resulting increase in SWP average annual critical period water supplies would be approximately 50,000 acre-feet. By 2000, a later phase of the Kern Water Bank Fan Element along with the South Delta Water Management Program could be operational. These facilities are estimated to increase total SWP supplies by approximately 200,000 acre-feet per year on average during the critical period. Shortly after 2000, it is projected that a North Delta or isolated conveyance facility and Los Banos Grandes Reservoir could also be operational. These facilities along with the South Delta Water Management Program and Kern Water Bank are estimated to increase average annual SWP critical period water supplies by approximately 800,000 acre-feet over current supply levels. Since Metropolitan's

SWP entitlement is about 48 percent of the total SWP entitlements, the water supply to Metropolitan would be expected to increase approximately 400,000 acre-feet. The Coachella Valley Water District (CVWD) and Desert Water Agency's (DWA) SWP entitlements, which Metropolitan receives in exchange for Colorado River water, are about an additional one percent of the total SWP entitlements.

COLORADO RIVER

Metropolitan is continuing its efforts to obtain additional Colorado River supplies. Both short- and long-range supplies are being pursued on intermittent and dependable bases as appropriate. The status of Metropolitan's activities in this regard is described herein.

COACHELLA GROUNDWATER STORAGE

Metropolitan's contracts with CVWD and DWA require that Metropolitan exchange its Colorado River water for these agencies' SWP entitlement water on an annual basis. As described in SWC Exhibit 85, and in accordance with an Advance Delivery Agreement executed by Metropolitan, CVWD, and DWA, Metropolitan delivered Colorado River water in advance to these agencies when sufficient supplies were available for

storage in the Coachella Groundwater Basin. Since 1987, CVWD and DWA have relied on this water delivered in advance. As a result, through the end of 1991 over 180,000 acre-feet of additional Colorado River water has been available to Metropolitan's service area during the drought. This has reduced the amount of water available in that groundwater storage account for use in the future by the same amount.

SURPLUS WATER

Water in storage in the Colorado River system reservoirs totalled 42.8 million acre-feet, 72 percent of capacity, at the end of May 1992. This is a decrease of 12.9 million acre-feet over the last five years. Long-term operation studies of the system reservoirs conducted by Reclamation this year indicate that the likelihood that flood control releases would be required would be as follows:

<u>Year</u>	<u>Percent</u>
1993	0
1994	5
1995	15
1996	26
1997	33
2005	35

Surplus water would be made available to California in the future at the discretion of the Secretary of the Interior

(Secretary) based on delivery obligations, reasonable consumptive use requirements of Colorado River users in the Lower Basin, requests for water, actual and forecast quantities of storage, and estimated inflow. The factors the Secretary is to consider are described further in SWC Exhibit 85. The amount of Colorado River water available to Metropolitan continues to be determined on a year-to-year basis and surplus water cannot be relied upon as a dependable supply. The Colorado River Board of California (CRB) and Metropolitan have urged and will continue in the near future to urge the Colorado River Management Work Group (described in WRINT SWC Exhibit 8) and Reclamation to recommend an annual operating plan to the Secretary which would satisfy consumptive use in excess of 7.5 million acre-feet in a calendar year, making surplus water available to Metropolitan. As indicated in WRINT SWC Exhibit 8, the other Colorado River Basin states have objected to such a declaration.

CONCEPTUAL APPROACH FOR REACHING BASIN STATES' AGREEMENT ON INTERIM OPERATION OF COLORADO RIVER SYSTEM RESERVOIRS, CALIFORNIA'S USE OF COLORADO RIVER WATER ABOVE ITS BASIC APPORTIONMENT AND IMPLEMENTATION OF AN INTERSTATE WATER BANK

In response to the other Basin states' continuing objections to declaration of a surplus condition, in August 1991 the CRB, following consultation with Metropolitan and

other California water agencies, submitted a conceptual approach for reaching Basin states' agreement on interim operation of Colorado River system reservoirs, California's use of Colorado River water above its basic apportionment, and implementation of an interstate water bank.

Under this approach, Metropolitan would agree to a schedule by which California would reduce its use of Colorado River water to 4.4 million acre-feet in the year 2011. (Under existing conditions, that would limit Metropolitan to 616,000 acre-feet in that year.) The schedule would be based on implementation of the opportunities being pursued within California to more efficiently and effectively use Colorado River water. This would provide Metropolitan with the opportunity on a dependable basis to use water above that now available.

An escrow account would provide a mechanism for Metropolitan to compensate the Basin states for use of Colorado River water above that now made available. The Basin states have indicated that compensation is required for the risk associated with allowing Metropolitan to increase its supplies by withdrawing additional water from reservoir storage. The escrow account would provide a source of monies to each of the Basin states for: funding water conservation

projects, enhancing environmental protection or recreation opportunities, purchasing water supplies for an interstate water bank, or other purposes to enhance the public welfare.

Establishment of an interstate water bank would allow the Basin states to govern how interstate transfers would occur. The water bank could provide a source of water for each state during critical, emergency, or unique water supply/demand conditions. These objectives could range from recreation or fish and wildlife uses to urban uses. Individual sellers would inform their states of their willingness to participate in the interstate water bank. Water would be purchased from the bank for use by a willing state or stored in the Colorado River system reservoirs. Individual purchasers would obtain water bank water through their state.

Interim operating criteria would have to be developed by Reclamation and the Department of the Interior in cooperation with the Basin states to allow water diversions and operation of the reservoirs as envisioned in the conceptual approach to occur. As each of the other states have indicated concerns with California's conceptual approach, representatives of California are attempting to reach a consensus with representatives of Arizona and Nevada as to how

Metropolitan's short-term needs for Colorado River water can be met. Once a consensus is reached, these representatives would present a proposal to representatives of Colorado, New Mexico, Utah, Wyoming, and Reclamation for consideration. Colorado's representative reiterated that State's concern with the conceptual approach in May 1992, stating that Colorado continues to have severe reservations as to the legal, political and technical aspects of the interstate water bank concept.

DEMONSTRATION PROGRAM ON INTERSTATE UNDERGROUND STORAGE OF UNUSED COLORADO RIVER WATER

The states of Arizona, California, and Nevada are discussing a program to demonstrate the feasibility of interstate underground storage of unused Colorado River water. Under this concept, Colorado River water would be placed in storage in a groundwater basin in central Arizona in years in which net diversions for beneficial consumptive use in the three states are forecasted to be less than 7.5 million acre-feet, or a surplus is declared and all requests are met.

If the Secretary declares a shortage, water would be withdrawn from groundwater storage to reduce or offset the impact. On the other hand, if anticipatory flood releases or

flood control releases are made from Lake Mead, then the additional water supply created by the groundwater storage program would be shared by the parties funding the program. Metropolitan and possibly entities within Nevada may choose to participate. Such water could be made available in the future by exchange by the Central Arizona Water Conservation District reducing its diversions from the Colorado River by an amount equal to the amount recovered from the groundwater basin. Consideration would be given for the use of Arizona facilities utilized to store the water. Up to 100,000 acre-feet of storage is under consideration, with 30,000 acre-feet proposed for storage in 1992. Implementation of the concept would require the cooperation of Reclamation.

WATER UNUSED BY ARIZONA AND NEVADA

In 1993, use of Colorado River water in Arizona and Nevada is projected by Reclamation to total 2.7 million acre-feet and 200,000 acre-feet respectively. Arizona expects to use nearly all of its basic 2.8 million acre-foot apportionment in 1995 and Nevada expects to use all of its basic 300,000 acre-foot apportionment in the year 2005. Until those two respective years, unused Arizona and Nevada water could be made available to California at the Secretary's discretion. Representatives of Arizona and Nevada have

repeatedly indicated their desire, however, that such water remain in reservoir storage rather than being made available for use by California entities such as Metropolitan.

WATER UNUSED BY CALIFORNIA AGRICULTURAL AGENCIES

As described in SWC Exhibit 85, the California agricultural entities--Palo Verde Irrigation District (PVID), the Reservation Division of the Yuma Project, Imperial Irrigation District (IID), and CVWD--had used less than their full entitlement of Colorado River water in three-fourths of the years between 1961 and 1986. These entities also used less than their full entitlement in 1987 and 1988. However, in 1989 and 1990, the entities utilized all of the Colorado River water available to them under the first three priorities of the water delivery contracts with the Secretary.

Reclamation records available for 1989 and 1990 indicate that the agricultural entities collectively utilized more water than was available. One or more of the contractors may be required by Reclamation to offset their overuse if pending credits for unmeasured return flows reaching the Colorado River, described in WRINT SWC Exhibit 8, are insufficient to do so. The agricultural entities utilized less than their full entitlement in 1991 and are forecasted to use less than their full entitlement in 1992. Reclamation, the CRB, and

Metropolitan have developed methods for forecasting water use by these agencies, and thus how much unused water could be available for diversion by Metropolitan in a particular year.

EAST MESA GROUNDWATER STORAGE

In 1988, the CRB released a report prepared by Reclamation for the Six Agency Committee (Metropolitan, Los Angeles Department of Water and Power, SDCWA, PVID, IID, and CVWD) on the practicality of implementing a groundwater storage and recovery program on the East Mesa of Imperial County. The study results were promising, but recommended that additional groundwater quality and environmental resources data be collected and examined to determine the feasibility of such a program. Following the drilling of observation wells and the completion of environmental documentation, a demonstration program to recharge water in a six-mile section of the old earthen Coachella Canal began. Over 17,000 acre-feet of water was recharged to the groundwater basin in late 1988 and early 1989. A small amount of water was recharged during 1990 when precipitation during the summertime reduced demands for Colorado River water already in transit to water agencies.

Reclamation has proposed recovering a portion of the recharged water using shallow, low-capacity skimming

wells. Water from the wells would be conveyed to the lined Coachella Canal and used by CVWD. Metropolitan, CVWD, and Reclamation have reached agreement conceptually on funding a demonstration recovery program. The water pumped from four wells, up to 8,000 acre-feet, would be made available by exchange to Metropolitan for the demonstration period. CVWD has circulated environmental documentation for the proposed demonstration program for public review.

PROPOSAL FOR PHASE II WATER CONSERVATION PROGRAM WITH IID

In July 1990, Metropolitan submitted a conceptual proposal for a Phase II water conservation program to IID's Chief Counsel for consideration. Metropolitan has proposed that the provisions of a Phase II water conservation program be similar to those of Phase I with a few modifications. One modification would be that all of the water conserved by a Phase II program would be made available to Metropolitan. (As indicated in WRINT SWC Exhibit 8, Metropolitan could be requested to reduce its use of conserved water under the Phase I arrangement.) Metropolitan suggested that the Phase II program consist of constructing a regulatory reservoir and a spill-interceptor canal, lining canals with concrete, and further managing irrigation water on the farm.

Such a program could conserve 150,000 acre-feet annually upon full implementation. The magnitude of reimbursement for indirect costs would be subject to negotiation. In February 1991, IID responded that it remains interested in discussing various options that may be available to enable IID to implement further water conservation programs, including temporary use by Metropolitan of a portion of the water conserved. Negotiations began in March 1991 on such an arrangement.

More recently, IID's Chief Counsel informed Metropolitan that while IID was continuing with its environmental/water quality and liability risk assessment for a Phase II Water Conservation Program, IID believed that continuing negotiations on such a program would not be fruitful at this time. IID cited adoption of the Inland Surface Waters Plan by the State Water Resources Control Board and comments and correspondence received from the Regional Water Quality Control Board, Colorado River Basin Region as its rationale. In January 1992, the Regional Water Quality Control Board suggested to IID that widespread implementation of conservation measures in Imperial Valley be delayed until effective selenium control measures for agricultural drainage water are developed. While implementation of tailwater

pumpback systems would decrease pesticide and sediment concentrations in drains, the Regional Water Quality Control Board stated that selenium concentrations in drains would increase. Metropolitan has informed IID that negotiations should continue. IID's water delivery contract with the Secretary limits use of Colorado River water and does not contemplate its utilization for diluting selenium concentrations in the agricultural drains in lieu of water conservation.

MODIFIED IRRIGATION PRACTICE AND LAND FALLOWING PROPOSAL

In January 1991, Metropolitan indicated its willingness to offer IID an arrangement similar to that negotiated with PVID for a land fallowing program. Early in 1992, IID proposed implementing a modified irrigation practice program and a land fallowing program that could make 100,000 acre-feet of Colorado River water available to Metropolitan annually for a two-year period. Under IID's proposal, farmers growing alfalfa in the Imperial Valley would enter into a contract, agreeing not to irrigate the crop for a 75-day period during the summer, saving an estimated 1.4 acre-feet per acre, in return for compensation. Farmers could also enter into a contract, agreeing to fallow irrigated

fields in return for compensation. Each farm with a history of irrigation would be eligible to participate. IID estimates that as little as 4 percent of the irrigated acreage would be fallowed to save 100,000 acre-feet in a year. IID also wishes to be compensated for water sales foregone. Metropolitan has informed IID that a number of matters associated with the proposal, including monetary compensation, need to be addressed. In addition, considering the approvals that must be obtained, it would not be possible to implement the program by this summer as contemplated by IID. Nevertheless, Metropolitan remains interested in pursuing this program at IID's earliest convenience.

ALL AMERICAN CANAL AND COACHELLA CANAL LINING

In 1988, the President signed S. 795 into law. Title II of Public Law 100-675 authorized the Secretary to line 65 miles of the All American Canal from Pilot Knob to Drop 4 and the Coachella Canal from Siphon 7 to Siphon 32. Lining of the canals is projected to conserve 100,000 acre-feet per year. The projects are to be constructed with 100 percent non-federal funding. Water conserved by the projects would be utilized in accordance with the priorities to use of Colorado River water in California.

In January 1990, IID informed Reclamation of its intent to become, when appropriate, the sole participating contractor for the works to be constructed to reduce seepage from the All American Canal. IID must first enter into an acceptable contract with the Secretary and agree to assume all non-federal obligations to finance the works.

In March 1990, Metropolitan provided IID with a draft agreement which contained provisions that were intended to address IID's concerns regarding the All American Canal lining project, thus allowing Metropolitan to become the sole participating contractor. As Metropolitan's draft agreement was unacceptable to IID, in July 1990, IID provided Metropolitan with a draft agreement for discussion purposes which was intended to address IID's concerns with respect to implementation of the project. The agreement would address the manner in which third-party liability, additional operation and maintenance costs, and impacts to public health and safety and fish and wildlife resources would be handled, along with responsibilities of the agencies which are party to the agreement upon termination of the funding agreement with the Secretary. Metropolitan revised the draft agreement and provided it to IID and CVWD to foster further discussion in November 1990.

In May 1991, IID informed Metropolitan that the revision of the draft agreement did not address certain IID concerns. Metropolitan has since presented a counterproposal to address IID's concerns and gain its agreement to withdraw its option to become the sole participating contractor. This proposal is still under consideration.

Reclamation is preparing EISS/EIRs for both the All American Canal and Coachella Canal lining projects. Metropolitan has informed Reclamation that it concurs with the selection of constructing a parallel concrete-lined canal from Pilot Knob to Drop 3 as the preferred alternative in the EIS/EIR. While Public Law 100-675 authorized the Secretary to line the canal to Drop 4, the cost of the environmental mitigation that would be required for lining the reach from Drop 3 to Drop 4 makes that portion of the project economically unattractive. The draft EIS/EIR for the All American Canal lining project was released in July 1991 for public review. While the comment period ended in September 1991, Reclamation is awaiting the receipt of non-federal funds to complete the document. Metropolitan has informed Reclamation that it is willing to provide 50 percent of the funding required. Provided that acceptable arrangements can be reached among the Secretary, PVID, IID,

CVWD, and Metropolitan, it is estimated that nearly 70,000 acre-feet conserved by this project may be available to Metropolitan.

Metropolitan participated in the funding of a demonstration project completed in 1991 to line 1.5 miles of the Coachella Canal, from Siphon 14 to Siphon 15, to test new canal-lining technology. Following completion of the demonstration project, a preferred alternative was selected which meets the primary goals of conserving water and minimizing environmental impacts. Reclamation expects to release a draft EIS/EIR for the Coachella Canal lining project in January 1993. This project is expected to conserve up to 30,000 acre-feet per year.

COLORADO RIVER BANKING

In 1991, Reclamation drafted proposed regulations for administering use of Colorado River water in Arizona, California, and Nevada. These draft regulations include procedures for transferring entitlements, implementing exchanges, reducing entitlements due to nonuse, delivering unused and surplus water, and wheeling non-system water among other matters addressed. In providing comments on the

proposed regulations, the CRB stated that regulations which would permit water to be accumulated in Lake Mead by reason of reduced diversions should be developed. Metropolitan's water delivery contracts with the Secretary provide for the accumulation of water in Lake Mead subject to such conditions as the Secretary may from time to time prescribe. Reclamation has not yet released a revised draft of its regulations for review. Reclamation's schedule calls for the regulations to become effective in December 1993. Metropolitan plans to continue participating in this rulemaking process to protect its water supply.

PRECIPITATION MANAGEMENT DEMONSTRATION PROGRAM

The Six Agency Committee is funding a portion of the cost of having Reclamation prepare a plan for conducting a precipitation management demonstration program in the Upper Colorado River Basin to increase runoff. Reclamation, the Central Arizona Water Conservation District, Colorado River Commission of Nevada, Upper Colorado River Commission, and the Utah Division of Water Resources are also contributing funds to the effort. The plan will describe the technical basis for, and activities and monies required to conduct a multi-year demonstration program to validate, quantify, and transfer cloud-seeding technology within the Basin.

METROPOLITAN ACTIONS TO COPE WITH 1991-92 WATER
SUPPLY SHORTFALL

INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

In order to cope with the water supply shortfall beginning in 1991, Metropolitan adopted an Incremental Interruption and Conservation Plan (IICP). The IICP is designed to encourage member agencies to utilize water held in local groundwater and surface storage reserves and promote consumer water conservation to reduce demands on imported sources during droughts. Under the program, Metropolitan assigns each member agency a monthly scheduled target quantity of water and an annual discretionary pool of water based on the total amount of water purchased from Metropolitan in fiscal year 1989-1990. That fiscal year is considered the base year.

To determine member agency scheduled targets, member agency deliveries in the base year are categorized into firm service and non-firm service depending upon the service classes taken in the base year. Non-firm service consists of water delivered for agricultural or seawater barrier use. Firm service consists of all noninterruptible service, and seasonal storage service water delivered in the winter period

of the base year and produced from storage in the summer of the base year.

Proportional reductions are then applied to each category determined by which stage of the IICP is in effect. Stage I of IICP is voluntary and consumer conservation is encouraged. Table 6 specifies the percentage by which non-firm and firm service are reduced in determining monthly target quantities for the member agencies. The expected reduction in overall water deliveries by percentage for each stage of the plan is also shown in Table 6.

The discretionary pools are established for member agencies based upon deliveries normally made to storage in the base year for: direct groundwater replenishment, in-lieu groundwater replenishment, long-term seasonal storage, and reservoir storage. Water is available from the discretionary pool exclusively for storage in member agency facilities. This stored water may then be used by the member agency from storage during periods when Metropolitan's supplies are not adequate. This pool is managed at the discretion of Metropolitan and the target deliveries are reduced in the same manner as the non-firm service.

Adjustments are made to the scheduled target quantities and the discretionary pool to reflect population

Table 6
Incremental Interruption and Conservation Plan

<u>Reductions from Base Year</u>			
<u>Stage</u>	<u>Reduction in Non-firm Deliveries</u>	<u>Plus Conservation of Firm Deliveries</u>	<u>Reduction in Overall Deliveries</u>
I	Voluntary	Goal 10%	---
II	20%	5%	10%
III	30%	10%	17%
IV	40%	15%	24%
V	50%	20%	31%
VI	90%	30%	50%

growth, changes in local water supplies, conservation, and reclamation. A rescheduling of base-year deliveries of Metropolitan water from one month to another is acceptable to meet the agency's operational needs. If rescheduling will not meet the needs of the agency, it may request a transfer of discretionary pool water to the nonfirm scheduled quantities.

Member agencies exceeding the target quantity are assessed a surcharge on the amount of water used over the target quantity equal to two times Metropolitan's noninterruptible water rate. Based on water rates of \$269 per acre-foot for untreated water and \$322 per acre-foot for treated water, beginning on July 1, 1992 the total water rate for exceeding the target is \$807 per acre-foot for untreated water and \$860 per acre-foot for treated water.

Metropolitan implemented Stage I of IICP on December 1, 1990, and with DWR's announcement that a 15 percent reduction would be imposed on 1991 SWP deliveries for municipal and industrial purposes, Metropolitan implemented Stage III on February 1, 1991. On February 4, DWR informed Metropolitan that a 50 percent reduction would have to be imposed on SWP deliveries for municipal and industrial purposes. As such, Metropolitan implemented Stage V of the Plan on March 1, 1991. With DWR's February 23 notification

that due to the worsening water supply situation the reduction would be 90 percent, Metropolitan scheduled implementation of Stage VI of the Plan for April 1, 1991. With a late March outlook that the availability of water to Metropolitan's service area had improved somewhat, Metropolitan returned to Stage V on April 1. Metropolitan remained in Stage V through February 29, 1992 as DWR initially approved delivery of only 20 percent of Metropolitan's 1992 request for water for its service area and carryover of a certain amount of water from 1991. With DWR increasing Metropolitan's allocation of SWP water by 15 percent, Metropolitan was able to implement Stage III beginning March 1, 1992. With DWR increasing Metropolitan's allocation of SWP water by another 10 percent in March, Metropolitan was able to further reduce its IICP stage to the current stage, Stage I effective April 1, 1992.

1991 DROUGHT EMERGENCY WATER BANK

In 1991, Metropolitan purchased 215,000 acre-feet of critical needs water from the Governor's Drought Emergency Water Bank. This critical needs water was used to irrigate permanent crops and to avoid urban water rationing in excess of 25 percent in Metropolitan's service area. Originally, Metropolitan anticipated purchasing up to 390,000 acre-feet from the Drought Emergency Water Bank. Several factors

including cooler than anticipated weather during the summer, an increase in Metropolitan's SWP allocation, and actions taken by Metropolitan to cope with the water supply shortfall reduced the quantity of water purchased.

1992 DROUGHT EMERGENCY WATER BANK

In February 1992, Metropolitan's Board of Directors authorized acquisition of 200,000 acre-feet of water from the 1992 Emergency Water Bank, an amount almost equal to that purchased in 1991. However, due to the increase in the percentage of SWP requests approved for delivery and below-anticipated water demands to date, Metropolitan has purchased an option for 10,000 acre-feet. Water demands have been reduced through April 1992 by Metropolitan's IICP and the wetter than normal weather to date in Southern California.