**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

August 4, 1992

To: Board of Directors (Water Problems Committee--Information)
From: General Manager
Subject: Seasonal Storage Service

Report

Seasonal Storage Service has been in place since July 1, 1989. The attached report summarizes our recent and limited experience with the program. In that time about 624,000 acre-feet of water has been sold as Seasonal Storage Service.

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 capture excess surface flows from both the State Water Project and the Colorado River, and improving the capability of the region both to produce more groundwater and to draft local surface reservoirs during sustained droughts and emergencies.

Seasonal Storage Service appears to be meeting its stated goals while benefiting the region. Metropolitan has been able to achieve greater conjunctive use of imported and local supplies by making Seasonal Storage Service available when supplies are available. Thus, Metropolitan has been able to influence demands on imported water and groundwater. This conjunctive use has benefited the region by allowing Metropolitan to divert additional Colorado River and State Water Project supplies when supplies became available.

According to a survey taken by Metropolitan's member public agencies, Seasonal Storage Service has encouraged construction of additional local production facilities. Currently, more than \$22,000,000 is planned

to be spent on the development of new facilities. Member agencies' dependence on Metropolitan's deliveries in the summer has decreased, thus reducing Metropolitan's need to increase system capacity.

Board Committee Assignment

This letter is referred for information to the Water Problems Committee pursuant to its authority to study policies regarding the sales and delivery of water for various uses under the Administrative Code Section 2482(d).

Recommendation

For information only.


Carl Boronkay

NT:gn

Attachment

SEASONAL STORAGE SERVICE ASSESSMENT

SEASONAL STORAGE SERVICE ASSESSMENT

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SEASONAL STORAGE SERVICE ASSESSMENT

Overview

The Seasonal Storage Program was instituted with the fiscal year (FY) 1989-90 rate structure. This was in response to the request by the Board of Directors to develop a permanent version of Metropolitan's temporary in-lieu program, first implemented in 1978 as a drought-related pilot storage program. These programs are consistent with historic practices of Metropolitan to price groundwater replenishment service as low as economically practicable to encourage management of groundwater storage to meet regional storage needs. A groundwater replenishment rate was first established in January 1955 at which time the groundwater replenishment rate was \$2.00 per acre-foot (AF) less than the basic domestic rate of \$10.00 per AF.

The current seasonal storage water service is available between October 1 and April 30 whenever and so long as the General Manager determines that water and system capacity are available. Additionally, the General Manager may make this service available at other times of the year at his discretion.

Table 1 lists the agencies which have participated in the Seasonal Storage Program, the total amount of seasonal

storage water taken, and percentage of seasonal storage water taken in relation to total water sales per agency.

Purpose/Benefits

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 capture excess surface flows from both the State Water Project and the Colorado River, and improving the capability of the region both to produce more groundwater and to draft local surface reservoirs during sustained droughts and emergencies.

Administration

Member agencies are encouraged to take 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 add to local agencies' capability to produce local water as well as store Metropolitan's water during periods of abundant availability. This rate is currently \$168 per AF for untreated water and \$203 per AF for treated water or approximately 60 percent of

the noninterruptible rate. Seasonal Storage rates for the first year of the program were set based on the costs of providing water service during the October through April period.

To receive the lower rates, agencies must certify to Metropolitan the amounts of imported water that they have stored in local reservoirs and groundwater basins by direct and in-lieu means. Certification forms are provided to agencies to assist in their calculations and standardize the certifications of all agencies.

Types of Seasonal Water

Seasonal water can be classified in several various ways: shift or long-term storage, reservoir storage or groundwater replenishment by spreading or injection, and in-lieu or direct deliveries. (Please refer to Exhibit A.)

Shift seasonal storage is that water produced from storage in the summer and restored the following winter. Under this concept, the agency's total annual purchases of Metropolitan water are unchanged from the baseline operation. Long-term storage is that water which an agency leaves in storage for a duration extending past the end of the FY (June 30). Under this scenario, total purchases from Metropolitan increase by the amount of seasonal storage

water which qualifies for long-term storage. During FY 1989-90, 183,523.7 AF of seasonal storage water was sold. Of this amount, 126,391.5 AF or 68.9 percent was shift seasonal storage and 57,132.2 AF or 31.1 percent 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 means that Metropolitan's water is served into 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 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.

Service for direct reservoir storage and for groundwater replenishment by spreading or injecting may be activated or terminated immediately upon notice by the General Manager. Service for in-lieu groundwater replenishment or in-lieu reservoir storage may be activated by the General Manager upon five days notice to member agencies and terminated upon 15 days notice to member agencies.

Survey

In May 1992, a questionnaire was sent to Metropolitan's member public agencies requesting information on how seasonal storage service has affected their operations and their future operational plans. A copy of the questionnaire is attached as Exhibit B. The member agency and sub-member agency responses were compiled in a matrix attached as Exhibits C and D.

In summary, 49 wells have been rehabilitated, 50 new wells have been drilled, and 12 contaminated wells are being treated. These operational changes have maintained or added 500 cubic-feet per second (cfs) of capacity at a cost of approximately \$86,000,000. By way of comparison, a constant flow at this rate would equal about 990 AF a day.

Additionally, more than 79 wells will be rehabilitated, more than 91 wells will be drilled and more than 35 contaminated wells will be treated. These planned projects will maintain or add about 900 cfs of capacity at an approximate cost of \$161,000,000.

Since the inception of seasonal storage services, member public agencies have spent about \$300,000 on the development of additional new facilities other than wells. Over \$22,000,000 is planned to be spent on the development of additional new facilities.

Effects on Metropolitan

The effects of seasonal storage service on Metropolitan have been complicated by the drought and Metropolitan's water supply. Graphs 1, 2, 3, and 4 illustrate water demands for the last four fiscal years. It appears that peaking in the summer has been reduced with a corresponding increase in the amount of water taken in the winter period.

During FY 1989-90, seasonal storage service was available from October 1, 1989 through April 30, 1990. During FY 1990-91, seasonal storage service was available beginning October 1, 1990. In response to deteriorating water supplies, seasonal storage deliveries were ceased February 28, 1991. However, three things changed the short-term water supply situation:

- Increased diversions from the Colorado River Aqueduct;
- Decreased demands due to heavy rains in March; and

- Shifting to groundwater supplies by agencies in an effort to comply with the IICP.

These three items left Metropolitan in a situation where it either had to reduce pumping from the Colorado River Aqueduct or encourage agencies to leave water in their groundwater basins and increase their use of water from Metropolitan. As a result, Metropolitan began deliveries of seasonal storage water to stimulate increased demand for storing water. These deliveries were made from March 15, 1991 until April 15, 1991.

During FY 1991-92, direct groundwater replenishment seasonal storage service was made available beginning September 15, 1991. The remaining types of seasonal water were made available from October 1, 1991 through April 30, 1992. Direct groundwater replenishment deliveries were begun early due to an increased State project water allocation. The Department of Water Resources stipulated with its increased allocation that all of the water had to be taken for storage by the end of the calendar year though Metropolitan was able to carry over some State water into 1992.

Summary

Seasonal storage service appears to be meeting its stated goals while benefiting the region. Metropolitan has

been able to achieve greater conjunctive use of imported and local supplies by making seasonal storage service available when supplies are available. Thus, Metropolitan has been able to influence demands on imported water and groundwater. This conjunctive use has benefited the region by allowing Metropolitan to divert additional Colorado River and State water project supplies when supplies became available.

According to the survey, seasonal storage service has encouraged construction of additional local production facilities. Currently, more than \$22,000,000 is planned to be spent on the development of new facilities. Member agencies' dependence on Metropolitan's deliveries in the summer has decreased, thus reducing Metropolitan's need to increase system capacity.

Staff will continue to work with the member public agencies to ease administration of the seasonal storage program and increase benefits.

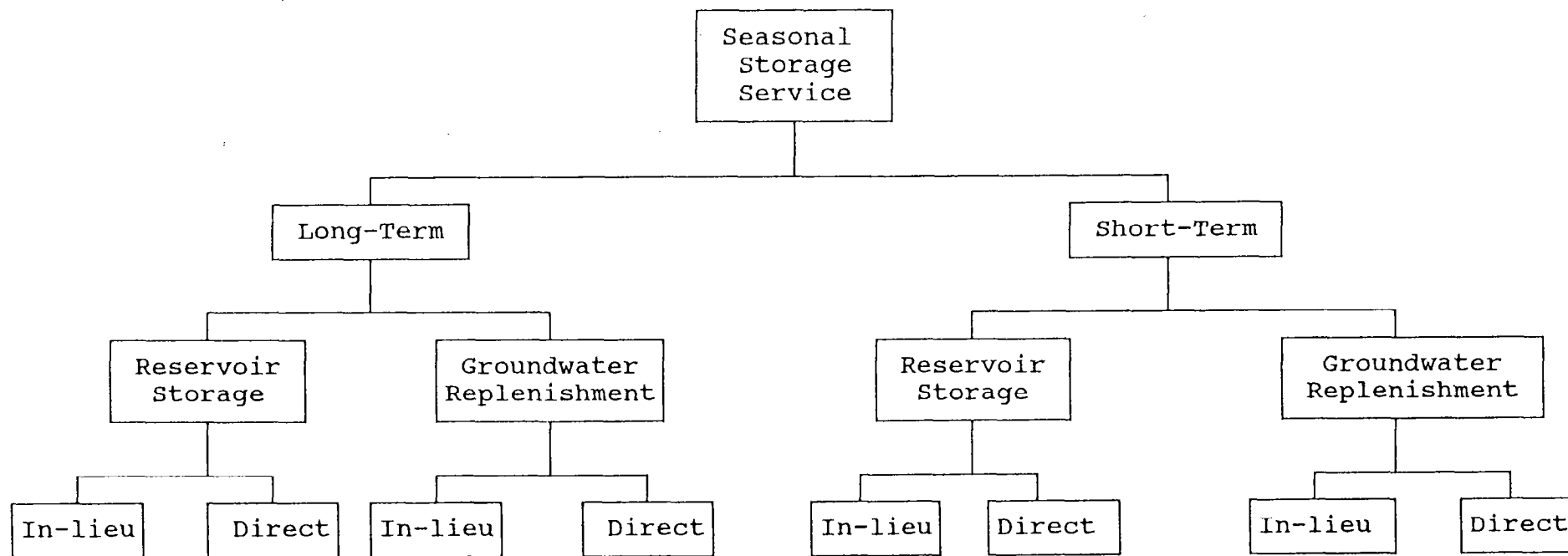
TABLE 1

Seasonal Storage Program Participation

<u>Agency</u>	<u>Seasonal Storage Service</u> (Acre-Feet)	<u>Percentage of Seasonal Water Sales to Total Water Sales</u>
City of Anaheim	29,129.3	35.05
City of Beverly Hills	0.0	0.00
City of Burbank	1,295.3	2.11
Calleguas MWD	8,600.5	2.90
Central Basin MWD	21,305.9	5.18
Chino Basin MWD	8,972.8	3.93
Coastal MWD	2,372.7	1.60
City of Compton	537.0	3.90
Eastern MWD	497.1	0.30
Foothill MWD	1,559.6	5.33
City of Fullerton	805.7	2.19
City of Glendale	992.4	1.29
Las Virgenes MWD	3,936.7	5.96
City of Long Beach	14,614.8	11.18
City of Los Angeles	211,908.7	19.54
MWD of Orange County	98,967.7	13.08
City of Pasadena	11,977.0	18.08
San Diego CWA	176,810.8	10.65
City of San Fernando	1,933.9	71.39
City of San Marino	0.0	0.00
City of Santa Ana	18,494.1	32.45

<u>Agency</u>	<u>Seasonal Storage Service (Acre-Feet)</u>	<u>Percentage of Seasonal Water Sales to Total Water Sales</u>
City of Santa Monica	642.9	2.41
Three Valleys MWD	358.4	0.17
City of Torrance	0.0	0.00
Upper San Gabriel Valley	148.4	0.07
West Basin MWD	6,565.5	1.31
Western MWD	1,273.1	0.57
<hr/>		
Total	623,700.3	9.37

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SEASONAL STORAGE SERVICE QUESTIONNAIRE

1. Have you or your agencies rehabilitated wells because of the implementation of the seasonal storage program?

YES NO

If so, how many? _____

What is the production capacity of each well? _____

What was the approximate rehabilitation cost of each well? _____

2. Do you or your agencies have plans to rehabilitate wells?

YES NO

If so, how many? _____

What will be the production capacity of each well? _____

What will be the approximate rehabilitation cost of each well? _____

3. Have you or your agencies drilled new wells because of the implementation of the seasonal storage program?

YES NO

If so, how many? _____

What is the production capacity of each new well? _____

What was the approximate cost of each well? _____

4. Do you or your agencies have plans to drill new wells because of the implementation of the seasonal storage program?

YES NO

If so, how many? _____

What will be the production capacity of each new well? _____

What will be the approximate cost of each well? _____

5. Have you or your agencies begun the treatment of water from contaminated wells because of the implementation of the seasonal storage program?

YES NO

If so, how many? _____

What is the production capacity of each well? _____

What is the approximate cost to treat water from each contaminated well? _____

6. Will you or your agencies begin treatment of water from contaminated wells because of the implementation of the seasonal storage program?

YES NO

If so, how many? _____

What will be the production capacity of each well? _____

What will be the approximate cost to treat water from each contaminated well? _____

7. Have you or your agencies developed additional diversions of surface water (local runoff) because of the implementation of the seasonal storage program?

YES NO

If so, how much surface water diversion was developed? _____

What was the approximate cost to develop this diversion of surface water? _____

8. Will you or your agencies be developing additional diversions of surface water because of the implementation of the seasonal storage program?

YES NO

If so, how much surface water diversion will be developed? _____

What will be the approximate cost to develop this diversion of surface water? _____

9. Have you or your agencies developed new facilities to directly store seasonal water?

YES NO

If so, what new facilities were developed? _____

What was the cost of these facilities? _____

10. Will you or your agencies be developing new facilities to directly store seasonal water?

YES NO

If so, what new facilities will be developed? _____

What will be the cost of these new facilities? _____

11. Before seasonal storage service was implemented, did you or your agencies have excess local water capacity (well capacity or surface diversion) in the summer?

YES NO

If so, what was the excess local water capacity? _____

How much is it since seasonal storage service was implemented? _____

How much excess local water capacity do you forecast to have in the future? _____

12. Has your agency made special programs available to your member agencies to take seasonal water?

YES NO NOT APPLICABLE

If so, what are the nature of these programs? _____

13. Does your agency plan to make special programs available to your member agencies to take seasonal water?

YES

NO

NOT APPLICABLE

If so, what will be the nature of these programs? _____

14. Describe any ideas for improvements in the program: _____

15. Other comments: _____

Please return your response by June 1, 1992 to:

The Metropolitan Water District
of Southern California
P. O. Box 54153 Terminal Annex
Los Angeles, California 90054

Attention: Ms. Nina Topjian

If you have any questions, please call Ms. Topjian at
(213) 250-6583.

ntquest

AGENCY	1				2				3				4			
	REHABILITATED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	PLAN TO REHABILITATE WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	DREALED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	PLAN TO DRILL WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)
City of Anaheim	* NO				YES	UK	UK	UK	NO				POSS	UK	UK	UK
City of Burbank	NO				NO				NO				NO			
City of Beverly Hills																
City of Compton	NO				YES	3	600/350	\$35	YES	1	1,050	\$550	YES	1	1,000	\$500
Colemans MWD *	YES	1	650	\$70	NO				YES	1	1,000	\$500	YES	5	1,000	\$500
Chino Basin MWD																
Central Basin MWD **																
Coastal MWD *																
Eastern MWD	NO				YES	UK			NO				YES	2	2,155/2,427	\$2,500
City of Fullerton	NO				NO				YES	3	2,000/1,000/500	\$750	NO			
Foothill MWD	NO				YES	2	1,000	UK	NO				STUDY	UK	UK	UK
City of Glendale	NO				YES *1	2	1,500	UK	YES	2	150	\$100	YES *1	3	1,000	UK
City of Los Angeles	NO				YES	10-15	2-6 CFS		YES	12	8 CFS	*11	NO			
City of Long Beach	YES		1,500-2,500	\$30	YES	*16	VARIES	\$30	YES	*17	1,000-3,000	\$350	YES	*17	3,000	\$440
Los Virgenes MWD	NO				NO				NO				NO			
MWD of Orange County *																
City of Pasadena	YES	1	4 CFS	\$500	YES	1	5 CFS	\$500	NO				YES	8	5 CFS	\$750
Three Valleys MWD *	NO				NO				NO				NO			
City of Santa Ana	NO				NO				YES	3	2,500/3,500	\$750	YES	*3	3,000	\$800
City of San Diego	NO				NO				NO				YES	NOT AVL	NOT AVL	NOT AVL
City of San Fernando	NO				YES	1	2,000	\$237	NO				NO			
City of San Marino	YES	12	600-2,000	\$150	YES	3	800-1,500	\$180	YES	2	3,500	\$950	YES	3	3,500	\$1,000
City of Santa Monica																
City of Torrance	NO				YES	2	1,800/2,000	\$50	NO				YES	2	2,000	\$400-500
Upper San Gabriel MWD																
West Basin MWD **	YES	26	500-3,000	\$500-2,500	YES	48	500-3,000	\$500-1,800	YES	14	1,500-3,000	\$450-750	YES	32	3,000	\$750
Western MWD of Riverside Co.	NO				YES				YES	2	2,500	\$650	NO			

* - MEMBER AGENCIES LISTED SEPARATELY

** - CENTRAL AND WEST BASIN RESPONSE COMBINED

*1 - PENDING EPA SUPERFUND PROJECT

*3 - ONE NEW WELL EVERY 2 TO 3 YEARS

*11 - \$18,000,000 INCLUDES COST OF 12 WELLS, PUMPING STATIONS, AND STORAGE TANK

*16 - ONE WELL EACH YEAR FOR THE NEXT FEW YEARS

*17 - DRILL A NEW WELL EVERY OTHER YEAR

PRODUCTION/WELL CAPACITY IN GALLONS PER MINUTE UNLESS OTHERWISE STATED

UK - UNKNOWN

STUDY - CURRENTLY UNDER STUDY

NOT AVL - INFORMATION NOT AVAILABLE

N/A - NOT APPLICABLE

SSS - SEASONAL STORAGE SERVICE

AGENCY	5				6				7			8		
	TREAT CONTAMINATED WELLS	HOW MANY	PRODUCTION CAPACITY/ WELL	COST/ WELL	PLAN TO TREAT CONTAMINATED WELLS	HOW MANY	PRODUCTION CAPACITY/ WELL	COST/ WELL	DEVELOPED ADDITIONAL SURFACE DIVERSIONS	HOW MUCH	COST	PLAN TO DEVELOP SURFACE DIVERSIONS	HOW MUCH	COST
City of Anaheim	NO				NO				NO			NO		
City of Burbank	NO				YES	2	2000	\$171/AF	NO			NO		
City of Beverly Hills														
City of Compton	NO				NO				NO			NO		
Collegians MWD	NO				NO				NO			NO		
China Basin MWD														
Central Basin MWD														
Coastal MWD														
Eastern MWD	NO				YES	UK			NO			YES	UK	UK
City of Fullerton	NO				NO				NO			NO		
Foothill MWD	YES	2	1,000 GPM	NOT AVL	STUDY	UK	UK	UK	NO			STUDY	UK	UK
City of Glendale	NO				YES #2	3	330	\$1,500,000	NO			NO		
City of Los Angeles	NO				*12				NO			NO		
City of Long Beach	NO				NO				NO			NO		
Los Virgenes MWD	NO				NO				NO			NO		
MWD of Orange County														
City of Pasadena	YES	4	4 CFS	\$70/AF	NO				NO			NO		
Three Valleys MWD	NO				NO				NO			NO		
City of Santa Ana	NO				NO				NO			NO		
City of San Diego	NO				NO				NO			NO		
City of San Fernando	NO				NO				NO			NO		
City of San Marino	NO				YES	2	1,600-2,300	\$750,000	NO			NO		
City of Santa Monica														
City of Torrance	NO				N/A				NO			N/A		
Upper San Gabriel MWD														
West Basin MWD	YES	4	1,100	\$40-640/AF	YES	21	500-3,000	\$40-640/AF	NO			NO		
Western MWD of Riverside Co.	NO				NO				NO			NO		

*2 - 2 WELLS & 1 GROUNDWATER PICK-UP SYSTEM. TREATMENT PLANT COST

*12 - POSSIBLY, DEPENDING ON WATER QUALITY REQUIREMENTS.

AGENCY	9			10			11			12		
	DEVELOPED NEW FACILITIES	WHAT FACILITIES	COST (THOUSANDS)	PLAN TO DEVELOP NEW FACILITIES	WHAT FACILITIES	COST (THOUSANDS)	B/4 SSS EXCESS LOCAL WATER CAPACITY	HOW MUCH	SINCE SSS EXCESS LOCAL WATER CAPACITY	EXCESS LOCAL WATER CAPACITY FORECASTED	SPECIAL PROGRAMS TO MEMBER AGENCIES	NATURE OF PROGRAMS
City of Anaheim	NO			NO			NO				N/A	
City of Burbank	YES	*15		NO			YES				N/A	
City of Beverly Hills												
City of Compton	NO			NO			YES	50-100 AF	0	0	N/A	
Collegiate MWD	NO			NO			NO				YES	COST OFFSET
China Basin MWD												
Central Basin MWD												
Coastal MWD												
Eastern MWD	YES	*8	\$150	YES	*8	\$420	NO				NO	
City of Fullerton	NO			NO			NO				N/A	
Foothill MWD	NO			STUDY	UK	UK	NO				NO	
City of Glendale	NO			YES	REPLN CONN	\$1,000	YES	VARIES		5,000	N/A	
City of Los Angeles	NO			YES	*13	UK	YES	120 CFS	0	75 CFS	N/A	
City of Long Beach	NO			NO			NO				N/A	
Las Virgenes MWD	NO			NO			NO				N/A	
MWD of Orange County												
City of Pasadena	YES	*4	\$150	YES	*5	\$100	NO				N/A	
Three Valleys MWD	NO			NO			NO				NO	
City of Santa Ana	NO			NO			NO				N/A	
City of San Diego	NO			YES	*6	*6	NO				NO	
City of San Fernando	NO			NO			NO				N/A	
City of San Marino	NO			NO			N/A				N/A	
City of Santa Monica												
City of Torrance	NO			NO			YES				N/A	
Upper San Gabriel MWD												
West Basin MWD	YES	CHARNOCK		YES	IN-LEU MGMT	\$12,000	NO				YES	MC SSS RATE DIFFERENTIAL BY \$10/AF
Western MWD of Riverside Co.	YES	*9		YES	*10	\$1,500	NO				N/A	

- *4 - ONE RETROFIT AQUIFER STORAGE AND RECOVERY WELL AND ONE SPREADING CONNECTION
- *5 - ALL NEW WELLS WILL HAVE AQUIFER STORAGE AND RECOVERY CAPABILITIES
- *6 - SURFACE RESERVOIR FOR EMERGENCY STORAGE COST \$3-5, 000, 000 AND GROUNDWATER STORAGE PROJECTS NO COST ESTIMATE
- *8 - SPREADING PONDS
- *9 - PURCHASE OF CANYON LAKE
- *10 - GROUNDWATER INJECTION WELLS
- *13 - S. HAIWEE RESERVOIR
- *15 - NEW SPREADING CONNECTION AT PACOMA

AGENCY	13		14		15
	PLAN TO MAKE SPECIAL PROGRAMS AVAILABLE	NATURE OF PROGRAMS	IDEAS FOR IMPROVEMENTS	OTHER COMMENTS	
City of Anaheim	N/A			RED TO BE IN PLACE SEVERAL YRS TO CAUSE SIG CONSTRUCTION OF NEW FACILITIES.	
City of Burbank	N/A				
City of Beverly Hills					
City of Compton	N/A				
Collegis MWD	NO			1ST YR LOCAL AGENCIES PARTICIPATED. ENCOURAGING TO IMPROVE LP CAP.	
Chico Basin MWD					
Central Basin MWD					
Coastal MWD					
Eastern MWD	YES	TAKE ADV BY WITHDRAWING DURING SUMMER	TAKE ADVANTAGE OF SSS ALL YEAR ROUND		
City of Fullerton	N/A				
Foothill MWD	STUDY	ENGINEERING STUDY WILL DETERMINE	WINTER/SUMMER RATES	SSS PROVIDES FLEXIBILITY IN PRODUCTION PLANNING & STRATEGIES	
City of Glendale	N/A				
City of Los Angeles	N/A				
City of Long Beach	N/A				
Los Virgenes MWD	N/A				
MWD of Orange County					
City of Pasadena	N/A				
Three Valleys MWD	NO				
City of Santa Ana	N/A				
City of San Diego	NO				
City of San Fernando	N/A				
City of San Marino					
City of Santa Monica					
City of Torrance	N/A				
Upper San Gabriel MWD					
West Basin MWD	YES	*14	INCREASE DIFFERENTIAL. SIMPLIFY PROCEDURES HIGHER % OF SWP WATER TO RED. TDS	SENT A REPORT ON SSS BENEFITS	
Western MWD of Riverside Co.	N/A				

*7 - PROVIDE FLEXIBILITY IN PROGRAM SCHEDULE. EARLY NOTICE OF CHANGES. MERGE INTERRUPTIBLE AND SSS.

*14 - CAPITAL CONSTRUCTION LOANS FOR NEW WELLS, WELL-HEAD TREATMENT, NEW IN-USE PROGRAMS, AND ADDITIONAL INJECTION WELLS

EXHIBIT D

AGENCY	1				2				3				4			
	REHABILITATED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	PLAN TO REHABILITATE WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	DRILLED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	PLAN TO DRILL WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)
Collegiate WWD	YES	2	1,000	\$45	NO				YES	2	2,500-3,000	\$120	YES	1	3,000	
City of Oxnard	YES	1	*1	\$40	STUDY				NO				STUDY			
City of Camarillo	YES	1							NO				NO			
Comrosa Water District	NO				YES	1	1,000	\$35	NO							
Coastal WWD																
Irvine Ranch W/D	YES	1	2,250	\$16	NO				YES	1	5 CFS	\$1,500	YES	7	5 CFS	\$1,500
Laguna Beach CWD	NO				NO				NO				YES	1	1,000 AF	\$200-1000
Newport Beach	NO				NO				NO				YES	4	3,500	\$1,000
South Coast W/D	NO				NO				NO				NO			
Tri-Cities WWD	NO				NO				YES	1	600	\$100	YES	4	600	\$100
WWD of Orange County																
East Orange County W/D	YES	1	500	\$30	NO				NO				NO			
City of Fountain Valley	NO				NO				YES	1	4,000	\$1,000	NO			
City of Garden Grove	YES	1	2,000	\$100	NO				YES	3	4,000/3,600/3,600	\$1,000	YES	1	4,000	\$1,200
City of Huntington Beach	NO				NO				NO				YES	2	3,000	\$750
Irvine Ranch W/D	YES	1	2,250	\$16	NO				YES	1	5 CFS	\$1,500	YES	7	5 CFS	\$1,500
City of Seal Beach	NO				NO				NO				NO			
Serrano ID	YES	1	1,500	\$50	YES	2	1,000	\$50	YES	1	1,500	\$600	YES	1	2,000	\$650
Southern Calif. Water Co.	NO				NO				NO				NO			
City of Tustin	YES	1	800	\$130	NO				NO				YES	3	1,000-2,000	\$750-1,000
City of Yorba Linda	NO				YES	1	1,200	\$100	NO				NO			
Three Valleys WWD																
City of Pomona	NO				YES	2	800	\$50	NO				YES	2	1,000	\$450

*1 - INJECTION = 600 GPM. EXTRACTION = 1100 GPM

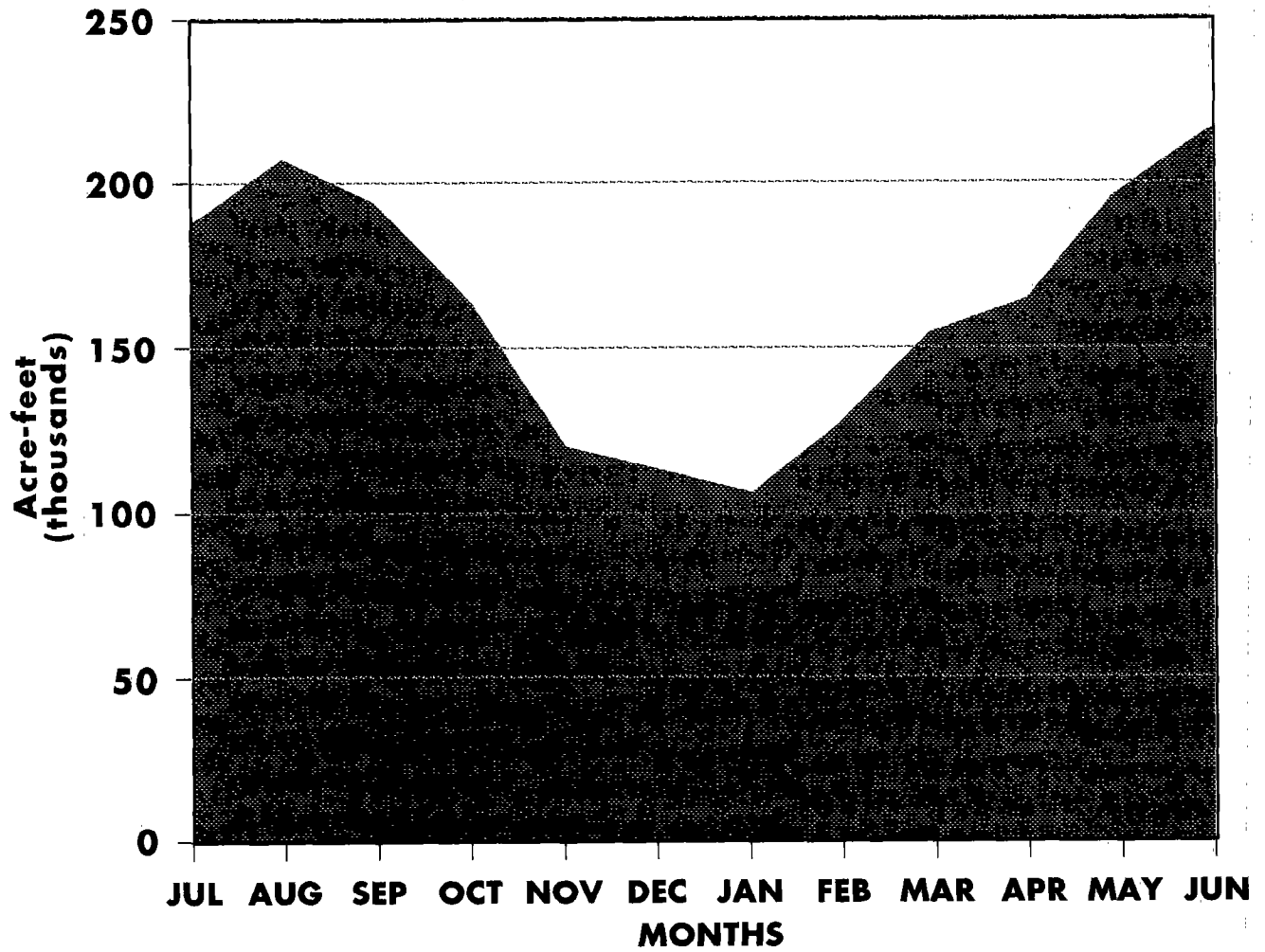
AGENCY	5				6				7			8		
	TREAT CONTAMINATED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	PLAN TO TREAT CONTAMINATED WELLS	HOW MANY	PRODUCTION CAPACITY/WELL	COST/WELL (THOUSANDS)	DEVELOPED ADDITIONAL SURFACE DIVERSIONS	HOW MUCH	COST	PLAN TO DEVELOP SURFACE DIVERSIONS	HOW MUCH	COST
CALLEGUAS MWD														
CITY OF OXNARD	NO				NO							NO		
CITY OF CAMARILLO	NO				NO							NO		
CAMROSA WATER DISTRICT	NO				NO							NO		
COASTAL MWD														
IRVINE RANCH WD	NO				YES	1	5 CFS	\$500				NO		
LAGUNA BEACH CWD	NO				YES	1	1,000 AF	\$500-1000				NO		
NEWPORT BEACH	NO				NO							NO		
SOUTH COAST WD	NO				NO							NO		
TRI-CITIES MWD	NO				NO							NO		
MWD of Orange County														
East Orange County WD	NO				NO							NO		
City of Fountain Valley	NO				NO							NO		
City of Garden Grove	YES	1	4,000	\$12	NO							NO		
City of Huntington Beach	NO				YES	1	4,000	\$1,500				NO		
Irvine Ranch WD	NO				YES	1	5 CFS	\$500				NO		
City of Seal Beach	NO				NO							NO		
Serrano ID	NO				NO							NO		
Southern Calif. Water Co.	NO				NO							NO		
City of Tustin	NO				NO #2	3	900	\$.42/AF				NO		
City of Yorba Linda	NO				NO							NO		
Three Valleys MWD														
City of Pomona	YES	1	700	UK	NO							NO		

#2 - 3 WELLS WILL BE TREATED BECAUSE OF THE GROUNDWATER RECOVERY PROGRAM

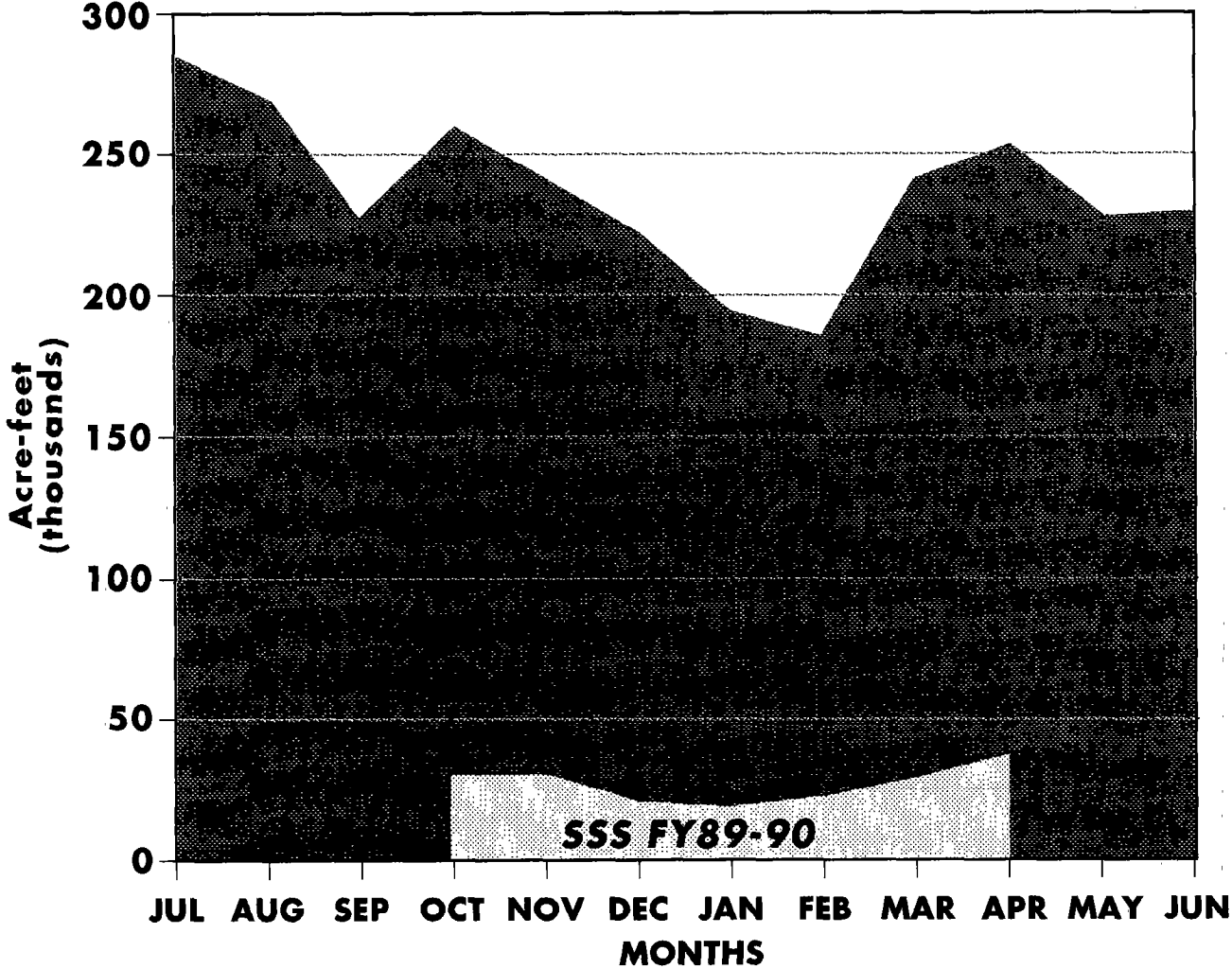
AGENCY	9			10			11			12		
	DEVELOPED NEW FACILITIES	WHAT FACILITIES	COST	PLAN TO DEVELOP NEW FACILITIES	WHAT FACILITIES	COST (THOUSANDS)	B/4 SSS EXCESS LOCAL WATER CAPACITY	HOW MUCH	SINCE SSS EXCESS LOCAL WATER CAPACITY	EXCESS LOCAL WATER CAPACITY FORECASTED	SPECIAL PROGRAMS TO MEMBER AGENCIES	NATURE OF PROGRAMS
CALLISTO WWD												
CITY OF OXNARD	NO			NO			NO				N/A	
CITY OF CAMARILLO	NO			NO			NO				N/A	
CAMROSA WATER DISTRICT	NO			NO			NO				N/A	
COASTAL WWD												
IRVINE RANCH WWD	NO			NO			NO		10 CFS	50 CFS	N/A	
LAGUNA BEACH CWD	NO			NO			NO				N/A	
NEWPORT BEACH				YES			YES	350 AF	350 AF		N/A	
SOUTH COAST WWD	NO			NO			NO				N/A	
TRI-CITIES WWD	NO			YES	WELLS/PIPELINES	\$4,000	NO				N/A	
MWD of Orange County												
East Orange County WWD	NO			NO			NO				N/A	
City of Fountain Valley	NO			POSS			NO				N/A	
City of Garden Grove	NO			NO			NO		9,000	13,000	N/A	
City of Huntington Beach	NO			NO			NO				N/A	
Irvine Ranch WWD	NO			NO			NO		10 CFS	50 CFS	N/A	
City of Seal Beach	NO			NO			NO				N/A	
Serrano ID	NO			NO			YES	3,000 AF	1,000 AF	1,000-3,000 AF	YES	STORE IN IRVINE LAKE TO 3,000 AF
Southern Calif. Water Co.	NO			NO			NO				N/A	
City of Tustin	NO			NO			NO				N/A	
City of Yorba Linda	YES											
Three Valleys WWD												
City of Pomona	NO			NO			NO					

AGENCY	13		14	15
	PLAN TO MAKE SPECIAL PROGRAMS AVAILABLE	NATURE OF PROGRAMS	IDEAS FOR IMPROVEMENTS	OTHER COMMENTS
CALLEGUAS MWD				
CITY OF OXNARD	N/A			
CITY OF CAMARILLO	N/A			
CAMROSA WATER DISTRICT	N/A			
COASTAL MWD				
RYNE RANCH WD				BPP BASED ON 20,000 AF/YR. DEVELOPING ADD GW SUPPLIES FOR 75% BPP
LAGUNA BEACH CWD	N/A			
NEWPORT BEACH	N/A		NOTIFY PRIOR TO START DATE OF SSS PROGRAMS.	
SOUTH COAST WD	N/A			
TRI-CITIES MWD	N/A		REDUCTION IN COST OF RECHARGE WATER	
MWD of Orange County				
East Orange County WD	N/A			
City of Fountain Valley	N/A			MAY BE FORCED TO STOP SSS B/C OF PAPERWORK
City of Garden Grove	N/A			
City of Huntington Beach	N/A		CONTINUE W/ METHOD USED IN FY91-92.	
Inline Ranch WD				BPP = 20,000 AF/YR. DEVELOPING GW SUPPLIES TO ATTAIN 75% BPP.
City of Seal Beach	N/A			
Serrano ID				
Southern Calif. Water Co.	N/A			
City of Tustin	N/A		SSS PRICE SHOULD BE SET AS FIXED % OF TM	
City of Yorba Linda				
Three Valleys MWD				
City of Pomona	N/A			

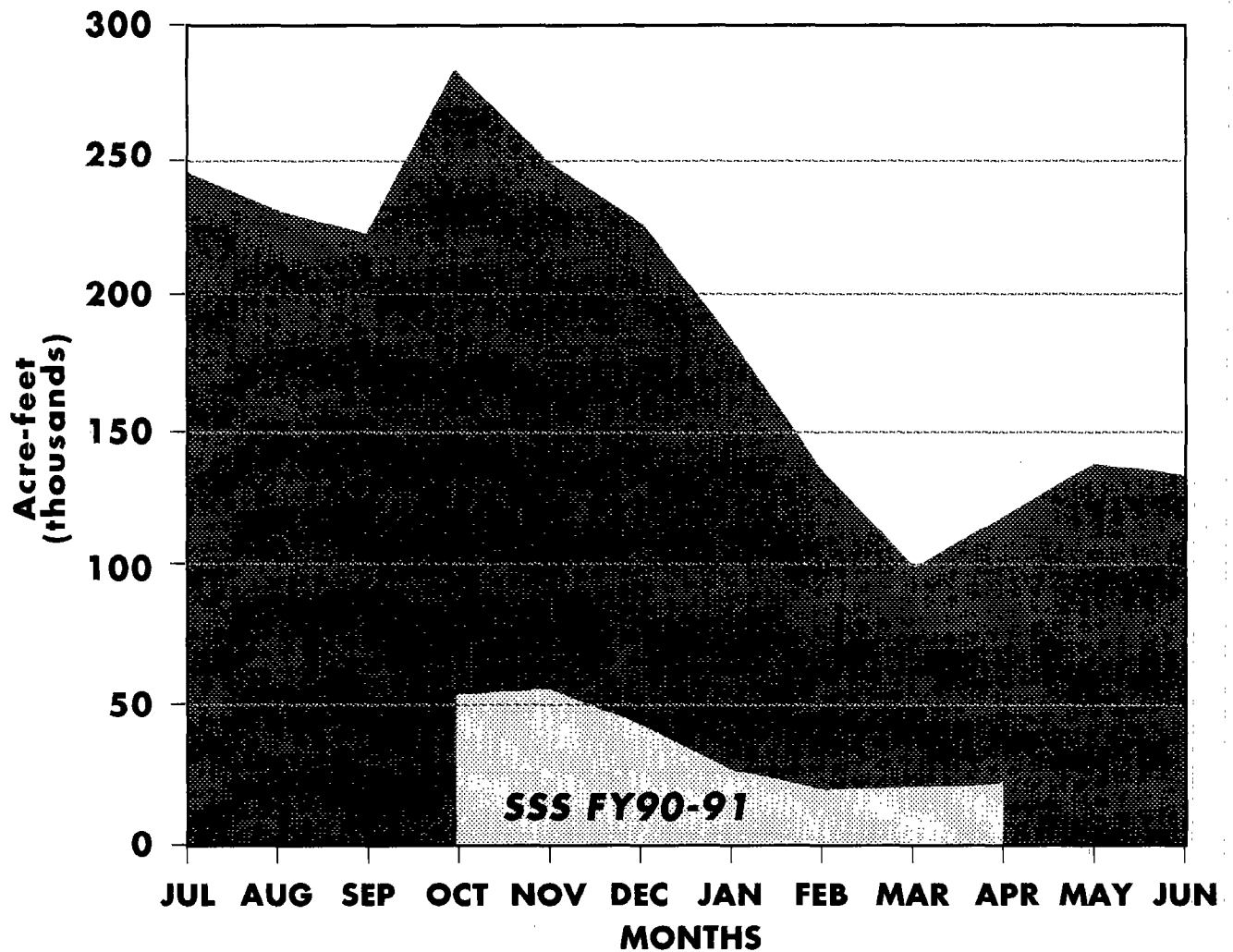
FY 1988-89 TOTAL WATER SALES



FY 1989-90 TOTAL WATER SALES AND SEASONAL STORAGE SALES



FY 1990-91 TOTAL WATER SALES AND SEASONAL STORAGE SALES



FY 1991-92 TOTAL WATER SALES AND SEASONAL STORAGE SALES

