

SAN DIEGO  
COUNTY WATER AUTHORITY



THIRTY-SEVENTH ANNUAL REPORT  
1983

SAN DIEGO COUNTY WATER AUTHORITY

Organized June 9, 1944

# THIRTY-SEVENTH ANNUAL REPORT

OF AUTHORITY OPERATIONS  
FOR FISCAL YEAR ENDING JUNE 30, 1983

Linden R. Burzell

*General Manager and Chief Engineer*

SAN DIEGO, CALIFORNIA

1983

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SAN DIEGO COUNTY WATER AUTHORITY

Member Agencies, Date of Entry and  
Representative on Board of Directors on June 30, 1983

**CITIES**

Del Mar . . . . .	Nov. 23, 1962
William Tripp	
Escondido . . . . .	Oct. 9, 1950
Robert M. Dodd	
National City . . . . .	June 9, 1944
Tom Crownover	
Oceanside . . . . .	June 9, 1944
David Rorick, Jr.	
Poway . . . . .	April 21, 1954
Alan D. Archibald	
San Diego . . . . .	June 9, 1944
Craig S. Andrews, Dr. Charles F. Cooper, Janet Erickson, Lawrence Hirsch, Francesca M. Krauel, Roy W. Lessard, Michael D. Madigan, Paul A. Peterson	

**WATER DISTRICTS**

Helix . . . . .	June 9, 1944
Nat L. Eggert, Harry Griffen, C. G. Watters, Jr.	
Otay . . . . .	Oct. 26, 1956
Milton R. Emerson	
San Dieguito. . . . .	Dec. 13, 1948
Laena Dashiell	

**IRRIGATION DISTRICTS**

Santa Fe . . . . .	Dec. 13, 1948
John M. Cranston	
South Bay . . . . .	Nov. 3, 1952
Lloyd L. Lee	
<i>(Includes City of Chula Vista, an independent member agency, from June 9, 1944 to November 3, 1952)</i>	

**MUNICIPAL WATER DISTRICTS**

Bueno Colorado . . . . .	June 11, 1954
Hans H. Doe	
Costa Real . . . . .	June 16, 1954
Fred W. Maerkle	
De Luz Heights . . . . .	June 28, 1967
George F. Yackey	
Olivenhain . . . . .	July 25, 1960
Howard G. Golem	
Padre Dam . . . . .	June 7, 1956
W. E. Klostermann	
<i>(Includes Lakeside I.D., an independent member agency, from June 9, 1944 to June 7, 1956)</i>	

Rainbow . . . . .	April 10, 1954
John H. Fox	
Ramona . . . . .	August 27, 1957
Harold J. Schachter	
Rincon del Diablo . . . . .	June 14, 1954
Sherwood D. Anderson	
Valley Center . . . . .	May 9, 1955
John F. Hennigar	
Yuima . . . . .	Dec. 16, 1963
F. D. Fitzsimmons	

**PUBLIC UTILITY DISTRICT**

Fallbrook . . . . .	June 9, 1944
Paul K. Algert	

**FEDERAL AGENCY**

Pendleton Military Reservation . . . . .	Dec. 16, 1977
Paul L. V. Campo	

**COUNTY WATER DISTRICT**

San Marcos . . . . .	
Dale Mason . . . . .	Feb. 25, 1980

**OFFICERS OF BOARD OF DIRECTORS  
1982-83**



**Chairman**  
**ROY W. LESSARD**  
*San Diego*  
5-73 to 6-83



**Vice Chairman**  
**NAT L. EGGERT**  
*Helix*  
*Water District*  
10-77 to 6-83



**Secretary**  
**FRANCESCA M. KRAUEL**  
*San Diego*  
8-78 to 6-83



**EXECUTIVE  
OFFICERS**

**LINDEN R. BURZELL**  
*General Manager and  
Chief Engineer*



**PAUL D. ENGSTRAND**  
*General Counsel*

**ADMINISTRATIVE STAFF**



**B. L. OGDEN**  
*Assistant Chief  
Engineer*



**HENRY LOZANO**  
*Director of Finance  
and Treasurer*



**I. E. NICHOLS**  
*Superintendent*



**JANET RAVIART**  
*Executive Secretary*

**BOARD OF DIRECTORS  
1982-83**  
*For Officers, See Page 4*



**ALEX L. ADAMS**  
*Padre Dam*  
*Municipal Water District*  
7-80 to 2-83



**PAUL K. ALGERT**  
*Fallbrook Public*  
*Utility District*  
7-74 to 10-82



**S. D. ANDERSON**  
*Rincon Del Diablo*  
*Municipal Water District*  
8-78 to 6-83



**CRAIG S. ANDREWS**  
*San Diego*  
5-83 to 6-83



**ALAN D. ARCHIBALD**  
*City of Poway*  
10-82 to 6-83



**HARRY BARBER**  
*Poway Municipal*  
*Water District*  
2-81 to 10-82



**PAUL L. V. CAMPO**  
*Pendleton Military*  
*Reservation*  
1-78 to 6-83



**ROBERT W. COATES**  
*Rainbow Municipal*  
*Water District*  
2-79 to 12-82



**DR. CHARLES F. COOPER**  
*San Diego*  
4-73 to 6-83



**JOHN M. CRANSTON**  
*Santa Fe*  
*Irrigation District*  
10-64 to 6-83



**TOM CROWNOVER**  
*National City*  
6-76 to 6-83



**LAENA DASHIELL**  
*San Dieguito*  
*Water District*  
1-78 to 6-83



**ROBERT M. DODD**  
*Escondido*  
1-70 to 6-83



**HANS H. DOE**  
*Bueno Colorado*  
*Municipal Water District*  
6-54 to 6-83



**MILTON R. EMERSON**  
*Otay*  
*Water District*  
12-81 to 6-83



**JANET ERICKSON**  
*San Diego*  
2-74 to 6-83

**BOARD OF DIRECTORS  
1982-83  
(Continued)**



**F. D. FITZSIMMONS**  
*Yuima Municipal  
Water District*  
8-71 to 6-83



**JOHN H. FOX**  
*Rainbow Municipal  
Water District*  
12-82 to 6-83



**HOWARD G. GOLEM**  
*Olivenhain Municipal  
Water District*  
1-62 to 6-83



**R. E. GRAHAM**  
*San Diego*  
7-63 to 5-83



**HARRY GRIFFEN**  
*Helix*  
*Water District*  
7-56 to 6-83



**JOHN F. HENNIGAR**  
*Valley Center  
Municipal Water District*  
10-76 to 6-83



**LAWRENCE HIRSCH**  
*San Diego*  
5-73 to 6-83



**W. E. KLOSTERMANN**  
*Padre Dam Municipal  
Water District*  
2-83 to 6-83



**LLOYD L. LEE**  
*South Bay  
Irrigation District*  
4-61 to 6-83



**MICHAEL D. MADIGAN**  
*San Diego*  
5-79 to 6-83



**FRED W. MAERKLE**  
*Costa Real Municipal  
Water District*  
11-78 to 6-83



**DALE MASON**  
*San Marcos  
County Water District*  
3-80 to 6-83



**LEO L. MCGUIRE**  
*Fallbrook Public  
Utility District*  
10-82 to 4-83



**JOSEPH PARKER**  
*San Diego*  
3-77 to 6-83



**PAUL A. PETERSON**  
*San Diego*  
6-83 to 4-83



**DAVID RORICK, JR.**  
*Oceanside*  
8-73 to 6-83

**BOARD OF DIRECTORS  
1982-83  
(Continued)**



**HAROLD J. SCHACHTER**  
*Ramona Municipal  
Water District*  
1-83 to 6-83



**JOHN P. STARKEY**  
*San Diego*  
10-75 to 6-83



**DR. ALICE C. TANG**  
*San Diego*  
10-79 to 6-83



**GORDON W. TINKER**  
*Fallbrook Public  
Utility District*  
4-83 to 6-83



**WILLIAM TRIPP**  
*City of Del Mar*  
6-80 to 6-83



**C. G. WATTERS, JR.**  
*Helix*  
*Water District*  
5-77 to 9-82



**JOHN T. WILSON**  
*Ramona Municipal  
Water District*  
10-79 to 1-83



**GEORGE F. YACKEY**  
*De Luz Heights  
Municipal Water District*  
6-68 to 6-83

**DIRECTORS REPRESENTING SDCWA ON METROPOLITAN WATER DISTRICT  
BOARD OF DIRECTORS**



**JOHN M. CRANSTON**  
12-74 to 6-83



**HANS H. DOE**  
7-59 to 6-83



**R. E. GRAHAM**  
7-79 to 7-82



**HARRY GRIFFEN**  
1-63 to 6-83



**MICHAEL D. MADIGAN**  
7-82 to 6-83



**JOHN P. STARKEY**  
1-81 to 6-83

COMMITTEES OF THE BOARD

June 30, 1983

ADMINISTRATIVE POLICY

David Rorick, Jr., Chairman  
 Laena Dashiell, Vice Chairman  
 Alan D. Archibald  
 Tom Crownover  
 Robert M. Dodd  
 Lloyd L. Lee  
 Fred W. Maerke  
 Alice C. Tang  
 Gordon W. Tinker  
 William H. Tripp  
 George F. Yackey

FISCAL POLICY

Dale Mason, Chairman  
 Howard G. Golem, Vice Chairman  
 Craig S. Andrews  
 Alan D. Archibald  
 John M. Cranston  
 Hans H. Doe  
 Nat L. Eggert  
 F. D. Fitzsimmons  
 John H. Fox  
 Harold J. Schachter  
 John P. Starkey  
 William H. Tripp

ENGINEERING AND OPERATIONS

Sherwood D. Anderson, Chairman  
 F. D. Fitzsimmons, Vice Chairman  
 Paul L. V. Campo  
 Milton R. Emerson  
 Howard G. Golem  
 W. E. Klostermann  
 Lloyd L. Lee  
 Fred W. Maerke  
 Harold J. Schachter  
 George F. Yackey

PUBLIC INFORMATION

John P. Starkey, Chairman  
 Michael D. Madigan, Vice Chairman  
 Sherwood D. Anderson  
 Tom Crownover  
 Laena Dashiell  
 Janet Erickson  
 Lawrence Hirsch  
 W. E. Klostermann  
 Francesca M. Krauel  
 Dale Mason  
 David Rorick, Jr.

LONG RANGE PLANNING

Lawrence Hirsch, Chairman  
 Charles F. Cooper, Vice Chairman  
 Paul L. V. Campo  
 Robert M. Dodd  
 Milton R. Emerson  
 Janet Erickson  
 Harry Griffen  
 John F. Hennigar  
 Michael D. Madigan  
 Paul A. Peterson  
 Alice C. Tang  
 Gordon W. Tinker

WATER POLICY

Hans H. Doe, Chairman  
 John F. Hennigar, Vice Chairman  
 Craig S. Andrews  
 Charles F. Cooper  
 John M. Cranston  
 Nat L. Eggert  
 John H. Fox  
 Harry Griffen  
 Francesca M. Krauel  
 Michael D. Madigan  
 Paul A. Peterson



San Diego County Water Authority

2750 Fourth Avenue, San Diego, California 92103 (619) 297-3218

(A Public Agency Organized June 3, 1948)

Roy W. Lissard, Chairman  
 Neil L. Eggert, Vice Chairman  
 Francesca M. Krauel, Secretary  
 Linden H. Brunel, General Manager  
 and Chief Engineer  
 Paul D. Engstrand, General Counsel

November 1, 1983

Board of Directors  
 San Diego County Water Authority

The Thirty-seventh Annual Report of the Water Authority, covering activities during the fiscal year ending June 30, 1983, has been prepared and is transmitted herewith.

The winter rainfall of 1982-83 was well above normal in Southern California. The water supply in storage at June 30, 1983 was approximately 526,100 acre feet, a net increase of over 138,000 acre feet during the year.

In August and September 1983, the Metropolitan Water District and the San Diego County Water Authority published extensive reports of alternative sources of water which will be available during the coming decades. Metropolitan Report 948 and the Water Authority Report of Potential Water Supply for San Diego County each concluded that the water supply will be much less dependable in the future. These reports also point out that Metropolitan's service area will be highly dependent upon completion of the State Water Project. During November 1983 the Director of Water Resources released a report entitled "Alternatives for Delta Water Transfer" which focused on four basic schemes to increase water available to the Project. Despite this progress it appears that no construction will commence until additional hearings are held and some consensus is reached in the state legislature.

The Water Authority continues to support construction of two local projects which will increase the dependable local water supply as well as provide long term storage for emergencies and droughts. These projects, the Famo Dam and Reservoir and the Santa Margarita Projects, made considerable progress during 1983. The Famo Project environmental review process will be completed early in 1984 and the Santa Margarita Project was approved by the U. S. Senate.

The Water Authority's financial position remains strong, and staff remains optimistic that water demands will be met through this decade and into the 1990's.

Very truly yours,

L. R. Burzell  
 General Manager and Chief Engineer

MEMBER AGENCIES

- |  |  |   |   |
|--|--|---|---|
| <p><b>CITIES</b><br/>                 *Del Mar *National City *Poway<br/>                 *Escondido *Oceanside *San Diego</p> | <p><b>IRRIGATION DISTRICTS</b><br/>                 *Santa Fe *South Bay</p> | <p><b>COUNTY WATER DISTRICT</b><br/>                 *San Marcos</p>    | <p><b>MUNICIPAL WATER DISTRICTS</b><br/>                 *Nuevo Colorado *Ramona<br/>                 *Costa Mesa *Ramona<br/>                 *De Luz Heights *Valley Center<br/>                 *Covington *Yuma<br/>                 *Padre Dam</p> |
| <p><b>WATER DISTRICTS</b><br/>                 *Imperial *Olay<br/>                 *San Diego</p>                             | <p><b>PUBLIC UTILITY DISTRICT</b><br/>                 *El Arroyo</p>        | <p><b>MILITARY RESERVATION</b><br/>                 *Camp Pendleton</p> |   |

FISCAL YEAR 1982-83

San Diego has depended on imported water for approximately 90 percent of its water needs since 1947. The San Diego County Water Authority, even under the most challenging circumstances, has been able to import enough water to meet the demand.

However, the prospects for an adequate future supply of water are very uncertain. Many solutions to reverse this trend have been proposed. The latest solution was Proposition 9 which would have provided for the construction of the Peripheral Canal and attendant solutions to the water problems. This measure and a subsequent measure, Proposition 13, were turned down by the electorate.

The overwhelming defeat of these measures and other factors were interpreted by water experts as a mandate to reevaluate traditional approaches to solving our water problems. A variety of alternate proposals, heretofore relegated a lesser priority, are now included in the reevaluation. Any of these alternatives will have an impact on San Diego's future.

Therefore, in order to reduce the impact of future water shortages and to insure that the water needs of San Diego are met, the Board of Directors of the San Diego County Water Authority has intensified its ongoing quest for water. As a result, it has authorized the General Manager to pursue a multiple course of action.

**Imported Resources**

San Diego's water supply for the foreseeable future will continue to be imported water. Accordingly, coordinated management of all water resources, including storage in Northern California both north and south of the Delta and improved conveyance capacity through and around the Delta, have the highest priority. The San Diego County Water Authority is working closely with The Metropolitan Water District of Southern California, the California Department of Water Resources, and other interested parties to insure maximum utilization of existing supplies and development of new resources.

**Local Resources**

The production of local water supply is at, or near, its maximum potential. Most of the member agencies of the San Diego County Water Authority see little opportunity for development of significant quantities of additional potable water. Some projects under investigation, should they be determined economically feasible, could probably produce a total of less than 10,000 acre feet of water per year.

Two projects, however, should be built. One project is the Pamo Dam and Reservoir on the Santa Isabel Creek which would be a joint project of the City of San Diego and the San Diego County Water Authority. This project would provide an impounding capacity of 100,000 to 130,000 acre feet of water. The second project would be the Santa Margarita Project which would involve a joint effort of Fallbrook Public Utility District, Camp Pendleton Military Reservation, and the United States Bureau of Reclamation. It would provide 36,150 acre feet of water for Fallbrook and 100,000 acre feet of water for Camp Pendleton. These projects are being supported by the San Diego County Water Authority.

Other efforts being pursued are conservation, reclamation, desalination, and groundwater basins. Reclamation projects with the most promise for early acceptance are the San Pasqual Project and the City of San Diego's Aquaculture Project now operating near Jack Murphy Stadium. Also, staff is cooperating with the County of San Diego in the preparation of a report on water independence for San Diego County.

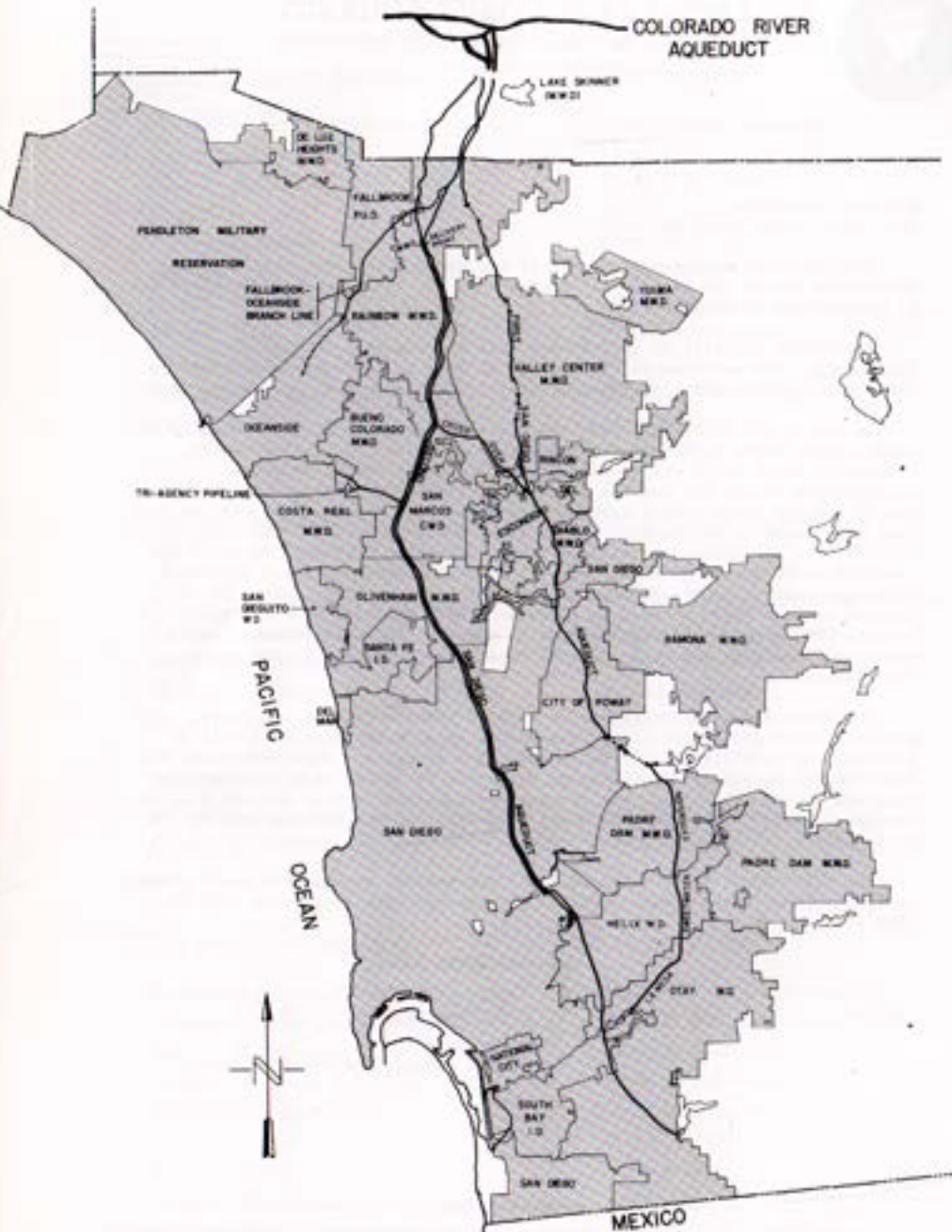


Figure A. Authority Area Within San Diego County.

## BOARD OF DIRECTORS

### General

The San Diego County Water Authority is comprised of 24 member agencies. Each member agency is represented by at least one person. A member agency is entitled to one additional representative for each full five percent of total assessed valuation contained within its boundaries. Assessed valuation is determined by the County of San Diego's Assessor's Office. These representatives are appointed by the chief executive officer of the respective agencies with approval by the agencies' governing bodies. During the year, only two agencies were represented by more than one representative: The City of San Diego by ten; Helix Water District by two. Directors serve without pay from the Authority.

Officers of the Board of Directors are elected in July of even-numbered years. In July 1982, Roy W. Lessard was elected Chairman; Nat L. Eggert, Vice Chairman; and Francesca M. Krauel, Secretary.

To facilitate matters, most business coming before the Board is first considered by one of its committees. Each committee then reports to the full Board which makes the necessary decisions. There are six standing committees:

Administrative Policy	Long Range Planning
Engineering and Operations	Public Information
Fiscal Policy	Water Policy

During fiscal year 1982-83, Directors were presented with service emblems as follows:

Director	Length of Service
Howard G. Golem	20 years
Tom Crownover	6 years
John Hennigar	3 years
Robert Coates	3 years
Michael D. Madigan	3 years
Fred W. Maerkle	3 years
Alice C. Tang	3 years
John T. Wilson	3 years

At the July 8, 1982 meeting, the Board adopted a resolution appointing Director Michael D. Madigan to the Metropolitan Water District Board of Directors to finish the unexpired term of Director Ralph E. Graham.

During the August 12, 1982 meeting, the Board of Directors adopted a resolution honoring Director Ralph E. Graham upon his retirement from the Water Authority Board.

At the September 9, 1982 special meeting, the Board approved a resolution appointing Director Janet Erickson as a representative and Director Harry Barber as alternate on the San Diego Reclamation Water Resources Agency.

On October 14, 1982 during the Board meeting, Mr. Leo L. McGuire, Sr. was seated as an Authority Director representing Fallbrook Public Utility District. He replaced Director Paul K. Albert. His term expires July 15, 1986.

At the October Board meeting, Mr. Alan Archibald was seated as a City of Poway representative. Mr. Archibald replaced Harry Barber. His term will expire on April 22, 1984.

Also during the October meeting, the Board adopted resolutions honoring Directors Paul K. Algert, Harry Barber, and Clarence G. Watters for their outstanding public service.

At the December 9, 1982 meeting, Mr. F. D. Fitzsimmons was reseated as a Water Authority Director representing Yuima Municipal Water District. Mr. Fitzsimmons's new term expires January 9, 1988.

Mr. John H. Fox was seated as a Director of the San Diego County Water Authority representing Rainbow Municipal Water District at the same meeting. Mr. Fox replaces Robert W. Coates for a term expiring on April 19, 1984.

Mr. Harold J. Schachter was seated at the January 13, 1983 meeting to represent Ramona Municipal Water District. Mr. Schachter replaces John T. Wilson. His term expires October 2, 1987.

Mr. W. E. Klosterman was seated as a Director of the Water Authority representing Padre Dam Municipal Water District at the February 10, 1983 meeting. Mr. Klosterman replaces Mr. Alex L. Adams, and his term will expire on July 7, 1986.

During the March 10, 1983 meeting, the Board of Directors adopted resolutions in memoriam for former General Counsel William H. Jennings and former Director Paul K. Algert.

At the April 14, 1983 meeting, Mr. Gordon W. Tinker was seated as a member of the Board of Directors of the Water Authority representing Fallbrook Public Utility District. Mr. Tinker's term will expire on July 15, 1986. He replaces Leo L. McGuire, Sr.

During the regular Board meeting of May 12, 1983, Mr. Craig S. Andrews was seated as a Director representing the City of San Diego. Mr. Andrews' term expires on February 24, 1989. He replaces Ralph E. Graham.

At the June 9, 1983 meeting, Mr. Paul A. Peterson was seated as a Director of the Water Authority Board representing the City of San Diego. Mr. Peterson replaces Joseph Parker, and his term will expire on October 27, 1988.

At the same meeting, Director Harry Griffen was reseated as a Director representing Helix Water District. Mr. Griffen's new term expires on July 15, 1989.

During the June meeting as well, the Board adopted a resolution honoring former Director Joseph Parker for his outstanding public service as a member of the Board of Directors of the San Diego County Water Authority.

### Policy

On July 8, 1982 during the Water Authority Board meeting, a resolution was adopted, moved by Director Griffen, and seconded by Director Algert, urging Congress to act favorably on pending legislation which would authorize construction of the Santa Margarita Project.

At the August 12, 1982 meeting, a resolution was adopted, moved by Director Rorick and seconded by Director Starkey, establishing vote of representatives of member agencies for fiscal year 1982-83.

The Board adopted a resolution, moved by Director Starkey and seconded by Director Coates, at the August meeting setting the tax levy for fiscal year 1982-83 at .817 cents per \$100 of assessed valuation on property within the Water Authority's service area.

At the same meeting, the Board adopted a resolution, moved by Director Griffen and seconded by Director Anderson, authorizing the General Manager to execute an agreement to join the San Diego Region Water Reclamation Agency and approve the Water Authority dues assessment for 1982-83 and the 1982-83 budget.

At the September 9, 1982 meeting, the Board of Directors adopted a resolution, moved by Director Hennigar and seconded by Director Maerkle, supporting congressional action to specifically exclude dams from the National Pollution Discharge Elimination System (NPDES).

During the same meeting, the Board adopted a resolution extending the contract with the International Boundary and Water Commission, the City of San Diego, Otay Municipal Water District, and Metropolitan Water District for delivery of a portion of its Colorado River water to Tijuana, Mexico. The extension expires August 14, 1983.

Also at the September meeting, the Board adopted a resolution declaring its opposition to the Water Resources Statutory Initiative (Proposition 13).

During the November 11, 1982 adjourned meeting, the Board adopted a resolution requesting termination of the Social Security agreement between the San Diego County Water Authority and the State of California.

A resolution was adopted by the Board during the December 9, 1982 meeting authorizing the General Manager to execute a joint funding agreement for United States Geological Survey Groundwater Studies from October 1982 to September 1983.

The Board of Directors approved a resolution during the January 13, 1983 meeting amending the Administrative Code, Article 2. The amendments increase committees' quorums, revise description of the Long-Range Planning Committee, and revise terms of board officers and committee chairmen.

Also at the January meeting, the Board approved a resolution providing for temporary borrowing pursuant to Title 5, Division 2, Part 4, Article 7.6 of the Government Code.

At the same meeting, the Board adopted a resolution authorizing the General Manager to execute an agreement with the City of San Diego for the construction and operation of Pamo Dam and Reservoir.

During the April 14, 1983 meeting, the Board adopted a resolution for the negative declaration of Pipeline 3 easements.

The Board of Directors also approved a resolution at the April meeting authoriz-

ing proceedings of eminent domain for the purpose of acquiring real property and interest in real property for pipeline purposes.

At the same meeting, the Board approved a resolution authorizing the execution of an agreement for design of hydroelectric generating plants at Alvarado and Miramar Treatment Plants.

During the April meeting as well, the Board approved a resolution authorizing the execution of an agreement with Mooney-Lettieri & Associates, Inc. for the preparation of an environmental impact report for the Pamo Dam and Reservoir Project.

The Board of Directors approved a resolution at the April meeting authorizing execution of an agreement with Metropolitan Water District and Otay Water District for delivery of Metropolitan Water District water to the Jamul Indian Reservation.

At the May 12, 1983 meeting, the Board adopted a resolution approving and establishing a San Diego County Water Authority budget of \$72,465,925 for fiscal year 1983-84.

During the same meeting, the Board adopted a resolution approving the construction of hydroelectric plants at the Alvarado and Miramar Treatment Plants in the City of San Diego, approving negative declarations for the projects, and authorizing staff to file notices of determination in accordance with the Water Authority's CEQA guidelines.

**Administration**

**Executive Officers**

Linden R. Burzell	General Manager and Chief Engineer
Paul D. Engstrand	General Council

**Administrative Staff**

Buckley L. Ogden	Assistant Chief Engineer
Henry G. Lozano	Director of Finance
Irwin E. Nichols	Superintendent
Pete Rios	Government/Community Affairs Officer
Janet M. Raviart	Executive Secretary

Administrative offices of the Authority are located at 2750 Fourth Avenue, San Diego. Field headquarters are at the Fred A. Heilbron Operations Center, 610 West Fifth Avenue, Escondido.

At the end of the fiscal year, the Authority had 45 full-time employees.

**WATER AUTHORITY COMPOSITION**

The San Diego County Water Authority consists of six cities, three water districts, two irrigation districts, ten municipal water districts, one public utility district, one federal agency, and one county water district. It was organized on June 9, 1944

under the "County Water Authority Act" of 1943. The act was requested by San Diego City and County officials, prepared by Phil D. Swing, and introduced by Senator Ed Fletcher. The measure was approved by the Governor on May 17, 1943.

The original incorporators of the Water Authority were the City of Chula Vista; City of Coronado; City of National City; City of Oceanside; City of San Diego; Fallbrook Public Utility District; Lakeside Irrigation District; La Mesa, Lemon Grove and Spring Valley Irrigation District; and Ramona Irrigation District.

Such an organization was needed for the prime purpose of importing Colorado River water to San Diego in order to replace the local water supplies which were rapidly becoming inadequate.

**Area**

The Authority encompasses 899,578 acres (1,405.6 square miles), a net increase of 820 acres during the fiscal year.

Area changes, addition of member agencies, and percentage of area each member agency serves are contained in Table 3. The City of San Diego is the largest area with 206,027 acres; the smallest area is the City of Del Mar consisting of 1,159 acres.

Each calendar year the Authority is required by State law to file a Statement of Change of Boundary. This statement was filed with Metropolitan Water District, the San Diego County Assessor, and the State Board of Equalization on December 30, 1982.

The statement for calendar year 1982 contained several annexations and deannexations which did not change the Authority and MWD boundary, in addition to annexations and detachments that affected the area of these agencies.

The Statement of Change of Boundary is used by the County Assessor to determine the total assessed valuation within each member agency and the Authority for tax purposes.

**Population**

The population of San Diego County on June 30, 1983 was estimated to be 1,986,035 people of which 97 percent live within the Authority service area. The average annual growth rate within the Authority service area for the period from 1946 to 1982 was 9.2 percent. The population within the Authority service area was estimated to be 1,934,587 persons on June 30, 1983, an increase of 45,222 or 2.4 percent from June 30, 1982 estimate of 1,889,365. Population statistics are contained in Table 2.

The City of San Diego, largest member agency of the Authority in area, leads the member agencies in population with 925,000 persons, approximately 48 percent of the Authority total. De Luz Heights Municipal Water District has the smallest population with 250 persons and the lowest density with 0.02 persons per acre. The highest average population density within an identifiable political entity is 8.85 per acre in the City of National City.

The average population density of the Authority increased during the fiscal year from 2.10 to 2.15 persons per acre or 1,376 persons per square mile.

**Assessed Valuation**

The assessed valuation of taxable property within the Authority, both secured and unsecured, and the Authority's debt service requirements provide the basis for the annual determination of the Authority tax rate by the Board of Directors. The number of directors and the number of votes to which each member agency is entitled are determined by the total assessed valuation within each member agency. The valuations are determined by the San Diego County Assessor who collects these taxes for the Authority.

Total assessed valuation of taxable property within the Authority for 1982-83, according to the County Auditor's certification, was \$54,778,924,886, an increase of \$5,889,243,018 or 12.6 percent from the 1981-82 certified valuation of \$46,889,681,868.

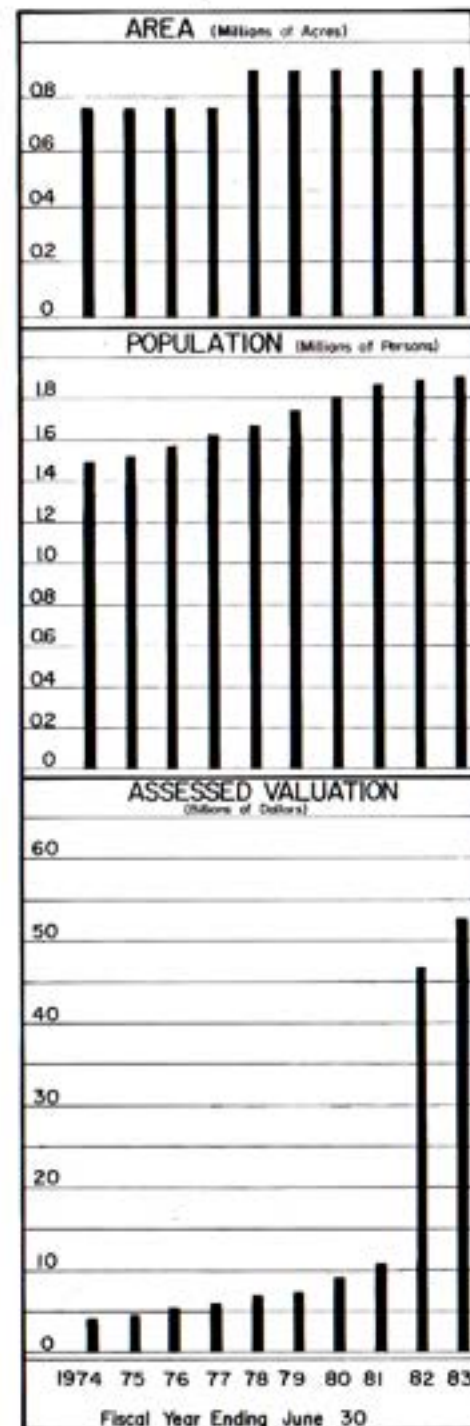
The average assessed valuation of property within the Authority service area increased from \$52,172 per acre in 1981-82 to \$58,671 per acre in 1982-83. This increase was the result of higher value of secured and unsecured property in the Authority service area.

The assessed valuation for each member agency, the Authority, and San Diego County are contained in Table 5.

**WATER SUPPLY AND CONSUMPTION**

**Source**

The Metropolitan Water District of Southern California (MWD) is the sole source of supplemental water to the Authority. The member agencies of the Water Authority used approximately 24.8 percent of MWD's supply in 1982-83.



**MWD Facilities**

Metropolitan Water District supplies a blend of Colorado River water and State Project water. Water from the Colorado River is diverted at Lake Havasu and is carried through the Colorado River Aqueduct to the terminus at Lake Mathews in Riverside County. Supplies for San Diego are diverted from the aqueduct near the west portal of the San Jacinto Tunnel into the First San Diego Aqueduct (Pipelines 1 and 2). A few miles west, the San Diego Canal receives water from the Casa Loma Canal. Pipelines 1 and 2 enter and traverse San Diego County without going through any other major facilities.

The State Water Project water is delivered to MWD at Lake Perris, terminus of the 444-mile California Aqueduct. From there, it flows through the Lakeview Pipeline to the San Diego Canal into Lake Skinner. A portion of the water from Lake Skinner flows directly into Pipeline 3 while another portion is processed through the Skinner Filtration Plant before entering Pipeline 4. By the end of June 1983, the blend in Lake Skinner was 45 percent Colorado River water and 55 percent State Water Project water.

Lake Skinner is the major storage facility for the San Diego Aqueducts with a maximum capacity of 44,000 acre feet of storage. The facilities are located in Riverside County south of Winchester. The maximum water elevation for storage is 1,479 feet above sea level. The Skinner Treatment Plant, located at the reservoir, has a treatment capacity of 240 million gallons per day (mgd).

**Authority Facilities**

The Authority takes delivery of water from MWD in the five pipelines of the San Diego Aqueducts approximately six miles south of the Riverside-San Diego County line.

San Vicente Reservoir, which is owned and operated by the City of San Diego, is the terminus of the First Aqueduct. The Fallbrook-Oceanside Branch originates from the First Aqueduct at Rainbow. The Authority operates and maintains approximately 12.5 miles of this branch from Rainbow to Morro Reservoir. The La Mesa-Sweetwater Branch extends from the First Aqueduct at Slaughterhouse Canyon through Lakeside and El Cajon to Sweetwater Reservoir. The two pipelines of the First Aqueduct share common tunnels and inverted siphons and are operated as a single unit.

The three pipelines of the Second Aqueduct (Pipelines 3, 4, and 5), although in common right of way for most of their length, do not share any facilities south of Lake Skinner and are operated separately. The treated water pipeline terminates in Lower Otay Reservoir. One untreated water pipeline ends at the City of San Diego's Alvarado Treatment Plant near Lake Murray. The terminus of Pipeline 5 is the crossover diversion structure near Escondido. Pipeline 5 has not been used for water delivery prior to the end of the fiscal year.

To maximize the flexibility of the system, several crossover connections have been constructed during recent years. One such facility is the pipeline from the Second Aqueduct at Twin Oaks Valley to the First Aqueduct just north of Escondido.

This connection permits the refilling of the First Aqueduct with untreated water after agencies to the north have used a portion of its capacity.

Just upstream of the Twin Oaks Valley Diversion is an interconnection which permits the transfer of Pipeline 3 flows into Pipeline 4 and vice versa. Member agencies have also increased the flexibility of their operations by increasing the number of aqueduct pipelines to which they are connected.

Flows in the First Aqueduct are chlorinated at a station in Rainbow Pass just north of the Riverside-San Diego County line. Treated water is chlorinated during the treatment process at the Skinner Plant, and water in Pipeline 3 is chlorinated at the Rainbow Chlorination Station.

Design capacity of the First Aqueduct, Pipelines 1 and 2 combined, is 196 cubic feet per second (cfs), Pipeline 3 has a 250 cfs design capacity, and Pipeline 4 has a 380 cfs design capacity. (One cubic foot equals 7.48 gallons. One cfs flowing 24 hours will produce nearly two acre feet. An acre foot contains approximately 326,000 gallons.)

No storage facilities are owned or operated by the Authority. However, it does have the contractual right to store up to 40,000 acre feet (af) in San Vicente Reservoir, the terminus of the First Aqueduct. An agreement with the City of San Diego, which owns the reservoir, provides for payment to the City of San Diego in the amount of \$2.20 per af for the maximum amount of water in storage each year.

In addition, the Authority pays the City of San Diego \$4.00 per af for pumping water from storage into the City's system. The agreement also provides that the first water which may be lost over the spillway is that stored by the Authority.

During the fiscal year, water was placed in storage at San Vicente Reservoir by the Authority for the account of member agencies. San Vicente storage statistics are shown in Table 4.

Another Authority-City of San Diego agreement permits storage up to 2,500 af in Lower Otay Reservoir, terminus of Pipeline 3. Storage here is for operational purposes only. No storage is provided for member agencies. The City is paid \$1.00 per af for the maximum storage in any twelve-month period subject to a minimum annual fee of \$1,000. The Authority also pays pumping charges which vary from \$1.50 to \$2.25 per af depending on water elevation.

Supervision and control of the San Diego Aqueduct system is conducted from the Fred A. Heilbron Operations Center, Escondido, where delivery requests from member agencies are received. Aqueduct flows and deliveries are controlled and monitored through a telemeter system designed and built by Authority personnel. Communication with operating and maintenance field staff and with MWD's East Valley Operations Section at Lake Skinner is by two-way radios.

**Deliveries and Rates**

The San Diego County Water Authority aqueducts delivered 298,167 af during the fiscal year. Untreated water accounted for 187,890 af, and the balance of 110,277 af of water was treated at the Robert A. Skinner Treatment Plant in Riverside County. This total flow of 298,167 af was 119,995 af less than the previous fiscal year which represents a 28.7 percent decrease.

The lowest flow rate averaged 135 cfs in March 1983. The highest average delivery of 776 cfs occurred during August 1982. The average for the entire year was 411.9 cfs.

SAN DIEGO COUNTY WATER AUTHORITY

Water deliveries to member agencies and others during the fiscal year are shown in Table 8. Purchases by member agencies totalled 296,450 af, and no water was delivered to Tijuana at the International Border.

Storage in member agencies' reservoirs at the end of the fiscal year was 526,113 af which is approximately 91 percent of total capacity compared with 387,930 af for the previous year. This increase amounts to 138,183 af or 35.6 percent of the previous year storage.

Annual water sales to individual agencies for the eight-year period 1974-75 through 1982-83, total water sales from 1947-75, and total water sales from 1947-83, are shown in Table 7. The sales during fiscal year 1982-83 are 71.3 percent of the previous fiscal year which is a decrease of 119,995 af.

The operations and maintenance of the Authority is financed by a surcharge rate of \$5 per af on water delivered to its member agencies plus other miscellaneous general fund revenues.

Capital costs for the First and Second Pipelines have been financed by the United States Government. The Third and Fourth Pipelines were financed from the sale of General Obligation Bonds. The debt service on this voter-approved debt is funded by an ad valorem tax on all property within the San Diego County Water Authority service area.

Construction of the Fifth Pipeline was financed through a borrowing from California First Bank under Section 8 of the Water Authority Act and accrued reserves from general purpose revenues including property tax allocation from the County of San Diego from the 1 percent general purpose levy.

The debt service on borrowings under Section 8 of the County Water Authority Act are funded by a surcharge rate of \$5 per af.

The tax revenues from assessed valuations of property within the Authority for fiscal year 1982-83, as determined by the County Assessor, was set at .817 cents per \$100 of assessed valuation for retirement of voter-approved bonded indebtedness.

The Metropolitan Water District generally announces water rates two years in advance. Since 1975, water rates have been increased yearly from \$67.00 an acre foot to \$140.00 an acre foot in fiscal year 1982-83 because of the higher cost of energy for pumping and an increase in the proportion of the bond service cost being financed through water sales. These rates are in accordance with the City of Los Angeles-MWD agreement which was the result of a lawsuit between these two parties.

The MWD rate for untreated water for municipal and industrial use was \$114.00 per acre foot for fiscal 1982-83 to which was added the Authority's surcharge of \$10.00 per acre foot. Treatment charges by MWD at the Skinner Treatment Plant were \$26.00 per af for the same period. Contracts between the Authority and some of its member agencies which have treatment plants provide for service by these plants. This treated water is then sold to agencies which do not have treatment facilities. The commodity charge for treatment of water as of July 1, 1982 was \$31.50 per af which remained in effect the entire fiscal year.

The following is a partial summary of past and future MWD rates to the Authority and Authority surcharge rates:

WATER SUPPLY AND CONSUMPTION

SUMMARY OF UNTREATED WATER RATES  
(Dollars Per Acre Foot)

From	To	MWD	Authority	Total	Agricultural Rebate	Resulting Agricultural Rate	Municipal and Industrial Interruptible Water Rate
7/01/58	1/01/61	15.00	2.00	17.00	3.00	14.00	-
1/01/61	1/01/62	17.00	2.00	19.00	4.25	14.75	-
1/01/62	1/01/63	19.00	2.00	21.00	5.50	15.50	-
1/01/63	1/01/64	21.00	2.00	23.00	6.75	16.25	-
1/01/64	7/01/64	24.00	2.00	26.00	9.00	17.00	-
7/01/64	9/01/64	25.00	2.00	27.00	9.75	17.25	-
9/01/64	7/01/65	25.00	1.25	26.25	9.75	16.50	-
7/01/65	7/01/66	28.00	1.25	29.25	12.00	17.25	-
7/01/66	7/01/67	31.00	1.25	32.25	14.00	18.25	-
7/01/67	7/01/68	34.00	1.25	35.25	16.00	19.25	-
7/01/68	7/01/69	37.00	1.25	38.25	18.00	20.25	-
7/01/69	7/01/70	40.00	1.25	41.25	20.00	21.25	-
7/01/70	7/01/71	44.00	1.25	45.25	23.00	22.25	-
7/01/71	7/01/72	48.00	1.25	49.25	26.00	23.25	-
7/01/72	8/13/73	52.00	1.25	53.25	28.50	24.75	-
8/13/73	7/01/75	56.00	1.25	57.25	31.00	26.25	-
7/01/75	7/01/76	58.00	1.25	59.25	33.00	26.25	-
7/01/76	7/01/77	62.00	2.00	64.00	33.00	31.00	-
7/01/77	7/01/78	67.00	2.00	69.00	34.00	35.00	-
7/01/78	1/01/79	74.00	2.50	76.50	34.00	42.50	-
1/01/79	7/01/79	79.00	3.00	82.00	34.00	48.00	-
7/01/79	7/01/80	79.00	5.00	84.00	34.00	50.00	-
7/01/80	7/01/81	90.00	9.00	99.00	39.00	60.00	-
7/01/81	7/01/82	96.00	9.00	105.00	35.00	70.00	70.00
7/01/82	7/01/83	114.00	10.00	124.00	35.00	89.00	89.00
7/01/83	12/31/83	144.00	10.00	154.00	44.00	110.00	110.00
1/01/84	7/01/84	197.00	10.00	207.00	44.00	163.00	163.00

NOTE: The above summary of water rates shows prices for untreated Colorado River and State Project water: \$13.00/af for the period 7/01/76 to 7/01/77; \$17.00/af for the period 7/01/77 to 7/01/78; \$21.00/af for the period 7/01/78 to 7/01/79; \$25.00/af for the period 7/01/79 to 7/01/82; \$26.00 for period 7/1/82 to 7/1/83; and \$28.00 for the period 7/1/83 to 7/1/84 must be added to the above rates for treated water deliveries to Authority from MWD.

As shown in the summary above, MWD now gives encouragement to better local control and management of water supplies through lower prices. To obtain the interruptible rebate, the Authority certifies the quantities of water in storage which qualify as interruptible water to MWD. Rebates are shared with member agencies in proportion to the interruptible water they have in storage.

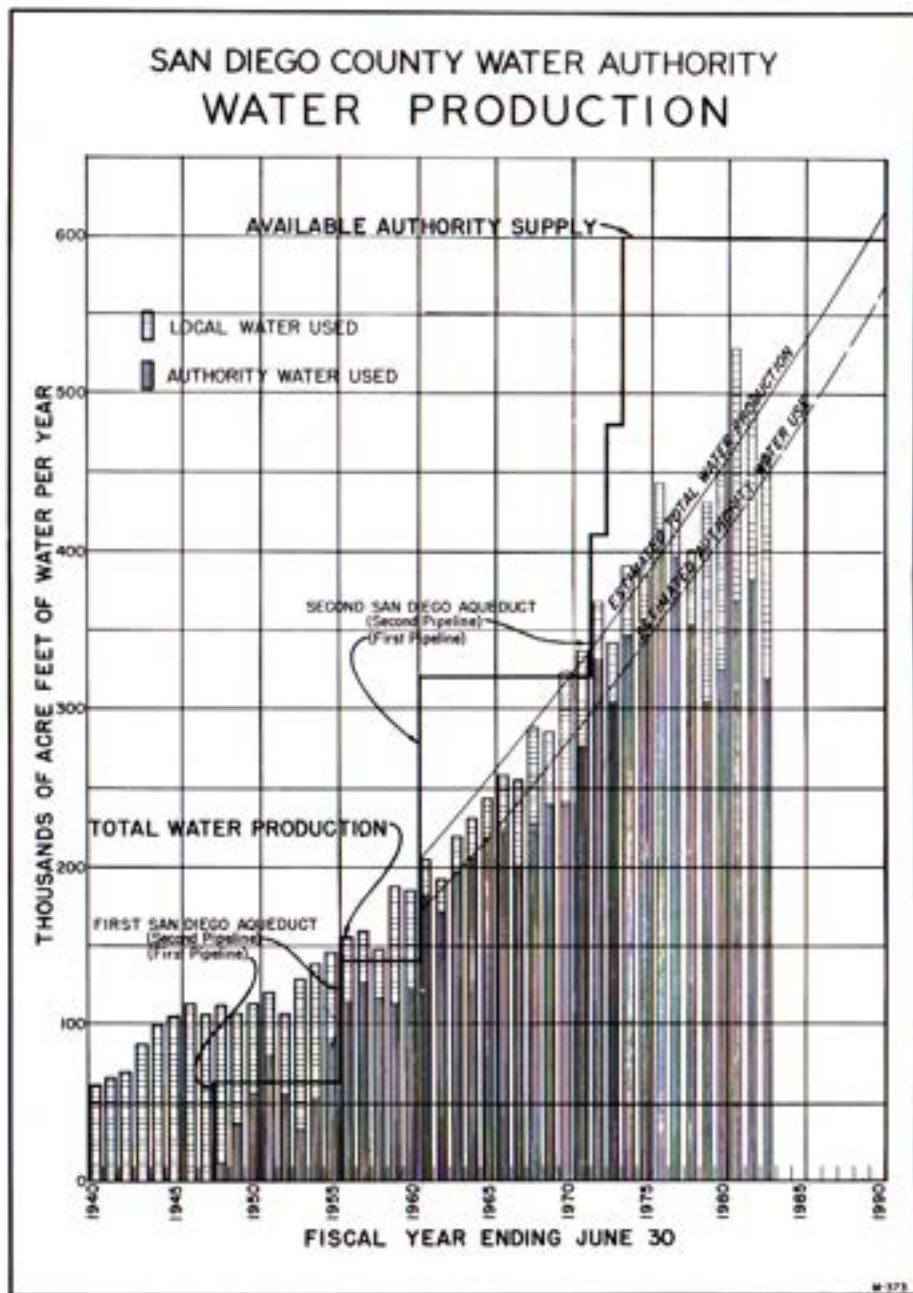


Figure B. Water Production of Authority Member Agencies

**Water Production of Member Agencies**

The phrase "Water Production" describes the quantity of water an agency obtains from all sources to meet its consumers' needs. It includes losses between the source and the consumer. These losses may result from pipeline breaks, evaporation from reservoirs, and operating shortages. Sources include impounding reservoirs, wells, and the Authority system.

Total water production for each of the 24 member agencies of the Authority is shown in Table 4. During 1981-82, the total water production was 499,387.0 af. The water production for the current year 1982-83 is 462,357.0 af which is a decrease of 37,030 af or 7.4 percent. The highest monthly production occurred during August 1982 when 63,009.9 af of water were used. This was lower than the previous high during July 1981 when 65,412.9 af were used. The lowest monthly production occurred during March 1983 when 21,119.9 af of water were used. The Authority supplied 79.2 percent of the water production during the month of July 1982 and 69.0 percent of the production for the fiscal year 1982-83.

Fiscal year 1982-83 produced 18.26 inches of rainfall at Lindbergh Field, 187 percent of normal; 74.63 inches at Lake Cuyamaca, 198 percent of normal; and 46.68 inches at Lake Henshaw, 191 percent of normal.

Local water runoff stored in local reservoirs increased from 387,930 af on June 30, 1982 to 526,113 af on June 30, 1983 which is an increase of 35.6 percent.

The City of San Diego maintains the most extensive system of impounding reservoirs in the Authority service area. This system produced 71,836 af of water during the fiscal year of which agencies outside of the Authority area received 3,723 af. Helix Water District produced 14,056 af from Lake Cuyamaca and its wells in the El Monte Basin. The Vista Irrigation District (part of Buena Colorado Municipal Water District) produced 11,965 af from Lake Henshaw and the Warner Ranch wells. The City of Escondido produced 12,075 af from the Henshaw-Wolford system, and 1,383 af were produced within Yuima Municipal Water District from the Pauma Valley wells. Sweetwater Authority produced 23,132 af for use in National City and South Bay Irrigation District.

Eleven of the 24 member agencies are 100 percent dependent on imported water. The thirteen remaining agencies vary from 98 percent (Valley Center Municipal Water District) to 0 percent (Pendleton Military Reservation) dependence on Authority water.

Water production per unit area is highest in the urbanized portions of the County. However, the per capita use of water is generally less in areas of greater population density such as Helix Water District, National City, and the City of San Diego. Water production per unit area in the less densely populated areas, such as Rainbow Municipal Water District, Valley Center Municipal Water District, and Olivenhain Municipal Water District, is approximately the same but per capita use is considerably higher.

Average daily per capita consumption of municipal and industrial water for fiscal year 1982-83 was 169 gallons which is down from 181 gallons per day during the previous year and down from 189 gallons per capita per day two years ago.

It is estimated that the Authority serves approximately 47% of the geographical area within its boundaries.

The combined water production of Authority member agencies is shown in Figure B. Shading indicates the proportion obtained from local sources compared with that supplied by the Authority. The trend toward increased dependence on imported water and changes in the quantity of local water used each year are shown graphically.

Present transmission facilities are adequate to meet water production demands until approximately 2000. Operational requirements for the delivery of treated, as well as untreated, water include Pipeline 5.

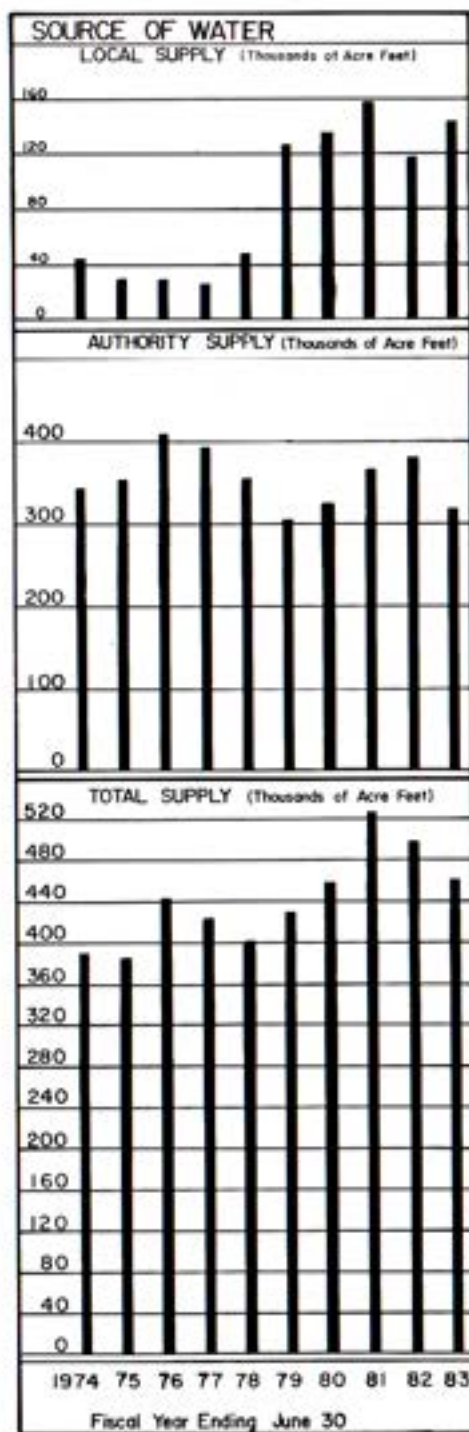
**Water Quality**

The general quality of water entering the Authority system continues to improve. Seasonal high algae still occurs which causes variable turbidity. Turbidity at Miramar Treatment Plant ranged from .9 Turbidity Units (TU) in June 1983 to a high of 35 units reported in February 1983.

Algae growth in Authority pipelines is controlled through a program of continuous chlorination. The rate of chlorine applied during the year was 1.00 parts per million (ppm) to flows in Pipelines 1, 2, and 3 at the Rainbow Chlorination Station. This program has effectively controlled the residual algae from the Colorado River Aqueduct.

During the fiscal year, all treated water delivered to the Authority was treated at the Robert A. Skinner Treatment Plant. This treatment includes chlorination as well as filtration.

The continuous chlorination of untreated water from Lake Skinner is performed by the Authority at the Rainbow Chlorination Station.



Chemical constituents of the dissolved solids in the Colorado River water are shown in Table 11. The analyses are based on samples taken from West Portal of San Jacinto Tunnel and tested by MWD. Total hardness ranged from a high of 331 milligrams per liter (mg/l) to a low of 321 mg/l. Water temperature varied from a high of 27°C (80.6°F) in July 1982 to a low of 12.0°C (53.6°F) reported in January and February 1983.

The chemical constituents of the dissolved solids of treated, blended water at Lake Skinner are shown in Table 12. Total hardness ranged from a high of 274 mg/l to a low of 160 mg/l. Water temperature ranged from a high of 25.8°C (78.4°F) recorded in August 1982 to a low of 11.3°C (52.3°F) in January 1983.

**Agricultural Water Use**

Agricultural water use by member agencies of the Authority during 1982-83 was 96,587 af which is 18,301 less than the previous year's use of 114,888 af. The percentage of agricultural water to the total water production was 21 percent. This is a decrease from 23 percent in 1981-82.

The difference between the percent of water used from the Water Authority for agricultural purposes (89.9 percent) and the total amount of water produced (69.0 percent) occurs because agencies with a high percentage of agricultural water have little or no local water production.

For example, Valley Center Municipal Water District uses approximately 99 percent of its water for agricultural purposes but its local production is less than 1 percent. While on the other hand, the City of San Diego uses less than 1 percent of its water for agricultural purposes but its local production approximates 40 percent of its total water needs.

A complete summary of agricultural water use is contained in Table 4.

**Water Treatment**

The Robert A. Skinner Treatment Plant began operations in September 1976. Initial capacity of the facility was 150 million gallons per day (mgd). A 90 mgd expansion of the plant was completed and in operation by May 1979. This expansion, together with the current 100 mgd Skinner No. 2 Plant construction, will provide sufficient treated water to satisfy the demand of 11 agencies within the Water Authority requiring treated water for several years.

Member agencies of the Authority that own and operate treatment plants within the County are: the City of San Diego, the City of Escondido (joint ownership with Vista Irrigation District), San Dieguito Water District-Santa Fe Irrigation District (joint ownership), Helix Water District, City of Poway, and Sweetwater Authority (operating agency for South Bay Irrigation District and National City). The cost of all treated water delivered by the Authority to its member agencies is the same regardless of the treatment source.

Several agencies on the First Aqueduct still use Colorado River water with dual chlorination as the only treatment provided. The Authority provides the first chlorine application in its pipelines, and the agencies are responsible for the second chlorination after delivery. The completion of Skinner No. 2 Treatment Plant will provide treated, blended water in these pipelines.

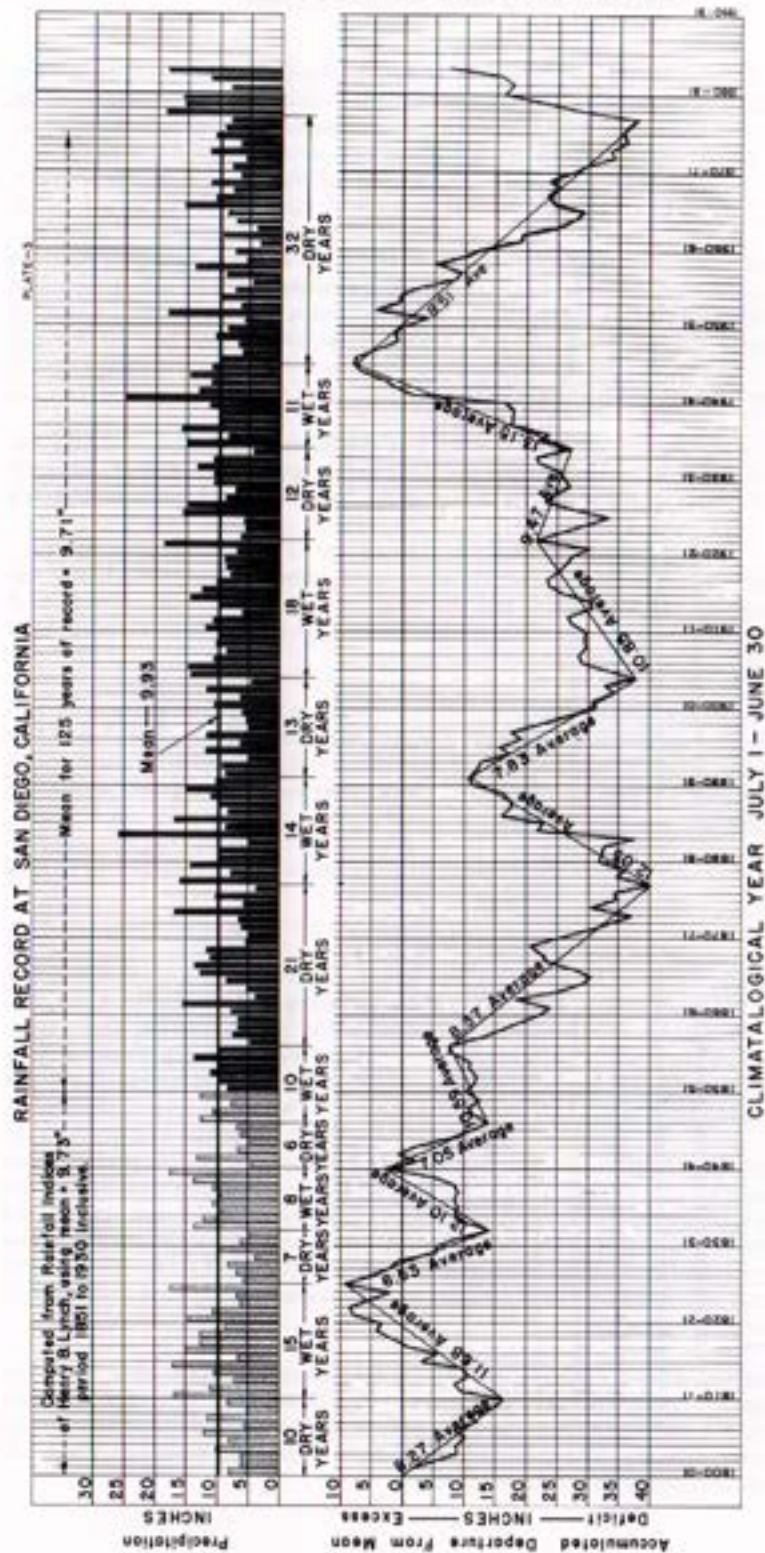


Figure C. Rainfall Record at San Diego, California

Allocation of Water to Member Agencies

The County Water Authority Act (Section 5.11) provides a preferential entitlement for the purchase of water by each of the Authority member agencies. This preferential right is established by the proportion of all payments by each agency to the Authority to meet capital costs, primarily the annexation fees, and taxes but does not include water purchases or any portion of the direct cost of water.

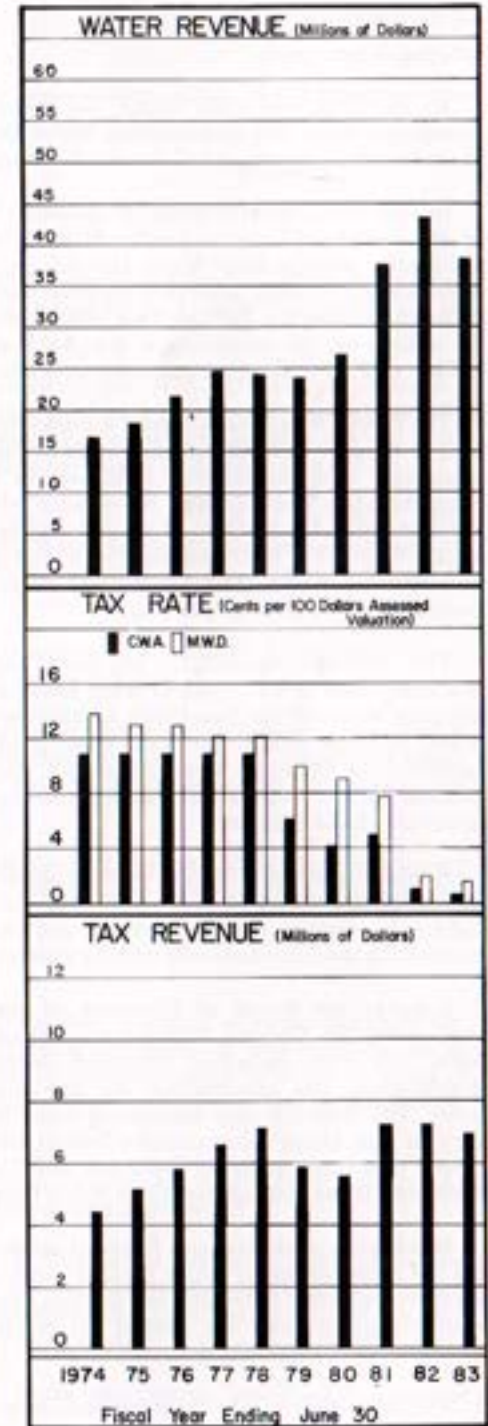
Voluntary agreement between the member agencies has made it unnecessary to invoke these provisions when shortages have developed. When water and capacity are available, agencies are permitted to purchase without restriction. In addition, the California Water Code (Section 350 through 358) contains procedures which may be followed should water shortages occur.

The Authority's Administrative Code (Section 12.4 and 12.5) contains provisions for normal and abnormal water allocations in situations not deemed to be so serious that either of the above-mentioned provisions need be invoked.

Future Supplies

It is the responsibility and the policy of the Authority to provide all the supplemental water required by its member agencies to meet the needs of their consumers. It is recognized that this policy must be tempered by an obligation to encourage prudent conservation practices. It is also recognized that there are certain acts of nature against which there is no defense available within reasonable economic bounds.

Growth rates within the Authority's service area have indicated a continued population increase for the foreseeable future. The long lead time required for



development of new water resources demands that constant attention be given to meeting future needs.

As has been previously noted, the Water Authority obtains all of the water it distributes from The Metropolitan Water District of Southern California which has two sources of supply: the Colorado River and the State Water Project.

In June 1982, voters rejected Proposition 9 thereby eliminating early construction of the Peripheral Canal and other features of the State Water Project. The State of California, Metropolitan Water District, and the Water Authority are working on alternatives to assure adequate supplies until cross Delta facilities are constructed. Population forecasts indicate that MWD's population will increase from the present 12 million to 16 million, and the Authority's population will increase from 1.8 million to 2.71 million persons sometime after the year 2000.

The MWD Board has adopted a policy to provide additional water and/or facilities, as needed, to meet demands of its member agencies. To fulfill that policy, MWD contracted with the State of California in 1960 for 1.5 million acre feet annually from the State Water Project. When faced with a loss of over half its annual Colorado River supply of 1,212,000 af because of the U.S. Supreme Court's decision in *Arizona v. California*, MWD amended its contract with the State to provide an additional 500,000 af per year. Annexations and other changes have increased that MWD-State contract to 2,011,500 af per year.

The California Aqueduct, a key water supply feature of the State Water Project, was completed in 1973. MWD takes delivery of State Project water at several points. Supplies destined for San Diego County are delivered to MWD at Lake Perris, terminus of the 444-mile aqueduct. Water then flows through Lakeview Pipeline which parallels the Colorado River Aqueduct. Northern California water is mixed with Colorado River water at the existing turnout for the San Diego Canal. It then flows south into Lake Skinner.

Additional water resources must be developed during the 1980's as a result of the failure of the voters to approve Proposition 9. The Authority, MWD, the State of California, various federal agencies, and many private organizations are presently conducting investigations of probable alternate water sources.

Locally, the Board of Directors of the San Diego County Water Authority authorized the General Manager to prepare a comprehensive study of alternative water resources including improved water conservation practices, reclamation, desalination, new construction for impounding runoff, and groundwater development. The Board is also supporting local projects of member agencies such as the City of San Diego's Aquaculture Project and the Santa Margarita Project which includes two dams to serve Fallbrook and Camp Pendleton. In addition, the Water Authority is the lead agency in the Pamo Dam and Reservoir Project.

In addition, technical and financial support is provided to other agencies addressing the issues on water which include the County of San Diego in the preparation of a report on water independence for San Diego, the San Diego Region Water Reclamation Agency, and the United States Geological Survey studying groundwater basins in San Diego County.

The potentials of the undeveloped rivers of Northern California, the Columbia River, rivers in Canada and Alaska, waste water reclamation, weather modification,

geothermal water development, seawater conversion, and other possibilities are being given careful consideration.

Figure B shows the increase in water requirements within the Authority since 1940.

## PUBLIC INFORMATION

Heretofore, an adequate supply of water available at affordable prices has allayed concerns of water users about the origin of water and those responsible for its availability.

The advent of water shortages precipitated by the 1976-1977 drought, escalating water prices, and the contradictory testimony refuting these conditions have greatly rekindled San Diegans' interest in the issues. They want to know what the real problems are, who is responsible, and what efforts have been made to mitigate them.

San Diegans have experienced water shortages as far back as the 1800's. The Board of Directors of the San Diego County Water Authority has been wrestling with the problem and the ensuing community unrest since its organization on June 9, 1944.

In anticipation of similar community reaction as a result of future water shortages, the Board conceived a water awareness plan in 1975.

The General Manager and Chief Engineer was authorized to formulate the plan. A public information department was established to carry out the objectives which were to create an awareness of the water resource available and to maximize its use particularly during periods of short supply.

Achieving this effort is complicated by the fact that the Water Authority rarely has contact with retail water consumers. Recognizing this limitation, the plan was designed to reach a diverse community.

### Community Relations

**School Program** - The program is offered free of charge to elementary and secondary schools, colleges, universities, and adult education. It combines the use of structured study units. The subject matter is variable enough to relate to fields of study such as government, history, geography, the environment, biology, chemistry, physics, mathematics, and economics.

The program is managed by two full-time Educational Resource Specialists who make presentations to approximately 20,000 students annually.

**Display Program** - Water information is disseminated at home and trade shows. The displays are also made available to military commands and community organizations for use in their water awareness programs. Brochures, pamphlets, and conservation kits are also made available through this program.

**Newspaper Water Report** - Monthly water use reports are published in the weather section of "The San Diego Union."

Radio and Television – Several members of the Board of Directors and staff personnel have participated in talk shows and special interest programs.

Newsletter – “Inside Water – The Chairman’s Report” is published as needed several times a year. It is widely circulated to community leaders and interested persons.

Speakers Bureau – Presentations were made to over 4,000 members of business, professional, community, and student organizations.

Low-Water Use Gardens – The Low Water Use Demonstration Garden which is located at the Southern California Exposition grounds in Del Mar was expanded to double its exhibit capacity this year. Lectures, demonstrations, and a variety of shows increased attendance during the 1983 Del Mar Fair.

Additional Low-Water Use Demonstration Gardens are maintained by Costa Real Municipal Water District, Helix Water District, and Vista Irrigation District. Gardens by the County of San Diego, the City of San Diego, and Sweetwater Authority are in the planning stages. Other areas for future gardens are under consideration as well.

Water Conservation Awards – Recipients of the Water Conservation Awards tripled in 1983. The ceremony to recognize deserving individuals, businesses, and organizations is held on opening day of the Del Mar Fair each year.

This year’s awards were presented to: McDonald’s Restaurant, Del Mar; City of El Cajon; Hughes Aircraft; Carlsbad Unified School District; Girl Scouts, San Diego-Imperial Council; Jamul-Las Flores Union School District; La Jolla Village Homeowners Association; Mr. and Mrs. W. T. McBreen, Chula Vista; Mrs. Joan E. Fleer, San Diego; and the Marine Corp Base, Camp Pendleton.

Presenting the awards for 1983 were: Senator Jim Ellis; Assemblywoman Sunny Mojonnier, Water Authority Vice Chairman Nat Eggert; Water Authority Secretary Francesca Krauel; SANDAG Chairwoman Harriet Stockwell; and legislative representatives for Congressman Bill Lowery, Jim Bates, and Assemblyman Steve Peace.

Media Program – Assisted by the Phillips-Ramsey Public Relations Agency, the Water Authority continued its radio, television, and transit advertising activities. The media program received several advertising awards including a sweepstakes and first place prize from the American Advertising Federation.

Restaurant Program – Several restaurants have requested additional supplies of the restaurant table tent cards on water conservation. To date, over 40,000 cards have been distributed.

Stadium Scoreboard – The “Did You Know” program continued this fiscal year. The Water Authority was provided advertising space on a rotational basis.

Water Conservation Kits – The joint program with the Girl and Boy Scouts to distribute 150,000 water conservation kits was launched at a press conference attended by Senator Jim Ellis; Supervisor Leon Williams; City of San Diego Council members Susan Golding, Dick Murphy, and Ed Struiksma; and representatives for Senator Hayakawa and Assemblyman Frazee. The Metropolitan Water District was represented by Vice Chairman Harry Griffen; Robert Y. D. Chun represented the

California Department of Water Resources; and the Water Authority was represented by Chairman Roy Lessard and several members of the Board.

The Boy Scouts were represented by Ron Brundage, Scout Executive. Barbara Wiggins, First Vice President and Arnie Marcus, Director of Program Development represented the Girl Scouts.

#### Government Relations

SANDAG – the Water Authority co-sponsored the Regional Water Resources Conference. Local, state, and federal water industry speakers presented an update on water matters and policies.

San Diego Delegation – The San Diego County Water Authority hosted an orientation seminar for the San Diego County legislators and state water leaders in Sacramento.

Sierra Club – A Greenhouse Effect Seminar was co-sponsored in Balboa Park during the fiscal year. Director Charles Cooper, Professor of Biology, and other climatology experts spoke on the effects of CO build-up theory.

Water Independence Report – The County Board of Supervisors appointed a committee to evaluate potential alternative sources of water for San Diego. Water Authority staff and Director Lawrence Hirsch participated as members of the committee.

Energy – The Water Authority provided 35,000 copies of its publication entitled “25 things you can do to save water” to the San Diego Gas & Electric Utilities Committee for inclusion in its water and energy conservation kit.

Water Softeners – The water softener industry, the City of San Diego, and the Water Authority developed a water conservation brochure on the proper use of water softeners to reduce water consumption. The City mailed out the brochure with its monthly water bills.

The San Diego County Water Authority’s water awareness and conservation programs continue to be supported by the news media.

The combined activities of community organizations and the Water Authority have made it possible to carry the water awareness story to a major portion of San Diego residents during the past fiscal year.

## OPERATION AND MAINTENANCE

### General

Operation and maintenance of the Water Authority’s Aqueduct facilities and equipment is directed by the Superintendent from the Fred A. Heilbron Operation Center, 610 West Fifth Avenue, Escondido, CA. The Authority’s operation and maintenance force of 23 persons operates the Aqueduct system and normally performs all maintenance and repair of the Aqueducts as well as construction and modification of metering and control buildings and facilities.

Four Systems Operators and two Systems Technicians all serve as system operators and also maintain all meters, telemeters, recorders, process control, and water disinfection equipment. They also are responsible for electrical and control wiring. The maintenance force includes a General Foreman, warehouseman, two shop mechanics, a three man construction crew and nine maintenance men.

The Fred A. Heilbron Operation Center occupies one city block with four major buildings. The main building contains the Aqueduct Operation room with the Aqueduct telemetric controls, offices for operation, maintenance, construction and field engineering; and a multipurpose room equipped for public tours, employee meetings and as a training facility. A shop building has facilities for repair and servicing of all Authority vehicles and heavy equipment, plus a small machine shop, meter shop and equipment maintenance office. Materials, supplies, and tools are stored in the warehouse which also contains the valve repair and carpentry shops and provides security and sheltered parking for certain vulnerable equipment. An on site residence gives added security, evening checks of the offices, buildings and grounds, nighttime assistance to the Aqueduct system operators, reduction of response time by having equipment ready for the emergency crews and off hour radio monitoring.

A two-way radio system uses two different radio relay sites on Palomar Mountain and an individual touch tone call system. This radio network connects the Authority base stations at the Operation Center and the Authority San Diego office with Metropolitan Water District's Robert A. Skinner Treatment Plant in Riverside County, 25 Authority mobile radios and with 95% of all major San Diego County water purveyors. Other radio frequencies allow any radio unit to be contacted directly if either or both relay stations fail.

A standby emergency generator supplies emergency power for the Fred A. Heilbron Operation Center's Aqueduct Control System, radios, offices and shops.

### Operations

The Operations Center is staffed from 7:30 AM to 4:00 PM everyday, including weekends and holidays. Phone calls outside regular office hours are transferred to the home of the duty systems operator. The duty operator will be alerted by a pager if any phone calls are missed. The duty operator's vehicle is equipped with an inter-agency radio. The Superintendent, Senior Systems Operator and Senior Systems Technician also have mobile units available with interagency radios for emergencies, quick response and in the field coordination with other agencies.

Water for the San Diego County Water Authority system is delivered from MWD through two Aqueducts comprising five pipelines. The flow into the San Diego Aqueduct is controlled at MWD's Robert A. Skinner Treatment Plant operation center. Authority system operators are in contact several times each day by radio or telephone with the MWD operation center.

Four of the five pipelines presently serving the Water Authority carry untreated water. The San Diego treated water pipeline from MWD's Robert A. Skinner Treatment plant also serves Rancho California and Santa Rosa Ranchos which are part of the Eastern Municipal and Western Municipal Water Districts in Riverside County. Sharing of the Aqueduct with these independent agencies requires close cooperation and coordination especially during periods when the high water demand approaches the treatment plant or pipeline capacity.

In addition to the full treatment received by water in one pipeline, three of the other pipelines receive continuous injection of chlorine from the Authority's Rainbow chlorine station. This chlorine is used for control of algae and asiatic clams in the pipelines and also provides the first of a required dual chlorination for First Aqueduct agencies delivering Colorado River water to consumers. Water in the treated water line is chlorinated by MWD at the Robert A. Skinner Treatment Plant and boosted with chlorine injected as the pipeline passes the City of San Diego's Miramar Treatment plant.

The Aqueduct water turbidity and chlorine residual is continuously monitored and recorded. Results of daily monitoring of Aqueduct water performed at member agency's treatment plants is also collected for a more complete water quality record. The Water Authority serves as agent of the north county First Aqueduct water districts by measuring turbidity to meet California Safe Drinking Water Act daily monitoring requirements.

Weekly flow charts and meter readings are compared for indications of inaccuracies. The calibration of each active meter is checked at least every three months. Meter accuracy is also checked at any time requested by a member agency. The difference between water received through Metropolitan Water District of Southern California's meter and the water delivered through Authority meters during the year was .07%.

Flow changes from MWD in both the treated and raw water Aqueducts is controlled locally and remotely at MWD's Robert A. Skinner treatment plant. Because the plant's operation room is manned 24 hours each day, flow changes can be made at any time if necessary, but normally are made at two designated times each day for the convenience of the treatment plant's operation.

The Aqueduct system in San Diego County has no built-in operational storage so flow changes must be carefully coordinated to keep the system in balance to maintain the proper flow to the service connections at or near the end of the pipeline.

During the year a new Water Authority designed Water Allocation Management computerized control system makes water flow changes by moving valves throughout the County at proper times and in the proper sequence to keep the Aqueduct flows in balance. It constantly monitors service connection flows as well as critical Aqueduct flows and makes necessary adjustment. Flows, pressure and other pertinent service connection data can be displayed on any of the three CRT terminals or printed out in several different formats for comparison, study or historical record.

Micro computer controls are being placed at critical locations in the field, which will respond to commands from the central computer to provide even quicker response and continued control even if the central computer or phone lines should fail. These computers also monitor and control pressure, valve position and provide security entry alarms. They can sense when Aqueduct flow is lost and close valves so that water would not drain back from distribution systems into the Aqueduct.

The computerized Aqueduct control system was built in San Diego by Systems Integrated and underwent several months of on line testing before being delivered to the Water Authority Operation Center on March 12, 1983. Within a month after installation all of the old telemeter panel had been removed. Five days of training

were held for system operators, system technicians, engineers and supervisory personnel to learn the capabilities and use of the system. During the month of June, 1983, a 30 day availability test was made of the new control system under normal everyday conditions and being operated by Authority personnel. The total system proved to be available approximately 99% of the time, much better than the 96% required by the specifications. With the control system in full operation, some debugging of minor problems continued.

The Authority participated in a county wide simulated earthquake emergency operation and repair drill and other Office of Disaster Preparedness activities.

Metropolitan Water District made a flow test on the San Diego Canal reaching a high flow of 1,030 cfs with 600 cfs State Project water.

A capacity test was run on Rainbow No. 7 while feeding the Rainbow Water District's Beck Reservoir. The high flow was 34 cfs.

On January 31st the new Robert A. Weese Water Treatment Plant came on line and began treating raw water from the Second Aqueduct for delivery to the City of Oceanside.

Starting in March, in order to help alleviate over full local reservoirs, treated local water was injected into the Aqueduct system by the Buena Colorado Water District and the City of San Diego with a maximum flow of 21 cubic feet per second.

By the end of March every major reservoir in the County, except El Capitan, was spilling.

Early in the morning, September 18th, the city of San Diego's Pomerado line ruptured approximately 600 feet west of the Aqueduct. The flow through the San Diego #11 service meter went from 30 cfs to 85 cfs drying up the southern end of the Aqueduct system.

Chlorine injection at the Rainbow station was reduced from 1.0 ppm to 0.75 ppm to reduce the possible formation of THM's in the Aqueducts.

The chlorination of the third pipeline was shut down when a leak developed in the chlorine solution manifold. Because of the location of the leak, it was possible to split the manifold by closing a valve and continue disinfecting the first Aqueduct. Since all of the third pipeline water eventually goes through a water treatment plant, there was no hazard posed by this failure while waiting for a replacement part.

#### Maintenance

The Authority maintenance yard is located at the Fred A. Heilbron Operation Center in Escondido. All maintenance and force account construction is based at this yard. For distant major projects, a field office may be established in an Authority office trailer or a large combination service trailer which also includes work benches and a locked storeroom. The Operation Center maintenance yard is located near the center of the Aqueduct system with some Aqueduct facilities being about 60 highway miles away.

Maintenance activities include servicing, repair and maintenance of Authority buildings, pipelines, roads and equipment. The facilities and equipment maintained

include the Fred A. Heilbron Operation Center buildings, shops and yard, about 210 miles of major pipelines, 130 miles of rights-of-way, about 109 miles of Authority roads, 66 buildings housing meters and control equipment, an 8000 pound per day chlorine station, a pump station with four pumps with motors up to 1,000 horsepower capable of pumping about 180 cubic feet per second and over 900 underground valve structures. All vehicles, trucks, light and heavy equipment, valves, meters, telemeters and control equipment are serviced and repaired in Authority shops or by specially equipped service trucks.

Maintenance equipment includes two motor graders, a bulldozer, two skidloaders, backhoe, 5 and 25 ton cranes, two forklifts, as well as dump trucks, truck tractors and equipment trailers, compressors, generators and pumps including an 8" dewatering pump and welders. All pickups have mobile radios and most other trucks are equipped so that a radio can quickly be slipped in as needed for efficiency and quick response.

During the year a new backhoe was purchased to replace the older backhoe, which was used as trade-in.

To take advantage of the longer daylight hours and reduce travel time, the maintenance crew is on a ten hour, four day a week work schedule for about 8 months of the year. The vehicle shop is open up to two hours after the crews leave to allow for minor repairs and servicing.

During the last year, 8 out of 66 control buildings were painted, other control stations and valve vaults had touchup or piping painted.

Much of the maintenance time is spent maintaining, moving or rebuilding the 109 miles of access roads and the associated gates and culverts.

The pipeline and patrol roads are normally checked at least once each week and twice each year the pipelines are checked by foot patrol.

Vandalism was normally confined to damage to doors, gates, locks and parked construction equipment. The operations office had a series of unlawful entries including a forced entry. A typewriter, adding machine and petty cash were taken during these incidences. The building locks were changed with limited distribution of the new keys and intruder detection equipment installed. Anti-vandalism lock guard devices were installed on most control stations south of Escondido.

In January the last pump at the Miramar pumping station was tested at a low flow and is now ready for service.

The equipment and piping at the chlorination station was disassembled, cleaned, inspected and serviced. The two evaporator cylinders were sandblasted and hydro-tested at 1,000 psi, then ceramic coated and sealed with epoxy.

Winter rains exposed about 100 feet of First Aqueduct pipeline north of Oathill Tunnel, 20 feet of Pipeline 3 at Lusardi Creek and 30 feet of Pipeline 4 on the steep south slope of Mission Gorge.

A minor leak developed at the Old Dairy Road leaksite of May 27, 1982. The previous repair patch expanded inside the existing pipe and split the weld. A 6" x 72" patch was placed over two repair insert welds for reinforcement and the inside of the pipe was regouted.

**Force Construction**

Valley Center No. 1-B service connection was completed and first placed in operation in August, 1982.

About 1 mile of underground power and telephone conduit and cable were installed to the San Diego #11 service connection. Underground cables were also installed to the Costa Real #3 service connection.

Power and lights were installed in the new Pipeline 5 terminus and pressure control structure. This will also allow remote operation of the valves.

Construction was started in October, 1982 on the Valley Center #7 takeoff and service on the fourth pipeline in Gopher Canyon. Excessive groundwater forced moving of the control station about 75 feet to the north. By the end of the year construction was complete except for painting and setting of the meter and flow control equipment.

Forces from two other water districts were contracted to perform relocations of two Authority branch lines. The Fallbrook Public Utility District relocated the 16-inch Fallbrook-Oceanside pipeline for the future I-15 freeway crossing. Several hundred feet of the removed pipe was stored for future use as replacement pipe in sections of this pipeline which are severely damaged by corrosion. At the State Highway 94 crossing, the Otay Water District lowered the 24-inch La Mesa-Sweetwater pipeline for new highway construction. Sections from this pipeline were also saved for future use or repairs.

For the second year, Authority forces were involved in the rehabilitation of Pipeline 3 in the Spring Valley area. This year a private contractor, General Welding and Mechanical Construction Corporation, assisted in the placing of the liners. Spiniello Construction Company grouted and mortar lined the steel cylinders.

Prior to the continuation of the pipeline rehabilitation, a second liner transporter, a surface trailer for transporting liners to the pipeline entry point and a second access work platform and shoring unit were fabricated. This additional equipment allowed two liner cylinder installation operations to progress simultaneously. About 4,600 feet of liners were placed through four access points where pipe sections had been removed.

**Shutdowns**

Pipeline 4 was shut down by Metropolitan Water District for three days beginning October 18, to allow their contractor to set valves. This was originally scheduled for five days but the MWD contractor was able to complete his work more rapidly than anticipated working around the clock because of the continuing warm weather. During this shutdown the pump station provided treated water from Miramar treatment plant to the south county agencies. The City of Oceanside, with permission from the Health Department, took approximately 8 cfs of untreated water from Pipeline 3. The City of San Diego backfed water from the City's distribution system through the San Diego #10 service connection into the Aqueduct to serve some agricultural customers to the north who relied on Aqueduct water.

There were two scheduled and one unscheduled shutdowns for the pipeline rehabilitation project. During a three week shutdown starting at the end of Novem-

ber, the pipeline was terminated at Mission Gorge. Liner cylinders were set in two reaches with all but 500 feet being mortar lined during this shutdown. The pipeline was refilled on December 23 and put back into service that night, but a few hours later a gasket in a coupling became unseated and released about 15 to 20 cfs for a period of approximately four hours. Some minor damage resulted at two residences. This leak and a small leak in a previous patch south of Sweetwater Lake were repaired and the Aqueduct placed back in service on December 27.

Another nearly three week rehabilitation shutdown began on February 7 and ended on February 26 as scheduled when all placing of liners, grouting and mortar lining at four reaches had been completed.

In January, Metropolitan Water District shut down Pipeline 3 to set a valve for a connection to Pipeline 5. During this one week shutdown the Robert B. Skinner Treatment Plant took Colorado River water from the end of the San Diego canal bypassing Lake Skinner.

Metropolitan Water District shut down the Colorado River Aqueduct in February. Since this aqueduct normally is the sole source for the First San Diego Aqueduct, these pipelines were shut down on February 26. The First Aqueduct was restarted on March 4. Because of the low water demand during this 8 day shut down, there appeared to be no major inconveniences.

The Fallbrook Public Utility District asked that the Fallbrook-Oceanside Pipeline, which is served from the First Aqueduct be left shut down for an additional three weeks to provide time to relocate the pipeline for Highway I-15 construction.

In April a backhoe accident punched a hole in the Fallbrook-Oceanside Pipeline. A new leak occurred elsewhere when the pipe was refilled.

The La Mesa-Sweetwater extension pipeline was shut down on June 13 for relocation for State Highway 94 construction.

**Miscellaneous**

The annual Board of Director's Engineering Committee tour included a description and demonstration of the new computerized Aqueduct control system, Rainbow #3 Service Connection and the under-construction Valley Center #7 Service Connection; the proposed Pamo Reservoir site and the City of Oceanside's new Robert A. Weese Water Treatment Plant. Because this year other people besides directors were invited, 55 persons were on this tour, making it the largest Engineering Committee tour. A tour bus was necessary in addition to two vans for transportation.

Several other tours of the Authority Operation Center were made by groups from local cities, service clubs and as part of tours to MWD's facilities on the Colorado River Aqueduct.

The Operation Center continues to be used for regional water technology training by the local water districts. One and two day seminars and evening classes were held with approximately 220 different students taking part in the various programs. Several waterworks committees regularly schedule their meetings to take advantage of the Operation Center facilities.

## DESIGN AND CONSTRUCTION

### Construction of Pipeline 5

The contract with Genstar/CONCO-BPA for the construction of Pipeline 5 to the Diversion Structure was 80 percent complete on July 1, 1982. About 11,000 feet of 96-inch pipe remained to be laid through the Pala Mesa area. The last section of pipe was laid on October 4, 1982. The hydrostatic test was completed on December 10 and followed by the replacement of irrigation systems, fences and the resurfacing of damaged roads.

The Notice of Completion was filed on December 28, 1982 and the final contract amount was \$26,779,279.16 of which \$5,492,106 was paid in this fiscal year.

### Pamo Dam and Pipeline

In November, 1982, James M. Montgomery, Consulting Engineers, Inc. was retained by the Authority and the Metropolitan Water District to independently determine the distribution of benefits and costs of the project. Although the final report will be presented in July, 1983, the interim recommendation is that Metropolitan Water District contract for 60,000 acre-feet of storage capacity for emergency and seasonal requirements.

In March, 1983, the Authority retained the firm of Mooney-Lettieri and Associates to prepare the Environmental Impact Report for the Pamo project. The first public hearing or scoping session was held in Ramona on May 24 to obtain the views of the public on the project. In June, Mooney-Lettieri had completed the field investigation at the dam and reservoir sites. By July 1, the pipeline route was established and ready for the environmental survey. The final environmental impact report should be ready for presentation to the Board in late 1983.

In April, 1983, a reviewing panel which included a representative from Metropolitan and another from the City of San Diego, selected Dames and Moore to make a thorough investigation of the seismic and geological conditions at the dam and reservoir site, to select the best dam site and the type of dam most suitable as to function and cost. By July 1, the two dam sites had been core drilled, potential impervious core and other material sources had been explored, and an extensive seismic analysis was well underway. The design report should be completed in March, 1984, and will have been coordinated with the State Division of Safety of Dams.

Reconnaissance photograph was flown over the Pamo Valley and the general location of the pipeline. The two dam sites were flown and mapped by the first of June so that this highly accurate topography would be available to Dames and Moore in their site investigation and dam design work. Triangulation of control points, test borings and pipeline points of intersection were located using an Authority-owned electronic distance measuring instrument.



Backfilling 96-inch prestressed pipeline with sand in extremely rocky area.



Pipe backfilled and finishing of the right-of-way in progress near Sumac Road.



Backfill operation in Wilt Road, Pala Mesa area.



View of north slope of San Luis Rey Valley after finish backfill.



View of benches on south slope of San Luis Rey Valley to minimize erosion.

Several meetings were held with the City of San Diego lease holders in San Pasqual Valley to familiarize them with the project.

**Design of Pipeline 4a**

Aerial topography was used in the preparation of the plan and profile for Pipeline 4a, a 6300 foot section of 72-inch pipeline that will extend from Highway I-15 near Mira Mesa Blvd. and bear south just west of Miramar Dam to the Authority's San Diego #5 turnout near Scripps Lake Drive. Construction of this project should be completed in 1984.

**Alvarado and Miramar Power Plant Design**

In December 1982 the Board authorized the General Manager and Chief Engineer to receive statements of qualifications from interested consulting engineers to design the power plants at Alvarado and Miramar, and in March the General Manager and Chief Engineer's recommendation to engage CH2M-Hill was approved.

The consultant has made the preliminary contacts and prepared specification for the conditions to be met by equipment manufacturers. Bids for equipment will be received on September 22, 1983 and let shortly thereafter.

Civil work for these power plants will be completed in early 1984 and the plants scheduled to be operable by March 1985.

**Pipeline 3 Rehabilitation**

The successful installation of a test reach of about 1,700 linear feet of cylinders resulted in the reach installed during the fiscal year 1982-83 being lengthened to include about 4,600 linear feet.

Several changes in the procedure resulted in a substantial saving for the section completed: (1) the Authority purchased a much larger volume of cylinders; (2) the grouting and lining operation was bid and contracted for; (3) the installation of about seventy percent of the total length was contracted on a linear foot basis. The resulting cost was approximately \$235 per linear foot compared to the test reach of \$285 per linear foot.

Plans and specifications for an additional 8,600 linear feet of rehabilitation were prepared and advertised for award on August 9, 1983. The Authority will only administer the contract and drain and refill the pipeline for the next two phases of this project.

**LEGAL DEPARTMENT**

Principal responsibility for legal advice and representation comes from the General Counsel. However, members of his firm provide assistance from time to time.

Mr. Wallace R. Peck generally assists in all areas and Mr. Ronald L. Endeman handles condemnation matters.

#### Routine Matters

New officers were elected (Lessard, Chairman; Eggert, Vice Chairman; and Krauel, Secretary); eight new directors (Andrews, Archibald, Fox, Klostermann, McGuire replaced by Tinker, Peterson, and Schachter) and two reappointed directors (Fitzsimmons, Griffen) were seated during 1982-83. Orientation for the new directors was provided by the legal department in cooperation with the General Manager.

Although there was one detachment (Meyer) and two annexations (Fairbanks County Club and Burdick), no significant changes occurred in the boundaries of the Authority.

No significant litigation directly involving the Authority occurred during the year.

#### MWD's Preferential Rights

Considerable discussion and controversy has ensued over the past 20 years and more (probably since shortly after the Authority annexed to MWD) about Section 135 of MWD's Act. It provides that member agencies have a "preferential right to purchase . . . a portion of the water served by the district which . . . bears the same ratio . . . as the total accumulation of amounts paid by such agency to the district on tax assessments and otherwise, *excepting purchase of water*, toward the capital cost and operating expense of the district's works and shall bear to the total (of such) payments received by the district . . ."

From time to time General Counsel has been requested to express his views about the legal efficacy of this provision. In connection with the comprehensive "Study of Potential Water Supply for San Diego County" (July 1983) prepared under supervision of the General Manager at direction from the Board in August 1982 (following defeat of Proposition 9), General Counsel expressed his views "that a court would declare (the provision) to be inapplicable." This conclusion was reached "because of the conflicts with other legislation, its inherent unfairness, and the constitutional ramifications . . ." (Chapter 8, pages 15-27, at 26; see, also, Chapter 6, pages 47-49.)

Since the language of the provision (Section 135) limits the right to purchase for "uses within the agency", it could not be used by a member agency to purchase and later re-sell to third parties. Therefore, it could only become operative in the event of a water shortage when MWD could not meet or fulfill the needs and requests of all its member agencies. Chapter 89 of the Study discusses these possibilities and concludes:

"In the event of a critical water shortage, a water allocation program would have to be implemented by the Metropolitan Water District. If the program followed existing State legislation for emergency water shortage, the San Diego County Water Authority would be treated equally along with other MWD member agencies.

"However, there is conflicting language in Metropolitan's Act which purports to give member agencies 'preferential rights' to purchase water. These are based on proportionate historic tax payments by members. This procedure is not expected to be followed because of contrary policy commitments, conflicting legislation and serious constitutional issues.

"Although conflicting views may arise about procedures to be followed in implementing an allocation program, it is believed that Metropolitan will establish fair, even-handed policies in allocating water to its member agencies which would be proportionate to their respective needs."

#### Political Overtones

As noted last year, after defeat of Proposition 9 new efforts are necessary to forge the consensus necessary to complete physical works to make it possible for the State Water Project to fulfill its contractual commitments. George Deukmejian, a supporter of necessary water development, was elected Governor in November 1982. He has moved slowly and in June appointed David Kennedy (formerly Assistant General Manager of MWD) as Director of Water Resources. It will undoubtedly take a year or more before an administration program, with legislative support, can be developed.

The San Diego County legislators (Senators Craven, Deddeh and Ellis; and Assemblymen Bradley, Chacon, Frazee, Killea, Mojonner, Peace and Stirling) have all stated their willingness to cooperate with and support legislative programs which will assure construction of the facilities necessary to import the water needed to meet the growing population within the Authority. The path to be chosen and the form in which it may emerge have not yet been defined or selected.

The old problem at MWD caused by the contention of the City of Los Angeles that it pays, through tax levies, too much of the total costs of MWD has surfaced in the Legislature. It is uncertain what the final scope of the legislation will be. However, at the present time MWD appears to be limited to levying a tax in excess of the levy for 1981-82. Since the tax levy is used to pay a significant portion of the increasing costs of the State Water Project, such limitation would arbitrarily increase water rates without any decision-making authority of the MWD Board. This intra-family quarrel will probably interfere with decisions about the future course for the State Water Project until it is solved.

All of these problems create uncertainties that will require patient perseverance, wisdom and leadership before solutions are developed and implemented.

## TREASURER'S REPORT

Henry G. Lozano, the San Diego County Water Authority Treasurer, is responsible for all funds not immediately required for the conduct of business. Funds are invested under Board policy in interest bearing bank time deposits, and in savings account.

The Administrative Code requires the Treasurer to report a summary of his financial transactions monthly and for each fiscal year-end. For fiscal 1982-83, the Statement of Earnings is as follows:

For the fiscal year ending June 30, 1983, total Water Authority income was \$47,347,241. Total disbursements during the year were \$38,834,110. At the fiscal year end, the Treasurer had control of funds and investments totaling \$17,132,260.

SAN DIEGO COUNTY WATER AUTHORITY

STATEMENT OF EARNINGS

Income was as follows:	1982	1983
Water sales	\$43,190,662	\$38,289,383
Taxes	7,231,207	6,852,252
Interest on investments	4,130,445	2,266,386
Tijuana water service	131	-
Miscellaneous	(331,502)	(60,780)
<b>Total income</b>	<b>\$54,220,943</b>	<b>\$47,347,241</b>
Disbursements were as follows:	1982	1983
Water purchases	\$39,162,343	\$35,627,652
Operation and maintenance	1,860,162	2,007,850
Interest expense	2,051,970	1,198,608
<b>Total disbursements</b>	<b>\$43,074,475</b>	<b>\$38,834,110</b>
<b>Net earnings before depreciation</b>	<b>\$11,146,468</b>	<b>\$ 8,513,131</b>

As of June 30, 1982, the Treasurer's cash accountability was as follows:

Demand deposits	\$ 25,565	\$ 34,260
Time deposits	24,895,000	17,098,000
<b>Total deposits</b>	<b>\$24,920,565</b>	<b>\$17,132,260</b>

METROPOLITAN WATER DISTRICT MEMBERSHIP

Due to the close relationship between the Metropolitan Water District of Southern California (MWD) and the San Diego County Water Authority, readers of this report are given the following brief description of MWD's organization and operations.

The Metropolitan Water District Act was approved by the State Legislature in 1927. Early the following year, MWD was organized. The original act provided for membership by cities. An amendment passed by the Legislature permitted annexation of water districts also, and MWD's membership now includes 13 original cities,

METROPOLITAN WATER DISTRICT MEMBERSHIP

one city added in 1971, 12 municipal water districts, and the San Diego County Water Authority.

The Authority joined MWD on December 17, 1946, the most recent of the 27 member agencies of that District. The two agencies have been working closely together since their association began.

The MWD Act and the County Water Authority Act are very similar. Under each act, policy is established by a board of directors which represents the member agencies. Each director is appointed by the chief executive officer of the agency he or she represents with approval from its legislative body. Under present MWD policy, each member agency is entitled to a minimum of one director. An additional representative may be appointed for each full three percent of the total MWD assessed valuation which lies within the member agency's boundaries. The district member agencies are listed in Figure D.

The Authority began and ended the fiscal year with five representatives on the Metropolitan Board of Directors. All were members of the Authority Board. Director Hans H. Doe has served on the MWD Board for 24 years and is a member of the Water Problems Committee, the Organization and Personnel Committee, and the Executive Committee.

Harry Griffen has served on the MWD Board for 20 years. He is a member of the Finance and Insurance Committees; Chairman of its Audit Subcommittee; a member of the Review Water Rates Committee, the Special Budget Committee, and Nominating Committee.

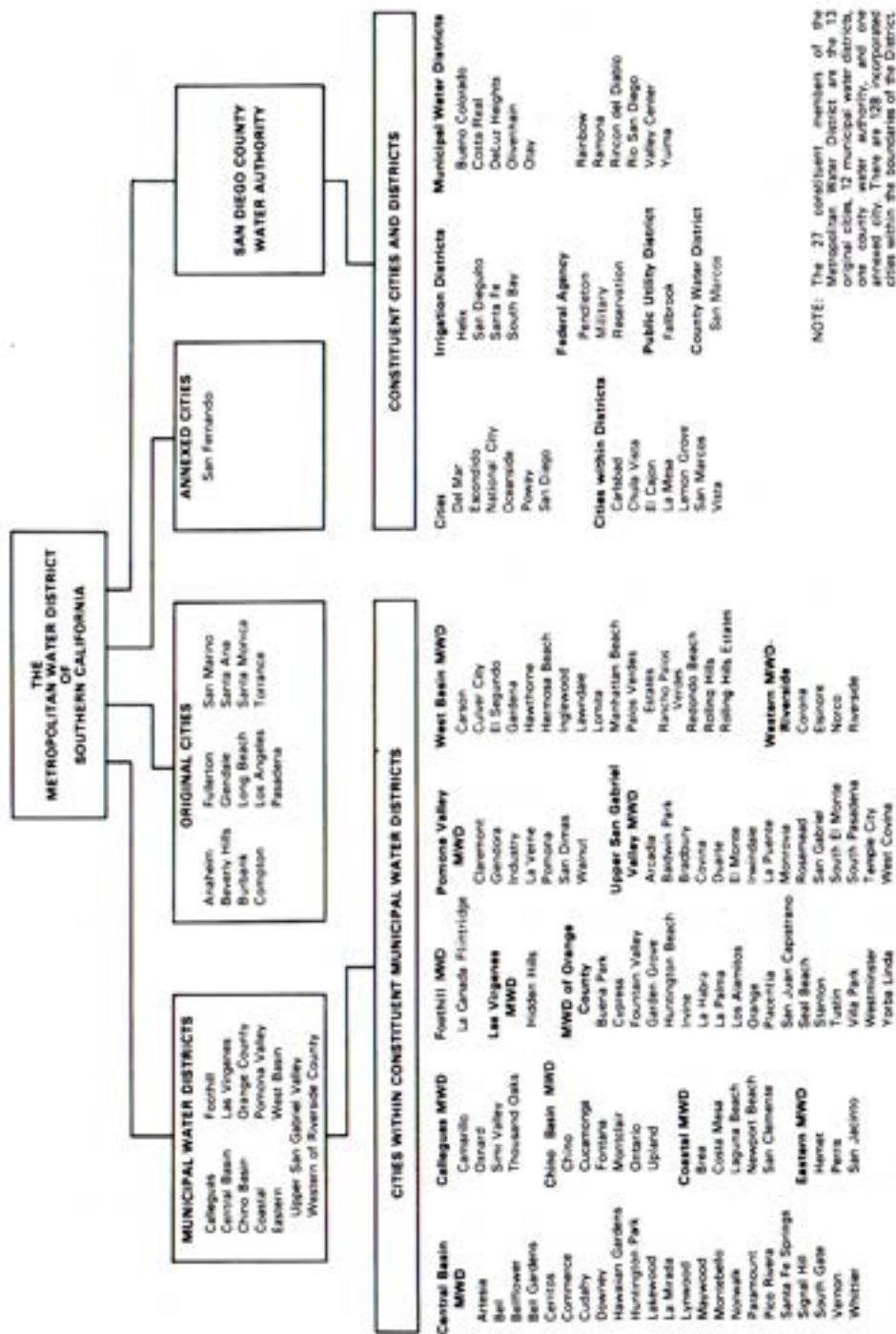
John M. Cranston, who has been an MWD Director for eight years, is Chairman of the Legal and Claims Committee; Vice Chairman of the Board of Directors; and a member of the Engineering and Operations Committee and the Executive Committee.

Michael D. Madigan was appointed to the Metropolitan Water District Board of Directors on July 8, 1982 to complete the unexpired term of Ralph E. Graham. The term expires December 31, 1982. Mr. Madigan serves on the Engineering and Operations Committee, Land Committee, Energy Committee, and the Special Committee on Public Information.

John Starkey has been a member of the Board for three years. He serves on the Finance and Insurance Committee and Land Committee.

As of June 30, 1983, the Authority representatives had a total of 5,067 votes out of 33,946 or 14.93 percent of the total voting strength of MWD. The delegation of each member agency is entitled to cast one vote for each \$10 million or major fraction thereof of assessed valuation within the agency's boundaries.

The Metropolitan Water District's aqueduct and distribution system and its service area are shown in Figure E. Also shown in the Authority's system (shown in greater detail in Figure A). Approximately 12 million people living within portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties are served by MWD. There are 128 incorporated cities and many large unincorporated communities and areas within the District. MWD's service area contains 3,276,800 acres (5,120 square miles) which is an increase of 3,463 acres during the fiscal year. Of this, 899,578 acres (1,405.6 square miles), or 27.4 percent, lie within the Authority's boundaries.



NOTE: The 27 constituent members of the Metropolitan Water District are the 13 original cities, 12 municipal water districts, one county water authority, and one annexed city. There are 138 incorporated cities within the boundaries of the District.

COMPOSITION OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

June 30, 1983

Figure D

Total assessed value of taxable property lying within the boundaries of Metropolitan Water District was \$353,335,259,307. Assessed value is determined by the assessors of the counties served for use in levying 1982-83 taxes. These valuations were increased \$38,608,401,425, or 12.3 percent, above the previous year's valuation of \$314,726,857,882. An amount of \$5,889,243,018 or 15.25 percent of this increase, occurred within the Authority's boundaries. Assessed valuation within the Authority is 15.50 percent of the MWD total.

**Water Sales**

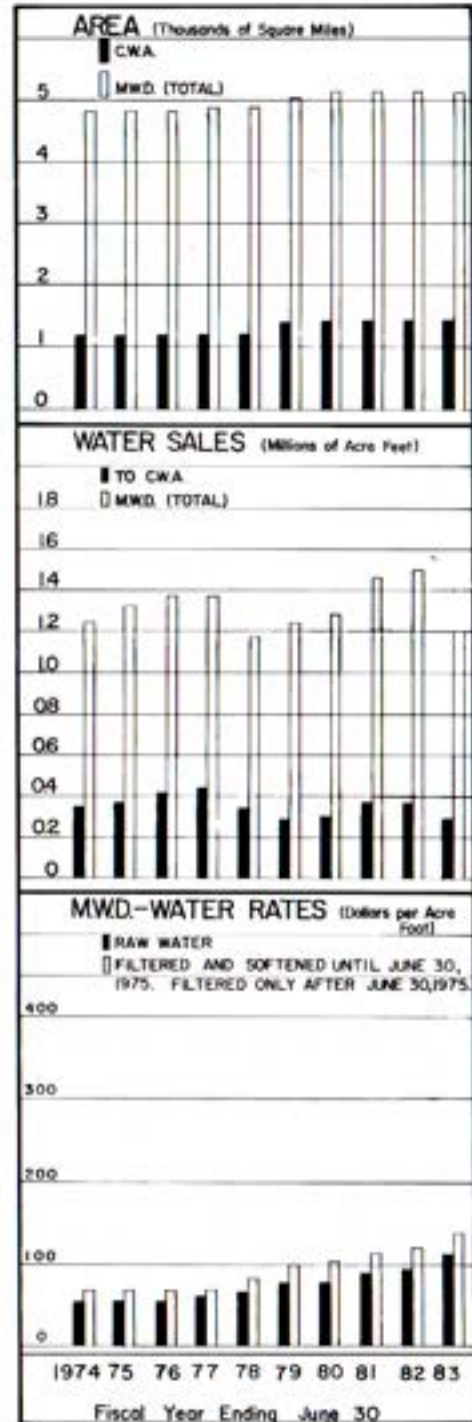
MWD delivered 1,226,700 acre feet of water during fiscal year 1982-83. Delivery to the Authority of 304,162 acre feet represented 24.8 percent of MWD's total deliveries.

MWD had four filtration plants in operation at the start of the fiscal year. The Skinner Filtration Plant serves a portion of the treated water requirements of the Authority. The capacity of the present plant is 240 mgd.

Three other plants, none of which can serve the Authority, are operated by MWD: F. E. Weymouth Memorial Filtration Plant at La Verne, Robert B. Diemer Filtration Plant at Yorba Linda, and Joseph Jensen Filtration Plant at Granada Hills. Each of these plants has a 400 mgd rated capacity. The Jensen Plant can be supplied water only from the West Branch of the California Aqueduct.

**Tax Rate**

During fiscal year 1982-83, MWD set its tax rate at 0.0166 percent of assessed valuation. When the Authority annexed to MWD in 1946, the tax rate was 50 cents per \$100 assessed valuation. The tax rate for each year from that time is shown in Table 13. The total MWD tax levy during the



## SAN DIEGO COUNTY WATER AUTHORITY

report year, including regular and special taxes, was approximately \$65,283,087 of which \$9,455,704, or 14.5 percent, was levied against property within the Authority.

### COLORADO RIVER AQUEDUCT SYSTEM AND AREAS SERVED BY METROPOLITAN WATER DISTRICT AND SAN DIEGO COUNTY WATER AUTHORITY

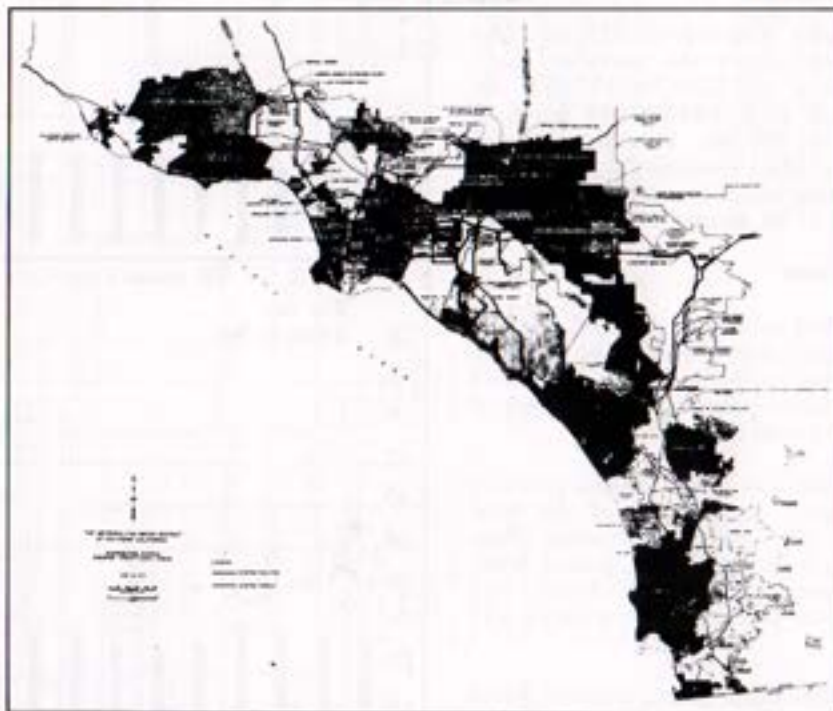


Figure E. Water Systems of Metropolitan Water District and San Diego County Water Authority.

## COLORADO RIVER BOARD MEMBERSHIP

The Colorado River Board of California is an agency of the State devoted to the protection of California rights to Colorado River water.

The Board members were originally selected by the Governor from a list of persons submitted by each of the six agencies that depend on Colorado River water. However, the Board was reorganized in April 1977 pursuant to legislation enacted in 1976. The revised act provides that the Governor shall appoint both a member and an alternate member to the Board from a list of at least three nominees designated by each of the six agencies.

Two State officers, the Director of the Department of Fish and Game and the Director of the Department of Water Resources, are ex officio members. In addition, the Governor may appoint three public members.

## COLORADO RIVER BOARD MEMBERSHIP

The six agencies are: San Diego County Water Authority, Metropolitan Water District, City of Los Angeles Department of Water and Power, Coachella Valley County Water District, Palo Verde Irrigation District, and Imperial Irrigation District. John M. Cranston represents the Authority on the Board.

Once fully financed by the State, the Board now receives only one-third of its support from that source. The six agencies provide the balance of the required financial support for the Board.

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SAN DIEGO COUNTY WATER AUTHORITY

Table 1  
STATISTICAL SUMMARY

	1981-82	1982-83	Percent Change
<b>GROWTH OF AREA</b>			
Number of Agencies	24	24	-0-
Total Area - Acres	898,758	899,578	+0.1
Population	1,889,365	1,934,587	+2.4
Assessed Valuation	46,889,681,868	52,778,924,896	+12.6
<b>OPERATIONS</b>			
Water Imported by Authority-ac. ft.	418,162	298,167	-28.7
Water Production of Agencies-ac. ft.	499,387	462,457	-7.4
Local Water Used-ac. ft.	117,550	143,474	+22.1
Authority Water Used-ac. ft.	381,837	318,983	-16.5
Miles of Pipe Line	210	221	+5.2
Miles of Patrol Roads Maintained	105	105	-0-
Number of Service Connections	74	75	+1.4
<b>FINANCIAL</b>			
<b>Revenues:</b>			
Water Revenue	43,190,662	38,289,383	-11.3
Other Revenue	3,798,943	2,205,606	-41.9
Taxes	7,231,207	6,852,252	-5.2
Tijuana Water Service	131	-	-
<b>Expenditures:</b>			
Operation and Maintenance	1,860,162	2,007,850	+7.9
Purchase of Water	39,162,343	35,627,652	-9.0
Payments on Outstanding Debt	2,395,525	2,489,575	+3.9
<b>Total Investment in Plant:</b>			
Total Fixed Assets	281,640,749	300,389,670	+6.7
Long-Term Debt	76,497,715	73,814,395	-4.5

TABLES

Table 2  
POPULATION GROWTH - COUNTY AND AUTHORITY AREA

1910 to 1983

(Includes Resident Military Personnel)

Year (as of April 1)	COUNTY		AUTHORITY		Percent of County Population in Authority
	Total Population (1)	Annual Growth	Total Population	Annual Growth	
1910 .....	61,665	5,058			
1920 .....	112,248	9,741			
1930 .....	209,659	7,969			
1940 .....	289,348				
1946 .....	(3) 502,804	26,746	(3) 440,659	2,807	88
1950 .....	556,808	42,478	(2) 451,886	50,083	81
1955 .....	(4) 769,200	52,762	(2) 702,300	50,820	91
1960 .....	1,033,010	32,198	(2) 956,400	38,720	93
1965 .....	(4) 1,194,000	23,360	(5) 1,150,000	21,000	96
1970 .....	(4) 1,310,800	49,850	(5) 1,255,000	54,500	96
1975 .....	(4) (6) 1,560,038	49,632	(5) 1,527,520	55,703	98
1980 .....	(7) 1,808,200	91,800	(5) 1,806,035	58,255	99
1981 .....	(7) 1,900,000	44,000	(5) 1,864,290	25,075	98
1982 .....	(7) *1,941,000	42,035	(5) 1,889,365	45,222	97
1983 .....	(7) 1,986,035		(5) 1,934,587		97

(1) County population from U.S. Census Bureau Reports.

(2) Authority population based on U.S. Census Bureau Reports.

(3) Based on Special Census, U.S. Census Bureau, exclusive of emergency military personnel due to World War II.

(4) Estimated by the San Diego Chamber of Commerce.

(5) Estimated by Authority member agencies.

(6) Population by Special Census.

(7) Population estimates by Integrated Planning Office, San Diego County.

\* Corrected estimate by Integrated Planning Office, San Diego County.

SAN DIEGO COUNTY WATER AUTHORITY

Table 3  
AREA - AUTHORITY MEMBER AGENCIES

Member Agencies	Area Within Authority			Percent of Total Authority Area 6/30/83
	As of 6/30/82 (acres)	Changes During Year (acres)	As of 6/30/83 (acres)	
Bueno Colorado M.W.D. (2)	19,864	-37	19,827	2.20
In City of Vista	(10,886)	(+123)	(11,009)	(1.22)
Costa Real M.W.D. (3)	20,369	-0-	20,369	2.26
In City of Carlsbad	(19,020)	(-0-)	(19,020)	(2.11)
Del Mar, City of	1,159	-0-	1,159	0.13
De Luz Heights M.W.D.	11,830	-0-	11,830	1.32
Escondido, City of (12)	14,637	+1,490	16,127	1.79
Fallbrook Public Utility District	16,104	+5	16,109	1.79
Helix Water District (4)	31,663	-0-	31,663	3.52
In City of El Cajon	(9,094)	(-0-)	(9,094)	(1.01)
In City of La Mesa	(5,760)	(-0-)	(5,760)	(0.64)
In City of Lemon Grove	(2,432)	(-0-)	(2,432)	(0.27)
National City (1)	5,479	-0-	5,479	0.61
Oceanside, City of	25,689	-0-	25,689	2.86
Olivenhain M.W.D. (5)	27,367	-255	27,112	3.01
Otay W.D. (6)	64,798	-15	64,783	7.20
Padre Dam M.W.D. (8)	54,082	+8	54,090	6.01
Pendleton Military Res	134,625	-0-	134,625	14.97
Poway, City of	22,809	-0-	22,809	2.54
Rainbow M.W.D. (10)	46,487	-0-	46,487	5.17
Ramona M.W.D.	46,939	-0-	46,939	5.22
Rincon del Diablo M.W.D. (7)	15,135	-1,351	13,784	1.53
San Diego, City of	204,945	+1,082	206,027	22.90
San Dieguito Water District	5,637	-0-	5,637	0.63
San Marcos C.W.D. (15)	28,606	-75	28,531	3.17
In City of San Marcos	(14,720)	(-780)	(13,940)	(1.55)
Santa Fe Irrigation District	10,155	-0-	10,155	1.13
South Bay Irrigation District (9)	15,505	-0-	15,505	1.72
In City of Chula Vista	(14,586)	(+1,292)	(15,878)	(1.77)
Valley Center M.W.D. (11)	62,061	-32	62,029	6.90
Yuima M.W.D.	12,813	-0-	12,813	1.42
Total Authority Area	898,758	+820	899,578	100.0
San Diego County	2,725,100			

- (1) Includes area annexed by an adjacent city member agency but still in district, being an overlapping area and considered here as being part of the city.
- (2) Does not include 2,902 acres overlapping in City of Oceanside, and 27 acres overlapping in City of Escondido.
- (3) Does not include 34 acres overlapping in City of Oceanside.
- (4) Does not include 3 acres overlapping in City of San Diego.
- (5) Does not include 260 acres overlapping in City of San Diego.
- (6) Does not include 741 acres overlapping in City of San Diego.
- (7) Does not include 12,229 acres overlapping in City of Escondido and 39 acres overlapping in City of San Diego.
- (8) Does not include 12 acres overlapping in City of San Diego.
- (9) Does not include 297 acres overlapping in City of San Diego and 673 acres overlapping in National City.
- (10) Does not include 701 acres overlapping in City of Oceanside.

TABLES

Table 3  
(continued)  
POPULATION - AUTHORITY MEMBER AGENCIES AND COUNTY  
(Includes Resident Military Personnel)

Population - U.S. Census			1983 Estimate (14)	Annual Increase 1970-83 Percent (15)	Density of Population 1983	
1970 (13)	1980 (13)	Decade Increase 1970-80 Percent			Per Acre	Per Sq Mile
39,000*	51,000	31	53,936	1.2	2.72	1,741
(24,600)	(35,800)	(46)	(40,800)	(8.1)	(3.71)	(2,372)
15,500	31,500	103	37,496	3.7	1.84	1,178
(14,850)	(35,000)	(136)	(39,037)	(7.9)	(2.05)	(1,314)
3,900	5,040	29	5,127	-0-	4.42	2,831
150	225	50	250	-0-	0.02	14
36,000	64,100	78	73,123	5.4	4.53	2,902
12,000	18,700	56	19,870	0.5	1.23	789
163,000	203,500	25	207,951	0.3	6.57	4,203
(50,900)	(72,100)	(42)	(78,673)	(3.7)	(8.65)	(5,537)
(38,800)	(45,900)	(18)	(50,308)	(-0.1)	(8.73)	(5,590)
---	(20,400)	(-)	(21,635)	(4.1)	(8.90)	(5,693)
39,000	47,200	21	48,500	0.2	8.85	5,665
40,700	77,800	91	84,071	4.0	3.27	2,094
2,000	23,000	1,050	25,600	3.2	0.94	604
19,400	51,600	166	56,000	2.8	0.86	553
46,000	89,000	93	98,722	2.9	1.83	1,168
---	33,150	---	34,000	-0-	0.25	162
14,000	**33,620	140	35,302	3.2	1.55	991
4,200	7,800	86	8,600	2.4	0.18	118
6,800	16,000	135	17,300	3.0	0.37	236
18,900	13,800	-27	15,500	2.6	1.12	720
675,800	849,600	26	925,000	3.1	4.49	2,873
21,800	30,900	42	31,050	0.2	5.51	3,525
---	24,200	---	28,100	0.7	0.98	630
(3,900)	(16,500)	(323)	(18,522)	(1.2)	(1.33)	(850)
8,600	14,700	71	15,519	1.5	1.53	978
80,000	99,200	24	100,900	0.2	6.51	4,165
(64,500)	(82,200)	(27)	(88,241)	(2.6)	(5.56)	(3,557)
7,000	**10,200	46	10,850	1.4	0.17	112
1,250	1,820	46	1,820	-0.3	0.14	91
1,255,000	**1,797,655	43	1,934,587	2.4	2.15	1,376
1,310,800	1,808,200	38	1,986,035	2.2	0.73	467

- (11) Does not include 93 acres overlapping in City of Escondido.
- (12) Includes 93 acres overlapping in Valley Center M.W.D., 14 acres overlapping San Marcos County W.D., 12 acres overlapping Bueno Colorado M.W.D., and 12,299 acres overlapping Rincon Del Diablo M.W.D.
- (13) Population in agencies other than cities was furnished by agencies.
- (14) Estimate by agencies.
- (15) Does not include 233 acres overlapping in City of Escondido.

\*Includes San Marcos CWD which became a member agency of Authority on February 25, 1980.

\*\*Corrected figures per agencies.

SAN DIEGO COUNTY WATER AUTHORITY

WATER PRODUCTION

(Compi

Member Agencies	SOURCE OF WATER (4)				Total Water Production Ac. Ft.	Gross Area (2) Acres	Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	LATE RESERVOIR OPERATIONS			Total Quantity in Storage 6/30/83 Ac. Ft.
	Local Supply		Authority Supply						STORED WATER WITHDRAWN DURING FISCAL YEAR			
	Amount Ac. Ft.	Percent	Amount Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.	
Bueno Colorado M.W.D.	11,965.1	81.3	2,754.5	18.7	14,719.6	19,827	16,163	81.5	-0-	-0-	-0-	-0-
Costa Real M.W.D.	-0-	-0-	11,878.7	100.0	11,878.7	20,369	17,540	86.1	-0-	76.6	779.8	1,608.5
Del Mar, City of	-0-	-0-	1,054.6	100.0	1,054.6	1,159	1,125	97.1	-0-	-0-	-0-	-0-
De Luz Heights M.W.D.	-0-	-0-	1,791.6	100.0	1,791.6	11,830	2,550	21.6	-0-	-0-	-0-	-0-
Escondido, City of	12,075.2	59.6	8,194.0	40.4	20,269.2	16,127	12,433	77.1	-0-	-0-	-0-	-0-
Fallbrook P.U.D.	-0-	-0-	10,155.9	100.0	10,155.9	16,109	10,612	65.9	-0-	76.6	779.8	1,608.5
Helix W.D.	14,056.2	38.5	22,462.4	61.5	36,518.6	31,663	30,006	94.8	-0-	-0-	-0-	-0-
National City, City of	6,129.2	99.5	30.2	0.5	6,159.4	5,479	4,550	83.0	-0-	-0-	-0-	-0-
Oceanside, City of	-0-	-0-	19,846.5	100.0	19,846.5	25,689	16,171	62.9	-0-	153.4	1,559.7	3,216.7
Olivenhain M.W.D.	-0-	-0-	6,026.8	100.0	6,026.8	27,112	14,250	52.6	-0-	25.4	260.0	536.2
Otay W.D.	-0-	-0-	11,951.9	100.0	11,951.9	64,783	32,021	49.4	-0-	76.6	779.8	1,608.5
Padre Dam M.W.D.	-0-	-0-	14,101.6	100.0	14,101.6	54,090	34,018	62.9	-0-	102.2	1,039.8	2,144.4
Pendleton Military Res (3)	N.R.	-	1,359.5	-	N.R.	134,625	N.A.	-	-0-	-0-	-0-	-0-
Poway, City of	919.7	12.2	6,627.5	87.8	7,547.2	22,809	7,152	31.4	-0-	-0-	-0-	-0-
Rainbow M.W.D.	-0-	-0-	25,353.9	100.0	25,353.9	46,487	17,300	37.2	-0-	25.4	260.0	536.2
Ramona M.W.D.	586.9	6.8	8,091.9	93.2	8,678.8	46,939	10,857	23.1	-0-	102.2	1,039.8	2,144.4
Rincon del Diablo M.W.D.	-0-	-0-	4,374.5	100.0	4,374.5	13,784	7,498	54.4	-0-	30.5	312.0	643.5
San Diego, City of (1)	71,836.5	38.5	114,759.4	61.5	186,595.9	206,027	108,593	52.7	-0-	-0-	-0-	-0-
San Dieguito W.D.	3,289.0	45.1	4,009.5	54.9	7,298.5	5,637	5,260	93.3	-0-	-0-	-0-	-0-
San Marcos C.W.D.	-0-	-0-	7,847.0	100.0	7,847.0	28,531	20,900	73.3	-0-	25.4	260.0	536.2
Santa Fe I.D.	3,565.7	46.1	4,162.5	53.9	7,728.2	10,155	10,155	100.0	-0-	-0-	-0-	-0-
South Bay I.D.	17,003.2	99.5	89.6	0.5	17,092.8	15,505	11,300	72.9	-0-	-0-	-0-	-0-
Valley Center M.W.D.	563.6	1.7	32,019.8	98.3	32,583.4	62,029	28,035	45.2	-0-	25.4	260.0	536.2
Yuima M.W.D.	1,383.4	49.7	1,399.1	50.3	2,782.5	12,813	4,120	32.2	-0-	5.1	52.0	107.2
Total and Average	143,373.7	31.0	318,983.4	69.0	462,357.1	899,578	422,609	47.0	-0-	724.8	7,382.7	15,226.5

- (1) Includes production by City of San Diego for areas outside City (not in Authority).
  - (2) Does not include overlapping areas as shown in Table 1.
  - (3) Delivery of water from local supplies not reported to Authority.
  - (4) Figures include losses from transmission and distribution system but not from reservoirs.
- N.A. - Not Applicable, N.R. - Not Reported

TABLES

Table 4  
 WATER PRODUCTION, AGRICULTURAL USE AND AUTHORITY STORAGE  
 FISCAL YEAR 1982-83  
 (Compilation of data furnished by member agencies)

Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	Water Production Per Acre Served Ac. Ft./Acre/Yr.	Estimated Population	Water Production Per Capita Ac. Ft./Cap./Yr.	WATER USED FOR AGRICULTURAL PURPOSES					Percent of Agricultural Water to Total Production	Total Quantity in Storage 6/30/82 Ac. Ft.	SAN VICENTE RESERVOIR OPERATIONS				
					From Local Supply		From Authority		Total Ac. Ft.			Placed into Storage During Fiscal Year Ac. Ft.	STORED WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/83 Ac. Ft.
					Ac. Ft.	Percent	Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.	
16,163	81.5	0.91	53,936	0.27	2,210.4	79.1	582.7	20.9	2,793.1	19.0	-0-	-0-	-0-	-0-	-0-	-0-
17,540	86.1	0.68	37,496	0.32	-0-	-0-	3,874.5	100.0	3,874.5	32.6	1,503.6	961.3	-0-	76.6	779.8	1,608.5
1,125	97.1	0.94	5,127	0.21	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
2,550	21.6	0.70	250	7.17	-0-	-0-	1,736.1	100.0	1,736.1	96.9	-0-	-0-	-0-	-0-	-0-	-0-
12,433	77.1	1.63	73,123	0.28	3,712.8	62.2	2,253.1	37.8	5,965.9	29.4	-0-	-0-	-0-	-0-	-0-	-0-
10,612	65.9	0.96	19,870	0.51	-0-	-0-	5,980.3	100.0	5,980.3	58.9	1,503.6	961.3	-0-	76.6	779.8	1,608.5
30,006	94.8	1.22	207,951	0.18	165.1	29.4	395.5	70.6	560.6	1.5	-0-	-0-	-0-	-0-	-0-	-0-
4,550	83.0	1.35	48,500	0.13	52.8	99.2	0.4	0.8	53.2	0.9	-0-	-0-	-0-	-0-	-0-	-0-
16,171	62.9	1.23	84,071	0.24	6.1	0.1	4,307.3	99.9	4,313.4	21.7	3,007.2	1,922.6	-0-	153.4	1,559.7	3,216.7
14,250	52.6	0.42	25,600	0.24	-0-	-0-	1,089.0	100.0	1,089.0	18.1	501.2	320.4	-0-	25.4	260.0	536.2
32,021	49.4	0.37	56,000	0.21	-0-	-0-	2,116.1	100.0	2,116.1	17.7	1,503.6	961.3	-0-	76.6	779.8	1,608.5
34,018	62.9	0.41	98,722	0.14	-0-	-0-	760.2	100.0	760.2	5.4	2,004.8	1,281.6	-0-	102.2	1,039.8	2,144.4
N.A.	-	-	34,000	-	-	-	-	-	-	-	-0-	-0-	-0-	-0-	-0-	-0-
7,152	31.4	1.06	35,302	0.21	44.0	5.2	806.0	94.8	850.0	11.3	-0-	-0-	-0-	-0-	-0-	-0-
17,300	37.2	1.47	8,600	2.95	-0-	-0-	21,246.8	100.0	21,246.8	83.8	501.2	320.4	-0-	25.4	260.0	536.2
10,857	23.1	0.80	17,300	0.50	330.5	6.1	5,108.5	93.9	5,439.0	62.7	2,004.8	1,281.6	-0-	102.2	1,039.8	2,144.4
7,498	54.4	0.58	15,500	0.28	-0-	-0-	1,082.1	100.0	1,082.1	24.7	601.4	384.6	-0-	30.5	312.0	643.5
108,593	52.7	1.72	925,000	0.20	-0-	-0-	1,406.0	100.0	1,406.0	0.8	-0-	-0-	-0-	-0-	-0-	-0-
5,260	93.3	1.39	31,050	0.24	794.7	46.2	927.1	53.8	1,721.8	23.6	-0-	-0-	-0-	-0-	-0-	-0-
20,900	73.3	0.38	28,100	0.28	-0-	-0-	2,502.7	100.0	2,502.7	31.9	501.2	320.4	-0-	25.4	260.0	536.2
10,155	100.0	0.76	15,519	0.50	450.8	44.6	559.8	55.4	1,010.6	13.1	-0-	-0-	-0-	-0-	-0-	-0-
11,300	72.9	1.51	100,900	0.17	144.3	99.4	0.9	0.6	145.2	0.8	-0-	-0-	-0-	-0-	-0-	-0-
28,035	45.2	1.16	10,850	3.00	516.4	1.8	28,720.0	98.2	29,236.4	89.7	501.2	320.4	-0-	25.4	260.0	536.2
4,120	32.2	0.68	1,820	1.53	1,341.4	49.6	1,362.5	50.4	2,703.9	97.2	100.2	64.1	-0-	5.1	52.0	107.2
422,609	47.0	1.09	1,934,587	0.24	9,769.3	10.1	86,817.6	89.9	96,586.9	20.9	14,234.0	9,100.0	-0-	724.8	7,382.7	15,226.5

## SAN DIEGO COUNTY WATER AUTHORITY

Table 5  
 ASSESSED VALUATION AND TAX COLLECTIONS  
 FISCAL YEAR 1982-1983

Member Agencies	ASSESSED VALUATION SECURED AND UNSECURED				Area 6/30/83  Acres	1982-83 Valuation Per Acre	Tax Assessments to Date	Adj. to Tax Assessments	Uncollected 6/30/83	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes	Ta
	*1981-82  Total	*1982-83  Total	1981-82 to 1982-83 Percent Change	*1983-84  Total									
Bueno Colorado M.W.D.	\$ 1,591,916,813	\$ 1,757,817,482	+10.4	\$ 1,877,874,244	19,827	\$ 88,658	\$ 2,515,470	\$ 5,867	\$ 112,417	\$ 2,408,920	\$ 28,609	\$ 10,802	\$
Costa Real M.W.D.	1,498,555,071	1,753,742,160	+17.0	1,918,749,078	20,369	86,099	2,561,570	(79,522)	23,176	2,458,871	26,910	33,275	
Del Mar, City of	222,523,789	253,579,080	+14.0	272,146,251	1,159	218,791	572,531	5,026	10,823	566,734	6,760	530	
De Luz Heights M.W.D.	33,396,561	38,783,874	+16.1	43,281,854	11,830	3,278	57,392	(1,511)	2,601	53,279	885	1,000	
Escondido, City of	1,139,806,627	1,271,163,154	+11.5	1,346,757,293	16,127	78,822	2,246,672	(3,221)	59,725	2,183,724	16,617	28	
Fallbrook P.U.D.	458,568,155	511,776,452	+11.6	538,254,402	16,109	31,770	896,888	3,192	27,221	872,859	7,407	3,420	
Helix W.D.	4,321,468,738	4,635,342,990	+ 7.3	4,870,077,608	31,663	146,396	9,900,094	(22,375)	203,508	9,674,210	54,309	4,930	
National City, City of	568,425,061	608,157,467	+ 7.0	640,918,086	5,479	110,998	1,705,713	(10,347)	22,859	1,672,507	7,568	6,828	
Oceanside, City of	1,581,916,065	1,771,748,419	+12.0	1,917,433,070	25,689	68,969	2,780,063	5,249	98,833	2,686,479	21,579	2,601	
Olivenhain M.W.D.	942,744,863	1,103,285,954	+17.0	1,199,680,406	27,112	40,694	1,080,137	4,222	87,856	996,504	15,324	1,250	
Otay W.D.	1,327,012,120	1,460,050,033	+10.0	1,584,622,361	64,783	22,538	1,938,356	4,773	99,119	1,844,010	17,049	4,455	
Padre Dam M.W.D.	1,621,753,742	1,801,244,162	+11.1	1,914,403,180	54,090	33,301	2,689,672	4,422	104,337	2,589,758	32,127	3,003	
Pendleton Military Res.	1,258,625,267	1,664,602,719	+32.3	2,451,994,415	134,625	12,365	1,018,012	44,695	257,450	805,257	-	-	
Poway, City of	900,395,185	981,195,087	+ 9.0	1,036,588,977	22,809	43,018	1,306,060	4,482	62,251	1,248,292	20,123	15	
Rainbow M.W.D.	541,360,192	596,376,119	+10.2	631,444,513	46,487	12,829	956,983	25,951	7,147	923,884	21,136	23,679	
Ramona M.W.D.	511,852,059	566,560,620	+10.7	599,881,518	46,939	12,070	799,507	23,658	(35,841)	859,007	11,974	5,400	
Rincon Del Diablo M.W.D.	864,001,569	971,223,754	+12.4	1,031,115,559	13,784	70,460	1,429,475	81,422	142,059	1,368,837	12,807	58,800	
San Diego, City of	22,048,874,449	24,887,567,567	+12.9	27,072,432,702	206,027	120,798	51,349,485	(1,200,624)	(1,044,499)	16,707,789	66,600	34,485,758	
San Dieguito W.D.	782,342,137	864,191,659	+10.5	935,911,104	5,637	153,307	1,464,809	3,532	47,749	1,420,592	8,648	5,426	
San Marcos C.W.D.	830,527,744	989,571,993	+19.1	1,055,972,761	28,531	34,684	1,311,843	4,136	31,543	1,284,435	628	-	
Santa Fe I.D.	968,995,413	1,112,948,557	+14.9	1,224,900,846	10,155	109,596	1,651,790	8,550	58,370	1,601,970	11,281	2,892	
South Bay I.D.	2,190,901,461	2,417,699,041	+10.4	2,553,603,199	15,505	155,930	5,380,793	(13,498)	(130,012)	4,867,330	19,838	629,977	
Valley Center M.W.D.	594,720,190	664,247,461	+11.7	705,564,091	62,029	10,709	944,916	12,568	48,940	908,543	15,372	1,011	
Yuima M.W.D.	88,998,577	96,049,082	+ 7.9	100,454,069	12,813	7,496	219,149	(757)	4,878	213,513	1,749	1,500	
Total Authority	\$46,889,681,868	\$52,778,924,886	+12.6	\$57,524,061,587	899,578	\$58,671	\$96,777,389	\$(1,142,008)	\$302,515	\$60,217,316	\$425,309	\$35,286,587	\$
San Diego County (1)	\$48,827,114,685	\$54,937,677,472	+12.5	\$59,839,543,777	2,725,100	\$20,160							

(1) Excluding 1,475,100 acres of tax exempt lands in San Diego County.

\* Market value as determined by County Assessor.

Table 5  
 ASSESSED VALUATION AND TAX COLLECTIONS  
 FISCAL YEAR 1982-1983

Tax Assessments to Date	Adj. to Tax Assessments	Uncollected 6/30/83	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes	Misc. Tax Sales	Net Total Collections	Amount Paid for Service Connections to 6/30/83	Total Amount Paid by Each Member Agency to 6/30/83	Amount Remaining to be Paid Under Terms of Annexation	Total Contributions Paid and Contracted for
\$ 2,515,470	\$ 5,867	\$ 112,417	\$ 2,408,920	\$ 28,609	\$ 10,802	\$ 123	\$ 3,514,335	\$ 207,438	\$ 3,721,773	-0-	\$ 3,721,773
2,561,570	(79,522)	23,176	2,458,871	26,910	33,275	10	2,519,068	7,931	2,526,999	-0-	2,526,999
572,531	5,026	10,823	566,734	6,760	530	1	574,025	-	574,025	-0-	574,025
57,392	(1,511)	2,601	53,279	885	1,000	-	55,164	-	55,164	-0-	55,164
2,246,672	(3,221)	59,725	2,183,724	16,617	28	28	2,200,399	9,253	2,209,652	-0-	2,209,652
896,888	3,192	27,221	872,859	7,407	3,420	43	883,730	67,773	951,503	-0-	951,503
9,900,094	(22,375)	203,508	9,674,210	54,309	4,930	783	9,734,233	28,905	9,763,138	-0-	9,763,138
1,705,713	(10,347)	22,859	1,672,507	7,568	6,828	96	1,687,000	-	1,687,000	-0-	1,687,000
2,780,063	5,249	98,833	2,686,479	21,579	2,601	100	2,710,761	106,369	2,817,130	-0-	2,817,130
1,080,137	4,222	87,856	996,504	15,324	1,250	-	1,013,078	66,608	1,079,686	-0-	1,079,686
1,938,356	4,773	99,119	1,844,010	17,049	4,455	45	1,865,560	208,573	2,074,133	-0-	2,074,133
2,689,672	4,422	104,337	2,589,758	32,127	3,003	131	2,625,020	45,244	2,670,264	-0-	2,670,264
1,018,012	44,695	257,450	805,257	-	-	-	805,257	-	805,257	-0-	805,257
1,306,060	4,482	62,251	1,248,292	20,123	15	8	1,268,440	103,875	1,372,315	-0-	1,372,315
956,983	25,951	7,147	923,884	21,136	23,679	-	968,701	152,685	1,121,386	-0-	1,121,386
799,507	23,658	(35,841)	859,007	11,974	5,400	58	876,440	3,378	879,818	-0-	879,818
1,429,475	81,422	142,059	1,368,837	12,807	58,800	1	1,440,447	14,527	1,454,974	-0-	1,454,974
51,349,485	(1,200,624)	(1,044,499)	16,707,789	66,600	34,485,758	777,150	52,037,299	313,038	52,350,337	-0-	52,350,337
1,464,809	3,532	47,749	1,420,592	8,648	5,426	131	1,434,798	47,205	1,482,003	-0-	1,482,003
1,311,843	4,136	31,543	1,284,435	628	-	-	219,184	-	219,184	-0-	219,184
1,651,790	8,550	58,370	1,601,970	11,281	2,892	1,914	1,618,058	58,787	1,676,845	-0-	1,676,845
5,380,793	(13,498)	(130,012)	4,867,330	19,838	629,977	143	5,517,288	594	5,517,882	-0-	5,517,882
944,916	12,568	48,940	908,543	15,372	1,011	26	924,954	162,554	1,087,508	-0-	1,087,508
219,149	(757)	4,878	213,513	1,749	1,500	-	216,762	28,424	245,186	-0-	245,186
\$96,777,389	\$(1,142,008)	\$302,515	\$60,217,316	\$425,309	\$35,286,587	\$780,800	\$96,710,013	\$1,633,161	\$98,343,174	-0-	\$98,343,174

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

Table 6  
WATER PRODUCTION WITHIN AUTHORITY AGENCIES—FISCAL YEARS 1973 TO 1983  
(All Figures in Acre Feet)

Member Agencies	From Local and Authority Supplies									
	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
Buena Colorado M.W.D.	13,868	12,897	15,178	13,928	13,263	14,554	15,038	17,565	15,446	14,720
Costa Real M.W.D.	10,039	10,022	10,965	10,752	10,010	11,135	12,554	13,385	12,749	11,879
Del Mar, City of	942	893	1,162	918	921	1,096	999	1,075	1,045	1,055
De Luz Heights M.W.D.	99	178	362	503	612	990	1,339	1,792	1,794	20,269
Encinitas, City of	18,749	18,181	21,828	19,740	19,091	20,500	22,113	26,052	22,534	20,356
Falbrook Public Utility District	12,198	11,524	13,429	12,999	11,128	11,667	12,174	14,698	12,386	10,156
Helix Water District	35,466	33,807	37,724	34,465	32,882	36,256	37,676	41,613	39,284	36,319
National City and South Bay I.D.	20,095	20,065	22,038	21,339	20,031	21,628	21,519	23,222	23,209	23,352
Oceanside, City of	14,539	14,817	17,358	16,565	15,851	18,310	19,602	22,408	21,769	19,846
Olivethain M.W.D.	2,857	2,697	4,079	3,739	4,358	4,714	5,313	6,437	5,856	6,027
Otay W.D.	12,043	10,970	12,927	11,787	11,846	11,270	11,852	13,612	12,943	11,952
Padre Dam M.W.D.	10,523	10,785	12,011	11,623	11,799	12,812	13,718	15,572	14,908	14,102
Pendleton Military Res.										
Poway, City of	7,053	7,335	7,983	7,177	6,553	6,948	8,240	9,027	7,873	7,547
Rainbow M.W.D.	21,565	20,678	25,472	25,824	22,529	24,709	26,943	34,111	28,630	25,354
Ranona M.W.D.	3,723	4,086	5,482	5,653	5,531	6,269	6,583	9,065	8,873	8,679
Rincon del Diablo M.W.D.	3,345	3,328	4,080	3,914	3,926	4,483	4,789	5,763	5,256	4,374
San Diego, City of										
Inside City	153,672	153,724	167,392	162,003	155,226	164,634	175,668	191,713	192,626	182,873
Outside City (not in Authority)	6,368	6,204	7,887	7,367	6,023	6,866	4,480	6,064	5,657	3,723
San Diego's Water District	5,677	5,811	7,167	7,038	6,452	7,170	7,342	8,056	7,668	7,298
San Marcos C.W.D.	4,528	4,580	5,374	5,535	5,562	6,559	6,800	8,420	8,233	7,847
Santa Fe Irrigation District	7,931	7,171	8,951	7,577	7,254	7,735	10,252	9,368	8,792	7,728
Valley Center M.W.D.	20,663	20,353	29,198	28,895	26,738	29,417	33,568	44,687	38,338	32,583
Yuana M.W.D.	4,639	4,251	4,263	3,729	3,335	2,987	2,978	3,891	3,498	2,782
Total	390,502	384,457	442,210	423,030	400,821	433,009	461,540	528,461	499,387	462,457

Table 7  
WATER SALES—1947 to 1983  
(All figures rounded to nearest whole acre foot)

Member Agencies	WATER SALES—1947 to 1983									
	(1) 1947-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	TOTAL
Buena Colorado M.W.D.	126,248	11,237	10,258	9,140	4,657	7,402	6,594	9,652	2,753	187,941
Costa Real M.W.D.	124,926	16,989	10,761	10,011	11,162	12,223	13,308	12,749	11,879	218,038
Del Mar, City of	7,672	1,162	918	921	1,095	1,283	1,076	1,045	1,055	16,227
De Luz Heights M.W.D.	286	362	533	552	820	1,097	1,627	1,792	1,863	8,863
Encinitas, City of	104,662	17,670	17,670	16,825	8,837	8,749	12,800	15,969	6,342	203,351
Falbrook Public Utility District	226,804	13,374	12,894	11,298	11,604	12,174	14,698	12,363	10,168	375,377
Helix Water District	520,088	29,809	37,232	28,350	19,198	19,800	24,413	29,577	22,898	721,365
National City & South Bay I.D.	308,220	19,190	17,183	13,357	4,174	3,093	3,115	3,115	132	365,807
Oceanside, City of	156,109	17,337	16,552	15,851	17,941	19,326	22,362	21,726	19,821	307,025
Olivethain M.W.D.	19,918	4,191	3,852	4,358	5,154	5,313	6,433	5,739	5,714	60,672
Otay W.D.	114,936	12,927	11,787	11,846	11,270	11,782	13,629	12,943	11,952	213,092
Padre Dam M.W.D.	96,813	12,280	11,617	11,799	12,812	13,721	15,522	14,908	14,102	203,624
Pendleton Military Res (2)						293	617	715	1,356	2,981
Poway, City of	71,050	8,187	7,649	6,304	6,942	7,052	9,269	8,351	6,841	131,645
Ranona M.W.D.	243,578	25,364	26,039	22,529	24,770	27,040	33,940	28,630	25,428	457,316
Rincon del Diablo M.W.D.	34,277	4,455	5,653	5,174	6,122	6,239	8,258	8,541	8,092	77,811
San Diego, City of	113,091	4,080	3,914	3,926	4,483	4,789	5,763	5,256	4,374	149,676
San Diego's Water District	2,273,395	173,863	179,387	130,110	94,280	91,986	119,800	155,743	90,841	3,464,535
San Marcos C.W.D.	35,986	6,641	7,078	6,067	4,056	5,732	5,711	4,573	4,009	99,833
Santa Fe Irrigation District	44,929	5,274	5,535	5,557	6,835	8,465	8,154	7,847	7,847	99,201
Valley Center M.W.D.	166,454	29,468	29,183	26,429	28,837	32,681	44,046	38,091	32,583	427,772
Yuana M.W.D.	22,549	2,558	1,953	1,967	1,829	1,601	2,054	2,205	1,403	38,119
Total Sales to Agencies	5,034,833	419,089	425,181	344,573	289,262	307,196	376,761	403,602	296,450	7,896,946
Total Sales to Others	25,857	8,186	9,058	8,200	1,999	2,560	658	-	-	+56,509
Total to Authority Storage	246,359	+25,492	+26,819	+21,411	2,000	+2,000	-	+14,560	9,100	+357,841
Total from Authority Storage	-194,639	-37,015	-26,123	-34,531	-4,533	-2,000	-	-7,383	-308,214	-120,929
Total from Metropolitan Storage	+120,929	-	-	-	-	-	-	-	-	+120,929
Total from Metropolitan Storage	-116,908	-	-	-	-	-	-	-	-	-116,908
Total Flow in Authority System	5,116,441	425,851	434,935	339,653	288,719	309,756	375,419	418,162	298,167	8,007,103
Average Rate of Flow (c.f.a.)	+253.1	588.6	599.8	487.3	402.3	426.7	521.3	557.5	409.5	
To Agencies and Others	+12.3	+49.0	+37.0	+29.6	+2.8	+2.8	-	+20.1	+12.6	
To Authority Storage	-9.7	-51.0	-36.1	-47.7	-6.3	-2.8	-	-	-10.2	
From Authority Storage	+6.0	-	-	-	-	-	-	-	-	
To Metropolitan Storage	-5.8	-	-	-	-	-	-	-	-	
From Metropolitan Storage	251.9	586.6	600.7	469.2	398.8	426.7	518.5	577.6	411.9	
Flow in Authority System										

(1) The operation of the First Aqueduct was formally initiated on November 24, 1947. For sales in intervening years, see previous reports.

(2) Pendleton Military Reservation deliveries not included in totals; delivered through Coastal MWD facilities.

\*Corrected figure

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

Table 8  
SALES OF IMPORTED WATER - FISCAL YEAR 1982-83  
(All Figures in Acre-Feet except as noted)

Table 8  
(Continued)

Member Agency	Month, 1982						Total 6 Months 1982	Month, 1983						Total 6 Months 1983	Fiscal Year Total	Fiscal Year, Average cfs
	July	August	Sept.	Oct.	Nov.	Dec.		Jan.	Feb.	March	April	May	June			
Bueno Colorado M.W.D.	706.2	619.0	415.7	248.4	78.7	(0.3)	2,067.7	2.2	(0.6)	(0.3)	323.7	109.8	250.8	685.6	2,753.3	3.8
Costa Real M.W.D.	1,545.3	1,784.6	1,394.8	1,327.2	936.4	646.2	7,634.5	667.0	415.5	340.6	708.8	1,005.7	1,106.6	4,244.2	11,878.7	16.4
Del Mar, City of	142.9	139.9	113.2	78.0	78.7	64.4	617.1	59.5	56.5	62.7	72.9	78.8	107.1	437.5	1,054.6	1.5
De Luz Heights M.W.D.	274.7	303.2	256.2	246.9	90.4	30.5	1,201.9	71.8	33.7	11.2	66.9	164.1	242.0	589.7	1,791.6	2.5
Escondido, City of	1,698.4	1,825.8	1,263.5	898.4	233.7	7.1	5,926.9	456.0	352.9	(28.2)	145.7	562.2	926.2	2,414.8	8,341.7	11.5
Fallbrook P.U.D.	1,658.1	1,685.2	1,293.4	1,225.7	573.5	277.4	6,713.3	540.1	250.3	199.6	392.3	862.2	1,210.6	3,455.1	10,168.4	14.1
Helix W.D.	3,355.3	3,297.4	2,912.7	3,192.3	1,528.1	2,179.8	16,465.6	1,311.6	489.9	551.8	415.1	1,637.8	2,026.5	6,432.7	22,898.3	31.6
National City & South Bay I.D.	5.6	5.2	44.2	3.1	7.9	0.9	66.9	1.8	5.2	54.1	1.3	1.1	1.3	64.8	131.7	0.2
Oceanside, City of	2,635.9	2,580.7	1,996.9	2,048.4	1,407.5	1,092.3	11,761.7	1,281.5	932.3	901.6	1,175.4	1,768.7	1,999.9	8,059.4	19,821.1	27.4
Olivenhain, M.W.D.	783.2	798.5	610.7	598.4	339.9	267.3	3,398.0	314.7	184.3	259.0	340.6	554.6	662.8	2,316.0	5,714.0	7.9
Otay W.D.	1,526.9	1,754.8	1,355.1	1,400.7	837.1	554.3	7,428.9	707.2	505.5	468.6	612.3	956.6	1,272.8	4,523.0	11,951.9	16.5
Padre Dam M.W.D.	1,884.9	1,927.4	1,527.9	1,381.9	834.1	746.8	8,303.0	815.4	636.9	675.1	820.4	1,326.3	1,524.5	5,798.6	14,101.6	19.5
Pendleton Military Res**	111.6	111.5	118.4	91.5	141.2	104.1	678.3	170.0	113.0	105.3	71.9	124.1	92.9	677.2	1,355.5	1.9
Poway, City of	1,178.2	1,097.1	830.7	804.4	286.7	331.7	4,528.8	441.2	242.0	(41.6)	173.7	647.1	849.9	2,312.3	6,841.1	9.5
Rainbow M.W.D.	4,453.7	4,140.9	3,533.0	3,119.0	1,248.4	379.5	16,874.5	1,217.0	391.4	237.2	1,303.8	2,385.7	3,016.3	8,551.4	25,425.9	35.1
Ramona M.W.D.	1,253.6	1,580.8	1,260.3	1,042.7	456.1	193.8	5,587.3	412.0	189.6	152.6	261.5	635.9	853.0	2,504.6	8,091.9	11.2
Rincon Del Diablo M.W.D.	697.1	711.9	539.1	501.6	248.0	150.3	2,848.0	216.2	126.8	121.6	168.1	373.2	520.6	1,526.5	4,374.5	6.0
San Diego, City of	14,474.2	14,380.4	9,588.7	8,454.8	7,522.7	5,094.1	59,514.9	7,658.6	5,780.8	3,566.1	6,948.7	4,573.8	3,697.8	31,325.8	90,840.7	125.5
San Dieguito W.D.	375.6	460.3	402.0	372.9	191.2	228.5	2,030.5	332.2	198.0	147.8	377.0	492.8	431.2	1,979.0	4,009.5	5.5
San Marcos C.W.D.	1,083.0	1,056.8	923.0	762.4	594.2	302.5	4,721.9	528.3	299.3	342.5	406.0	699.3	849.7	3,125.1	7,847.0	10.8
Santa Fe I.D.	540.6	666.7	487.8	436.1	156.7	107.7	2,395.6	259.1	172.9	90.2	342.0	587.8	578.5	2,030.5	4,426.1	6.1
Valley Center M.W.D.	5,592.7	4,190.5	4,847.6	4,512.1	1,645.2	461.9	23,250.0	1,317.0	458.7	87.2	904.9	2,531.3	4,034.3	9,333.4	32,583.4	45.0
Yuima M.W.D.	294.6	312.5	307.9	195.1	67.4	6.8	1,184.3	28.8	-	-	-	55.8	134.2	218.8	1,403.1	1.9
<b>Total Sales to Agencies</b>	<b>46,160.7</b>	<b>47,119.6</b>	<b>35,904.4</b>	<b>32,850.5</b>	<b>19,362.6</b>	<b>13,123.5</b>	<b>194,521.3</b>	<b>18,639.2</b>	<b>11,721.9</b>	<b>8,199.4</b>	<b>15,061.1</b>	<b>22,010.6</b>	<b>26,296.6</b>	<b>101,928.8</b>	<b>296,450.1</b>	<b>409.5</b>
<b>Total Sales to Others*</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Sales to Agencies &amp; Others</b>	<b>46,160.7</b>	<b>47,119.6</b>	<b>35,904.4</b>	<b>32,850.5</b>	<b>19,362.6</b>	<b>13,123.5</b>	<b>194,521.3</b>	<b>18,639.2</b>	<b>11,721.9</b>	<b>8,199.4</b>	<b>15,061.1</b>	<b>22,010.6</b>	<b>26,296.6</b>	<b>101,928.8</b>	<b>296,450.1</b>	
<b>Total to Authority Storage</b>	<b>-</b>	<b>600.0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>600.0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>+3,500</b>	<b>+5,000</b>	<b>+8,500.0</b>	<b>+9,100.0</b>	
<b>Total From Authority Storage</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-7,382.7</b>	<b>-</b>	<b>-7,382.7</b>	<b>-7,382.7</b>	
<b>Total Flow in Authority System</b>	<b>46,160.7</b>	<b>47,719.6</b>	<b>35,904.4</b>	<b>32,850.5</b>	<b>19,362.6</b>	<b>13,123.5</b>	<b>195,121.3</b>	<b>18,639.2</b>	<b>11,721.9</b>	<b>8,199.4</b>	<b>15,061.1</b>	<b>18,127.9</b>	<b>31,296.6</b>	<b>103,046.1</b>	<b>298,167.4</b>	
<b>Total Evaporation Losses from Storage in San Vicente and Lower Otay Reservoirs</b>	<b>123.3</b>	<b>117.3</b>	<b>101.5</b>	<b>81.7</b>	<b>34.9</b>	<b>20.6</b>	<b>479.3</b>	<b>30.1</b>	<b>23.5</b>	<b>55.2</b>	<b>31.9</b>	<b>39.8</b>	<b>65.0</b>	<b>245.5</b>	<b>724.8</b>	
<b>Total Evaporation Losses from Storage in Sweetwater Reservoir</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	
<b>Rate of Flow (c.f.s.)</b>																
<b>To Agencies and Others</b>	<b>750.7</b>	<b>766.3</b>	<b>603.4</b>	<b>534.3</b>	<b>325.4</b>	<b>213.4</b>	<b>533.0</b>	<b>303.1</b>	<b>211.1</b>	<b>133.4</b>	<b>253.1</b>	<b>358.0</b>	<b>441.9</b>	<b>283.9</b>	<b>409.5</b>	
<b>To Authority Storage</b>	<b>-</b>	<b>+9.8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>+1.6</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>+56.9</b>	<b>+84.0</b>	<b>+23.7</b>	<b>+12.6</b>	
<b>From Authority Storage</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-120.1</b>	<b>-</b>	<b>-20.6</b>	<b>-10.2</b>	
<b>In Authority System</b>	<b>750.7</b>	<b>776.1</b>	<b>603.4</b>	<b>534.3</b>	<b>325.4</b>	<b>213.4</b>	<b>534.6</b>	<b>303.1</b>	<b>211.1</b>	<b>133.4</b>	<b>253.1</b>	<b>294.8</b>	<b>525.9</b>	<b>287.0</b>	<b>411.9</b>	

\*To Otay for delivery to Tijuana, Mexico

\*\*Delivered through Coastal M.W.D. facilities and are not included in Authority's totals.

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

ASSESSED VALUATIONS AND TAX RATES  
Fiscal Years 1945-46 to 1982-83

Fiscal Year	Secured Property	Public Utilities	Unsecured Property	Total	Tax Rate per \$100	
					Secured	Unsecured
1945-46	\$ 212,082,975	28,253,700	29,960,130	270,296,805	0.04	-
1946-47	208,715,150 (1)	29,433,450	30,665,910	268,814,510	0.04	0.04
1947-48	233,579,990	32,740,680	40,977,850	307,298,520 (2)	0.14	0.04
1948-49	254,227,570	37,482,020	47,177,300	338,886,890	0.14	0.14
1949-50	290,351,875	42,429,140	45,743,200	378,524,215	0.10	0.14
1950-51	306,104,930	43,595,730	44,717,740	394,418,400	0.10	0.10
1951-52	344,620,030	48,452,940	50,904,035	443,977,005	0.10	0.10
1952-53	382,948,860	53,208,220	63,996,330	500,153,410	0.12	0.10
1953-54	490,709,350	63,092,050	69,147,150	622,948,550	0.10	0.12
1954-55	546,272,880	69,243,550	79,629,790	695,146,220	0.10	0.10
1955-56	627,062,960	87,485,390	79,936,450	794,484,800	0.09	0.10
1956-57	680,824,400	101,224,260	97,950,800	879,999,460	0.09	0.09
1957-58	761,088,330	111,151,890	128,785,440	1,001,025,660	0.09	0.09
1958-59	865,283,080	128,479,290	128,124,720	1,121,887,090	0.10	0.09
1959-60	979,491,050	145,317,290	134,846,730	1,259,655,070	0.11	0.10
1960-61	1,116,723,830	165,666,720	159,954,740	1,442,345,290	0.11	0.11
1961-62	1,220,810,650	191,276,650	155,149,890	1,567,237,190	0.11	0.11
1962-63	1,272,506,330	201,245,370	154,989,440	1,628,741,140	0.11	0.11
1963-64	1,340,197,170	209,793,780	159,714,930	1,709,705,880	0.11	0.11
1964-65	1,423,375,590	213,352,470	151,686,520	1,788,414,580	0.11	0.11
1965-66	1,511,967,750	212,605,040	155,417,220	1,879,990,010	0.11	0.11
1966-67	1,567,290,460	212,223,550	147,740,730	1,927,254,740	0.11	0.11
1967-68	1,735,209,870	209,136,160	178,641,120	2,122,987,150	0.10	0.11
1968-69	1,876,936,080	208,018,700	197,139,600	2,282,094,380	0.09	0.10
1969-70	2,063,618,582	210,839,100	237,951,409	2,512,409,091	0.09	0.09
1970-71	2,348,151,943	216,378,300	276,932,717	2,841,462,960	0.09	0.09
1971-72	2,755,734,087	213,191,301	306,698,099	3,275,533,487	0.10	0.09
1972-73	3,061,010,163	225,224,650	347,857,938	3,634,092,751	0.11	0.10
1973-74	3,481,734,238	239,346,070	393,300,174	4,114,380,482	0.11	0.11
1974-75	4,075,823,685	249,562,970	450,374,627	4,775,761,282	0.11	0.11
1975-76	4,629,303,071	283,156,410	503,493,823	5,415,953,304	0.11	0.11
1976-77	5,230,851,497	311,553,680	545,425,038	6,087,830,215	0.11	0.11
1977-78	6,121,864,014	376,899,840	607,393,849	7,106,157,703	0.11	0.11
1978-79	6,272,490,327	554,099,470	707,294,537	7,533,884,334	0.06	0.11
1979-80	7,624,459,863	660,454,310	837,758,367	9,122,673,040	0.04	0.06
1980-81	9,163,752,692	731,869,180	483,834,623	10,379,456,495	0.05	0.04
1981-82(4)	41,759,646,912	3,457,486,360	1,697,548,096	46,809,681,868	0.01	0.0125
1982-83	46,670,563,147	4,336,558,170	1,971,803,569	52,778,924,886	0.00817	0.01

Table 9  
Continued  
TAX LEVIES AND TAX COLLECTIONS BY FISCAL YEAR  
(Includes in Lieu of Taxes)  
Fiscal Years 1945-46 to 1982-83

Tax Levy (3)	Collection of Current Year's Taxes During Fiscal Year	Percentage of Levy Collected During Fiscal Year	Adjustments to Prior Year's Levies	Collection of Prior Years' Taxes During Fiscal Year	Total Tax Collections	Accumulated Delinquent Taxes	Ratio of Accumulated Delinquent Taxes to Tax Levy
107,808	105,753	98.09	-	1,090	106,844	2,439	2.26
389,591	381,563	97.94	-	1,882	383,445	8,585	2.20
474,520	459,504	96.84	-	5,916	465,420	17,685	3.73
401,112	392,732	97.91	329	13,342	406,074	13,052	3.25
397,970	390,274	98.07	373	8,217	398,492	12,904	3.24
450,405	441,242	97.97	978	7,699	448,941	15,346	3.40
594,603	585,417	98.46	(1,140)	12,567	597,985	10,824	1.82
652,335	640,239	98.15	4,213	9,942	650,181	17,191	2.62
709,678	695,200	97.96	1,295	12,638	707,838	20,326	2.86
803,375	788,734	97.41	(2,099)	12,140	800,874	20,726	2.59
874,774	861,461	98.48	576	13,056	874,517	21,560	2.46
965,006	946,445	98.08	958	12,890	959,335	28,189	2.92
1,178,885	1,157,265	98.17	-	13,347	1,170,613	36,462	3.09
1,436,270	1,408,277	98.05	(5,274)	16,647	1,424,925	42,533	2.97
1,624,733	1,586,169	97.63	(8,720)	21,501	1,607,671	50,874	3.15
1,763,785	1,718,575	97.44	(2,276)	31,477	1,750,053	62,330	3.54
1,816,449	1,775,932	97.77	(3,688)	38,134	1,814,066	61,023	3.37
1,910,019	1,862,973	97.54	(268)	36,825	1,899,799	70,975	3.72
2,000,067	1,948,853	97.44	(6,588)	42,596	1,991,450	73,003	3.66
2,101,023	2,033,032	96.76	2,503	44,784	2,077,816	98,714	4.69
2,154,994	2,090,637	97.01	(7,164)	54,333	2,144,970	101,573	4.73
2,175,276	2,129,996	97.92	(301)	64,473	2,194,470	82,078	3.77
2,110,913	2,103,601	99.65	-	55,253	2,158,854	34,136	1.62
2,182,274	2,149,330	98.49	91,680	24,018	2,204,127	103,963	4.52
2,450,123	2,408,899	98.32	38,500	104,032	2,512,932	79,655	3.25
3,084,869	3,058,713	99.15	27,045	32,926	3,091,639	99,930	3.24
3,790,191	3,743,715	98.77	494	45,314	3,789,029	101,586	2.68
4,004,024	3,941,152	98.43	4,891	43,846	3,984,999	125,502	3.13
4,673,400	4,597,610	98.37	(4,573)	42,611	4,640,222	154,107	3.32
5,336,375	5,223,483	97.88	(17,845)	76,632	5,300,115	172,522	3.23
6,012,954	5,928,085	98.59	34,543	109,718	6,037,803	182,216	3.03
7,111,999	7,083,080	99.59	(6,021)	87,193	7,170,273	117,921	1.66
5,956,033	5,802,438	97.42	-	134,444	5,936,882	137,027	2.30
5,549,222	5,420,190	97.67	(105,757)	137,072	5,557,262	23,275	0.42
7,164,231	7,076,598	98.78	181,346	137,782	7,214,380	154,472	2.16
7,150,025	6,886,178	96.31	73,743	228,215	7,114,393	213,847	3.09
6,690,619	6,634,619	99.16	197,022	164,354	6,798,973	302,515	4.52

- (1) City of Coronado secured assessed valuations not included in this or subsequent tax levies by the Authority, having withdrawn from the Authority prior to 1946-47.
- (2) City of Coronado not included in this or subsequent total valuation.
- (3) Gross Tax Levy; Includes State Grant for Business Inventory, Homeowners Exemption, and allocation of the 1% assessment from the County of San Diego.
- (4) Assessed valuation changed to full market value as determined by County Assessor.

Table 10  
SAN DIEGO COUNTY WATER AUTHORITY  
ANNEXATION CHARGES, ASSESSMENTS AND BALANCES

Area	Date of Annexation	Amount of Annexation Charge	Period of Special Assessments		Special Assessments to 6/30/83	Fiscal Year 1982-83		Remaining Balance of Annexation Charges 6/30/83
			First Year	Last Year		Special Assessments	Tax Rate \$/100	
None	NA	NA	-	-	-	-	-	-0-

TABLES

Table 11  
CHEMICAL CHARACTER OF NATURAL COLORADO RIVER WATER  
AT WEST PORTAL OF SAN JACINTO TUNNEL  
Year Ending June 30, 1983  
Samples Taken at Entrance to San Diego Aqueduct by M.W.D.  
and Analyzed by District Laboratory

Month	Total Hardness as mg/l Ca CO <sub>3</sub>	Alkalinity as mg/l CaCO <sub>3</sub> Total	Magnesium as mg/l	(PH) Hydrogen Ion Concentration	Temperature When Sampled	
					°F	°C
July	329	124	29.0	8.45	78.8	26.0
August	328	122	30.0	8.30	80.6	27.0
September	323	119	30.0	8.35	77.0	25.0
October	321	117	29.5	8.27	67.1	19.5
November	326	119	30.0	8.35	62.6	17.0
December	321	119	30.0	8.28	59.0	15.0
January	330	123	31.0	8.34	53.6	12.0
February	329	126	29.0	8.34	53.6	12.0
March	326	125	30.0	8.51	59.9	15.5
April	329	126	29.5	8.48	65.3	18.5
May	330	130	28.5	8.34	69.8	21.0
June	331	124	29.5	8.25	77.0	25.0

ANALYSIS - YEAR ENDING JUNE 30, 1983

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	8.7	9.2	8.1
Calcium	(Ca)	82.0	85	79
Magnesium	(Mg)	29.7	31	28.5
Sodium	(Na)	104.3	108	100
Potassium	(K)	4.6	5.0	4.1
Carbonate	(CO <sub>3</sub> )	0.4	2.0	-0-
Bicarbonate	(HCO <sub>3</sub> )	148.9	159	143
Sulfate	(SO <sub>4</sub> )	296.4	300	292
Chloride	(Cl)	90.3	93	89
Nitrate	(NO <sub>3</sub> )	0.7	1.15	0.35
Fluoride	(F)	0.36	0.39	0.34
Boron	(B)	0.12	0.14	0.11
Total Dissolved Solids		692	701	685
Hardness as CaCO <sub>3</sub> Total		327	331	321
Alkalinity - Total		123	130	117
Free Carbon Dioxide	(CO <sub>2</sub> )	1.1	1.4	0.8
Hydrogen Ion Concentration	(pH)	8.36	8.51	8.25
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		1089	1115	1071
Temperature °C		19.5	27	12

SAN DIEGO COUNTY WATER AUTHORITY

Table 12

CHEMICAL CHARACTER OF BLENDED TREATED WATER  
AT LAKE SKINNER  
Year Ending June 30, 1983  
Samples Taken by M.W.D. and Analyzed by District Laboratory

Month	Total Hardness as mg/l Ca CO <sub>3</sub>	Alkalinity as mg/l CaCO <sub>3</sub>	Magnesium as mg/l	Hydrogen Ion Concentration	Temperature When Sampled	
	Total	Total			°F	°C
July	234	102	23.0	8.08	73.2	22.9
August	274	108	26.5	8.10	78.4	25.8
September	235	103	23.0	8.08	75.7	24.3
October	183	93	19.0	8.09	69.1	20.6
November	164	88	17.5	8.10	62.2	16.8
December	160	88	17.0	8.08	55.4	13.0
January	272	110	25.5	8.10	52.3	11.3
February	218	100	21.5	8.09	52.7	11.5
March	189	96	18.5	8.10	55.4	13.0
April	198	99	19.5	8.11	59.9	15.5
May	233	106	22.0	8.10	64.4	18.0
June	194	97	18.0	8.10	69.3	20.7

ANALYSIS - YEAR ENDING JUNE 30, 1983

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	10.0	11.0	8.9
Calcium	(Ca)	50.7	67.0	36.0
Magnesium	(Mg)	20.9	26.5	17.0
Sodium	(Na)	75.6	94	61
Potassium	(K)	3.4	4.6	2.9
Carbonate	(CO <sub>3</sub> )	-	-	-
Bicarbonate	(HCO <sub>3</sub> )	120.8	134	107
Sulfate	(SO <sub>4</sub> )	166.7	243	106
Chloride	(Cl)	76.5	89	64
Nitrate	(NO <sub>3</sub> )	0.48	0.85	0.15
Fluoride	(F)	0.23	0.29	0.13
Boron	(B)	0.18	0.19	0.16
Total Dissolved Solids		465	599	357
Hardness as CaCO <sub>3</sub> Total		212.8	274	160
Alkalinity - Total		99.2	110	88
Free Carbon Dioxide		1.6	1.8	1.4
Hydrogen Ion Concentration	(PH)	8.09	8.11	8.08
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		775	963	622
Temperature °C		17.8	25.8	11.3

TABLES

Table 13  
ASSESSED VALUATIONS AND TAX RATES OF THE  
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Fiscal Year	Area (acres)	Assessed Valuation Total (1)	Tax Rate	
			Per \$100 Secured	Per \$100 Unsecured
1929-30	-	\$ 2,439,836,920	0.04	0.00
1930-31	-	2,431,686,250	.03	.04
1931-32	-	2,382,184,445	.03	.03
1932-33	-	1,936,051,180	.04	.03
1933-34	-	1,654,403,890	.04	.04
1934-35	-	1,587,147,565	.10	.04
1935-36	-	1,783,531,020	.20	.10
1936-37	-	1,789,160,685	.37	.20
1937-38	-	1,827,765,725	.40	.37
1938-39	-	1,896,966,255	.40	.40
1939-40	-	1,910,152,190	.42	.40
1940-41	389,588	1,841,248,450	.49	.42
1941-42	399,875	1,900,599,934	.48	.49
1942-43	400,614	2,001,924,735	.48	.48
1943-44	401,190	2,005,496,430	.48	.48
1944-45	401,536	2,109,192,795	.48	.48
1945-46	402,779	2,159,731,425	.50	.48
1946-47	501,425	2,413,186,570	.48	.50
1947-48	546,573	3,443,212,822 (2)	.35	.48
1948-49	578,368	3,883,081,225	.34	.35
1949-50	585,184	4,181,812,855	.34	.34
1950-51	721,850	4,281,519,725	.31	.34
1951-52	995,130	4,674,664,040	.30	.31
1952-53	1,120,448	5,372,498,515	.28	.30
1953-54	1,368,038	6,015,691,980	.25	.28
1954-55	1,793,651	6,548,392,114	.23	.25
1955-56	1,876,256	8,514,868,335	.21	.23
1956-57	1,932,205	9,674,000,560	.19	.21
1957-58	2,046,189	11,235,906,510	.18	.19
1958-59	2,128,333	12,070,838,070	.18	.18
1959-60	2,171,290	12,714,205,470	.17	.18
1960-61	2,544,960	13,737,971,925	.16	.17
1961-62	2,647,014	14,803,202,587	.15	.16
1962-63	2,797,946	15,699,681,030	.14	.15
1963-64	2,825,306	17,261,412,395	.14	.14
1964-65	2,882,144	17,757,246,740	.14	.14
1965-66	2,890,266	19,143,157,788	.14	.14
1966-67	2,901,421	20,979,150,165	.14	.14
1967-68	3,061,885	22,732,157,500	.14	.14
1968-69	3,067,896	24,016,568,274	.16	.14
1969-70	3,072,058	25,572,510,561	.17	.16
1970-71	3,075,616	27,605,064,302	.17	.17
1971-72	3,093,303	29,023,413,462	.17	.17
1972-73	3,126,803	31,001,520,641	.15	.17
1973-74	3,127,680	32,838,476,378	.14	.15
1974-75	3,129,664	35,941,961,265	.14	.14
1975-76	3,132,012	39,585,365,754	.13	.14
1976-77	3,132,800	45,695,542,697	.12	.13
1977-78	3,267,533	51,268,796,300	.12	.12
1978-79	3,268,337	53,573,470,118	.10	.12
1979-80	3,270,880	64,119,383,253	.09	.10
1980-81	3,272,679	69,390,300,019	.079	.09
1981-82	3,273,339	314,726,854,882 (3)	.0198% (3)	.0198% (3)
1982-83	3,277,011	353,335,259,307	.0166%	.0198%
1983-84		379,788,761,242	.0237%	.0166%

(1) Includes secured, unsecured, and public utility valuations.

(2) First year in which Authority assessed valuation was included in District's assessed valuation.

(3) Effective FY 1981-82, assessed valuation reported at 100% of full value, and tax rates levied in percentage of full assessed value.

SAN DIEGO COUNTY WATER AUTHORITY

Table 14  
METROPOLITAN WATER DISTRICT ANNEXATION CHARGES  
AND BALANCES ON AUTHORITY AREAS

Member Agencies	Date of Annexation	Amount of Annexation Charge	Remaining Balance 6-30-83
<b>Annexation Charges Outstanding</b>			
Bueno Colorado M.W.D.	6-11-54	\$ 1,072,230	\$ 68,922.86
Costa Real MWD (formerly Carlsbad MWD)	6-16-54	548,100	35,811.76
Del Mar, City of	11-23-62	611,250	203,573.52
De Luz M.W.D.	6-28-67	2,002,000	* 3,100,177.39
No. 1 Annexation of 1969	10-15-69	312,000	* 493,419.59
Fallbrook P.U.D.			
No. 2 Annexation of 1958	11-24-58	50,400	10,036.24
Fallbrook Community Air Park	12-22-69	59,800	* 85,592.64
Helix Water District			
El Cajon Dry Island Annexation	12-20-54	327,450	21,605.60
Helix-Watson Ranch Annexation	2-20-59	8,730	2,029.98
Helix-Sunny Slope Hts. Annexation	9-13-59	38,250	8,910.16
Olivenhain M.W.D.	7-25-60	83,880	21,780.46
No. 1 Annexation of 1965	2-11-65	512,520	222,076.87
No. 4 Annexation of 1967	11-13-67	74,000	* 77,702.20
Otay M.W.D.	10-26-56	273,000	18,745.14
No. 3 Annexation of 1960	10-20-60	95,100	25,254.42
Padre Dam M.W.D. (not including Lakeside I.D.) (Formerly Rio San Diego M.W.D.)	6- 7-56	373,980	48,894.90
No. 2 Annexation of 1959	11- 6-59	109,110	25,396.26
No. 3 Annexation of 1960	10-17-60	289,890	77,061.83
No. 4 Annexation of 1970	8- 3-70	164,000	137,919.70
Poway M.W.D.	4-21-54	91,800	3,585.43
No. 1 Annexation of 1959	9-21-59	27,150	6,300.41
Rainbow M.W.D.	4-10-54	167,700	10,732.94
No. 1 Annexation of 1959	5-12-59	24,300	5,665.44
No. 3 Annexation of 1967	12- 6-67	1,728,000	* 2,878,664.00
No. 5 Annexation of 1973	11-22-73	13,200	12,446.57
Ramona M.W.D.	8-27-57	339,000	56,383.86
No. 1 Annexation of 1959	5-29-59	42,330	9,840.70
No. 2 Annexation of 1961	9-22-61	15,480	4,632.32
No. 3 Annexation of 1963	9-20-63	10,560	3,866.62
No. 4 Annexation of 1967	11-27-67	480,600	* 615,058.54
No. 5 Annexation of 1972	5-17-72	732,000	* 828,408.53
Rincon del Diablo M.W.D.	6-14-54	757,200	48,943.00
No. 4 Annexation of 1972	11- 2-72	19,200	* 23,864.71
San Diego Water District			
No. 1 Annexation of 1959	9-15-59	71,820	16,658.83
No. 2 Annexation of 1972	12- 8-72	107,000	* 136,803.78
South Bay Irrigation District (not including City of Chula Vista)	11- 3-52	449,370	0
Valley Center M.W.D.	5- 9-55	205,680	20,003.84
No. 1 Annexation of 1960	12-12-60	23,700	6,308.82
No. 2 Annexation of 1967	11-29-67	22,000	* 29,830.48
No. 3 Annexation of 1967	11-30-67	502,000	* 678,333.79
Yuima M.W.D.	12-16-63	749,490	274,731.45
No. 1 Annexation of 1967	11-21-67	72,200	65,576.79
No. 2 Annexation of 1969	11-24-69	14,400	* 15,838.50
Pendleton Mill Reservation-Nuclear Generating Plant	12-16-77	**2,405,229	** 2,200,393.35
<b>Total</b>		<b>\$16,077,099</b>	<b>\$12,637,784.22</b>
Annexation charges received from other annexed areas not listed above having no remaining balance		\$14,285,776	

\*Annual interest charge on outstanding balance is greater than tax levy based on maximum MWD tax rate of .1875% of assessed valuation (formerly 75¢/\$100 of A.V.).

\*\*Principal only.

TABLES

Table 15  
WATER SALES BY METROPOLITAN WATER DISTRICT

Year	Fiscal Years 1941-42 to 1982-83						
	To Member Municipalities						Total
	Natural Water		Treated Water		Total to Agencies	To Others	
Acre Feet	Percent	Acre Feet	Percent	Acre Feet	Acre Feet	Acre Feet	
1941-42	-0-	-0-	9,372.6	100	9,372.6	70.7	9,443.3
1942-43	-0-	-0-	14,457.8	100	14,457.8	2,626.4	17,084.2
1943-44	-0-	-0-	15,874.9	100	15,874.9	3,301.8	19,176.7
1944-45	-0-	-0-	30,591.3	100	30,591.3	1,715.7	32,307.0
1945-46	-0-	-0-	46,685.8	100	46,685.8	1,264.2	47,950.0
1946-47	-0-	-0-	59,861.8	100	59,861.8	524.0	60,385.8
1947-48	41,093.5	26	71,595.4	64	113,088.9	116.8	113,255.7
1948-49	71,642.6	49	73,237.1	51	144,879.7	128.4	145,008.1
1949-50	69,308.0	49	72,936.0	51	142,244.0	23,371.6	165,615.6
1950-51	75,000.9	54	63,493.1	46	138,494.0	26,978.6	165,472.6
1951-52	66,674.3	44	84,616.1	56	151,290.4	42,464.2	193,754.6
1952-53	30,845.3	24	99,589.6	76	130,434.9	31,682.4	162,117.3
1953-54	120,773.0	51	115,550.6	49	236,323.6	7,820.7	244,144.3
1954-55	192,544.7	59	134,923.3	41	327,468.0	58,184.5	385,652.5
1955-56	190,337.2	53	169,506.4	47	359,843.6	45,562.9	405,406.5
1956-57	286,059.1	60	191,110.7	40	477,169.8	66,074.1	543,243.9
1957-58	266,024.1	57	197,900.0	43	463,924.1	75,612.8	539,536.9
1958-59	244,354.2	46	282,248.1	54	526,602.3	74,107.1	600,709.4
1959-60	425,019.0	58	304,874.8	42	729,893.8	3,523.2	733,417.0
1960-61	594,521.1	64	335,207.2	36	929,728.3	4,099.4	933,827.7
1961-62	608,811.0	66	312,975.9	34	921,786.9	3,676.9	925,463.8
1962-63	648,881.8	66	348,092.6	34	1,016,974.4	3,677.0	1,020,651.4
1963-64	671,853.4	63	388,553.9	37	1,060,407.3	3,776.7	1,064,184.0
1964-65	645,577.3	58	471,042.0	42	1,116,619.3	5,035.3	1,121,654.6
1965-66	550,630.8	52	503,424.9	48	1,054,055.7	4,821.8	1,058,877.5
1966-67	523,141.2	50	531,659.7	50	1,054,800.9	4,513.0	1,059,313.9
1967-68	514,248.1	48	557,730.9	52	1,071,979.0	4,934.9	1,076,913.9
1968-69	455,174.3	43	599,237.7	57	1,054,412.0	2,232.4	1,056,644.4
1969-70	482,256.9	41	692,846.4	59	1,165,103.3	650.0	1,165,753.3
1970-71	520,983.9	46	612,511.6	54	1,133,495.5	150.3	1,133,645.8
1971-72	590,356.9	47	656,635.9	53	1,246,992.8	549.6	1,247,542.4
1972-73	569,290.7	48	606,320.4	52	1,175,611.1	4.3	1,175,615.4
1973-74*	655,058.0	52	593,180.0	48	1,248,238.0	955.0	1,249,193.0
1974-75*	721,970.0	54	607,013.0	46	1,328,983.0	653.0	1,329,636.0
1975-76*	735,100.0	53	653,154.0	47	1,388,254.0	994.0	1,389,248.0
1976-77*	560,124.0	40	829,773.0	60	1,389,897.0	569.0	1,390,466.0
1977-78*	508,036.0	40	757,270.0	60	1,265,306.0	22,019.0	1,287,325.0
1978-79*	434,455.0	35	777,173.0	65	1,211,628.0	24,256.0	1,235,884.0
1979-80	438,414.0	34	843,800.0	66	1,282,214.0	2,620.0	1,284,834.0
1980-81	487,833.0	33	975,177.0	67	1,463,010.0	588.0	1,463,598.0
1981-82	562,650.0	37	940,660.0	63	1,503,310.0	989.0	1,504,299.0
1982-83	314,190.0	26	912,172.0	74	1,226,362.0	207.0	1,226,569.0

\*Revised

Table 16  
**WATER PRODUCTION - METROPOLITAN WATER DISTRICT CONSTITUENT AREAS**  
 Figures Furnished by Metropolitan Water District

	Total Water Production			Source of Water Produced - 1982-1983			
	(1) 1981-82 Amount Ac. Ft.(b)	(2) 1982-83 Amount Ac. Ft.(b)	Percent Increase or Decrease	(3) MWD Direct Deliveries Ac. Ft.(b)	(3+2) Percent of Total	(4) Local Production Amount Ac. Ft.	(4+2) Percent of Total
Anaheim .....	60,715	61,205	+ 0.8	17,890	29	43,315	71
Beverly Hills .....	13,798	13,218	- 4.2	13,218	100	-	-
Bozbank .....	22,126	20,929	- 5.4	18,654	89	2,275	11
Calliguan M.W.D. ....	102,080	87,573	-14.2	70,703	81	16,870	19
Central Basin M.W.D. ....	220,799	213,103	- 3.5	71,760	34	141,343	66
Chino Basin M.W.D. ....	153,571	144,341	- 6.0	13,706	9	130,635	91
Coastal M.W.D. ....	36,181	35,949	- 0.6	35,172	98	777	2
Compton .....	8,695	8,682	- 0.1	2,734	31	5,948	69
Eastern M.W.D. ....	128,461(a)	110,540(a)	-14.0	27,681	25	82,859(a)	75
Foothill M.W.D. ....	14,763	13,758	- 6.8	8,176	59	5,582	41
Fullerton .....	30,929	29,729	- 3.9	13,371	45	16,358	55
Glendale .....	26,959	26,185	- 2.9	21,846	83	4,239	17
Las Virgenes M.W.D. ....	16,351	13,462	-17.7	13,462	100	-	-
Long Beach .....	70,815	69,255	- 2.2	42,049	61	27,206	39
Los Angeles .....	608,332	594,544	- 2.3	25,619	4	568,925	96
Orange County M.W.D. ....	335,314	314,726	- 6.1	145,726	46	169,000	54
Pasadena .....	34,980	33,901	- 3.1	14,957	44	18,944	56
San Diego C.W.A. ....	533,205	447,536	-16.1	304,162	68	143,374	32
San Fernando .....	3,241	3,225	- 0.5	80	2	3,145	98
San Marino .....	4,878	4,172	-14.5	1	0	4,171	100
Santa Ana .....	42,108	41,875	- 0.6	12,087	29	29,788	71
Santa Monica .....	16,651	16,666	+ 0.1	9,435	57	7,231	43
Three Valleys M.W.D. ....	91,540	101,950	+11.4	40,968	40	60,982	60
Torrance .....	22,041	20,489	- 7.0	14,569	71	5,920	29
Upper San Gabriel Valley M.W.D. ....	226,368	217,421	- 4.0	6,847	3	210,574	97
West Basin M.W.D. ....	176,455	171,008	- 3.1	129,432	76	41,576	24
Western M.W.D. ....	214,860	211,346	- 1.6	40,084	19	171,262	81
Totals .....	3,216,216	3,026,788	- 5.9	1,114,389	37	1,912,399	63

NOTES: (a) Includes seepage into San Jacinto Tunnel.

(b) Does not include water delivered for groundwater replenishment.

San Diego County Water Authority  
**ANNUAL FINANCIAL REPORT**  
 YEAR ENDED JUNE 30, 1983

FINANCIAL REPORT



Peat, Marwick, Mitchell & Co.  
Certified Public Accountants  
225 Broadway, Suite 1400  
San Diego, California 92101

The Board of Directors  
San Diego County Water Authority:

We have examined the balance sheets of the San Diego County Water Authority as of June 30, 1983 and 1982, and the related statements of earnings, changes in equity and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of the San Diego County Water Authority at June 30, 1983 and 1982 and the results of its operations and the changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Our examinations were made for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplementary information included in Schedule 1 is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the examinations of the basic financial statements and in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

August 2, 1983

*Peat, Marwick, Mitchell & Co.*

SAN DIEGO COUNTY WATER AUTHORITY

FINANCIAL REPORT

SAN DIEGO COUNTY WATER AUTHORITY

Balance Sheets

June 30, 1983 and 1982

<u>Assets</u>	<u>1983</u>	<u>1982</u>
<b>Current assets:</b>		
Cash and certificates of deposit	\$ 8,379,070	15,732,630
Accounts receivable, net	3,938,378	4,661,862
Inventory of water in storage	1,625,544	1,366,464
Prepaid expenses	43,708	48,253
<b>Total current assets</b>	<u>13,986,700</u>	<u>21,809,209</u>
<b>Restricted assets:</b>		
Debt redemption:		
Waterworks bonds:		
Cash and certificates of deposit	1,757,447	1,621,668
Taxes and interest receivable, less allowance for delinquent taxes of \$321,486 in 1983 and \$341,726 in 1982	62,239	34,817
U.S. Government contracts:		
Cash and certificates of deposit	150,746	2,441
Due from Metropolitan Water District	2,318,838	2,516,186
Taxes and interest receivable, less allowance for delinquent taxes of \$14,473 in 1983 and \$16,736 in 1982	3,588	2,301
Capital improvements:		
Cash and certificates of deposit	6,844,996	7,563,827
Unamortized issue costs	198,710	231,946
Investment in annuity contract	263,315	149,184
<b>Total restricted assets</b>	<u>11,599,879</u>	<u>12,122,370</u>
Property, plant and equipment, net (note 2)	123,154,145	113,668,855
Participation rights (note 2)	177,235,525	167,971,894
	<u>\$ 325,976,249</u>	<u>315,572,328</u>

See accompanying notes to financial statements.

<u>Liabilities and Equity</u>	<u>1983</u>	<u>1982</u>
<b>Current liabilities, payable from current assets:</b>		
Accounts payable	\$ 7,661,716	8,889,033
Advances and deposits by agencies	60,384	182,283
Accrued expenses	327,345	225,536
<b>Total current liabilities, payable from current assets</b>	<u>8,049,445</u>	<u>9,296,852</u>
<b>Current liabilities, payable from restricted assets:</b>		
Contracts payable	-	2,747,703
Current installments of long-term debt (note 3)	3,589,575	2,489,575
Accrued interest payable	649,635	675,889
<b>Total current liabilities</b>	<u>12,288,655</u>	<u>15,210,019</u>
Deferred compensation payable	263,315	149,184
<b>Long-term debt, excluding current installments (note 3):</b>		
General obligation waterworks bonds	39,615,000	41,835,000
U.S. Government contract	3,972,935	4,342,510
Annexation charges - Metropolitan Water District	12,636,885	12,830,630
Note payable to bank	8,000,000	9,000,000
Contract notes payable	6,000,000	6,000,000
<b>Total long-term debt</b>	<u>70,224,820</u>	<u>74,008,140</u>
<b>Equity:</b>		
Equity in property, plant and equipment (note 2)	61,976,635	50,001,769
Contributed capital (note 2)	164,598,640	155,141,265
Restricted balances:		
Waterworks bonds, debt redemption	1,265,916	1,072,725
U.S. Government contract, debt redemption	2,473,172	2,520,928
Capital improvements	6,947,841	4,955,941
Appropriated, long-term projects	2,326,039	2,556,689
Unrestricted balance	3,611,216	9,955,668
<b>Total equity</b>	<u>243,199,459</u>	<u>226,204,985</u>
	<u>\$ 325,976,249</u>	<u>315,572,328</u>

## FINANCIAL REPORT

SAN DIEGO COUNTY WATER AUTHORITY

Statements of Earnings

Years ended June 30, 1983 and 1982

	<u>1983</u>	<u>1982</u>
Water sales	\$ 38,289,383	43,190,662
Cost of water sold	<u>35,627,652</u>	<u>39,162,343</u>
Gross margin from water sales	<u>2,661,731</u>	<u>4,028,319</u>
Operating expenses:		
Water treatment	109,791	132,328
Systems operations	210,157	178,795
Maintenance of structures and plant	299,034	266,676
Automotive operation, maintenance and shop expense	131,806	112,405
Depreciation	1,090,705	1,165,812
Administrative and general salaries	355,502	322,596
General expense and supplies	<u>901,560</u>	<u>847,362</u>
Total operating expenses	<u>3,098,555</u>	<u>3,025,974</u>
Net income (loss) from operations	(436,824)	1,002,345
Nonoperating income (expense):		
Property taxes	6,852,252	7,231,207
Interest expense (note 2)	(1,198,608)	(2,051,970)
Interest income	2,266,386	4,130,445
Other	<u>(60,780)</u>	<u>(331,371)</u>
Net earnings	\$ <u>7,422,426</u>	<u>9,980,656</u>

See accompanying notes to financial statements.

SAN DIEGO COUNTY WATER AUTHORITY

SAN DIEGO COUNTY WATER AUTHORITY  
 Statements of Changes in Equity  
 Years ended June 30, 1983 and 1982

	Total equity	Unrestricted balance
Balance, July 1, 1981	\$ 206,412,396	15,102,281
Additions (deductions):		
Net earnings	9,980,656	6,014,252
Taxes and direct payments by member agencies to Metropolitan Water District for participation rights	9,601,064	-
Capital expenditures for property, plant and equipment:		
From restricted assets	-	-
From operations	-	(9,946,970)
From contributions by member agencies	210,869	-
Waterworks bonds redeemed	-	-
Payments on U.S. Government contracts	-	-
Increase in long-term debt	-	-
Transfers, net	-	(1,213,895)
Balance, June 30, 1982	<u>226,204,985</u>	<u>9,955,668</u>
Additions (deductions):		
Net earnings	7,422,426	2,822,692
Taxes and direct payments by member agencies to Metropolitan Water District for participation rights	9,457,375	-
Capital expenditures for property, plant and equipment:		
From restricted assets	-	-
From operations	-	(8,465,323)
From contributions by member agencies	114,673	-
Waterworks bonds redeemed	-	-
Payments on U.S. Government contracts	-	-
Transfers, net	-	(701,821)
Balance, June 30, 1983	<u>\$ 243,199,459</u>	<u>3,611,216</u>

See accompanying notes to financial statements.

FINANCIAL REPORT

Appropriated long-term projects	Restricted balances			Contributed capital	Equity in property, plant and equipment
	Debt redemption		Capital improvements		
	U.S. Government contract	Waterworks bonds			
442,794	2,796,335	1,264,984	6,884,406	145,540,201	34,381,395
-	249,168	2,765,560	2,117,488	-	(1,165,812)
-	-	-	-	9,601,064	-
-	-	(187,819)	(10,045,953)	-	10,233,772
-	-	-	-	-	9,946,970
-	-	-	-	-	210,869
-	-	(2,025,000)	-	-	2,025,000
-	(369,575)	-	-	-	369,575
-	-	-	6,000,000	-	(6,000,000)
<u>2,113,895</u>	<u>(155,000)</u>	<u>(745,000)</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>2,556,689</u>	<u>2,520,928</u>	<u>1,072,725</u>	<u>4,955,941</u>	<u>155,141,265</u>	<u>50,001,769</u>
-	321,819	3,060,262	2,308,358	-	(1,090,705)
-	-	-	-	9,457,375	-
-	-	(747,071)	(1,248,929)	-	1,996,000
-	-	-	-	-	8,465,323
-	-	-	-	-	114,673
-	-	(2,120,000)	-	-	2,120,000
-	(369,575)	-	-	-	369,575
<u>(230,650)</u>	<u>-</u>	<u>-</u>	<u>932,471</u>	<u>-</u>	<u>-</u>
<u>2,326,039</u>	<u>2,473,172</u>	<u>1,265,916</u>	<u>6,947,841</u>	<u>164,598,640</u>	<u>61,976,635</u>

SAN DIEGO COUNTY WATER AUTHORITY

SAN DIEGO COUNTY WATER AUTHORITY  
 Statements of Changes in Financial Position  
 Years ended June 30, 1983 and 1982

	<u>1983</u>	<u>1982</u>
<b>Sources of working capital:</b>		
Net earnings	\$ 7,422,426	9,980,656
Add back depreciation which does not use working capital	<u>1,090,705</u>	<u>1,165,812</u>
Working capital provided by operations	8,513,131	11,146,468
Contributions by member agencies for property, plant and equipment	114,673	210,869
Decrease in waterworks bonds equity	-	192,259
Decrease in U.S. Government contract equity	47,756	275,407
Proceeds from contract notes payable	-	6,000,000
Decrease in capital improvements, net restricted assets, applied to new construction	-	1,928,465
Decrease in working capital	<u>6,575,102</u>	<u>3,032,718</u>
	<u>\$ 15,250,662</u>	<u>22,786,186</u>
<b>Uses of working capital:</b>		
Repayments of long-term debt excluding annexation charges	2,489,575	2,394,575
Capital expenditures, net of taxes and direct payments by member agencies to Metropolitan Water District for participation rights of \$9,457,375 in 1983 and \$9,601,064 in 1982 and credits for annexation charges of \$193,745 in 1983 and \$67,667 in 1982	10,575,996	20,391,611
Increase in waterworks bonds equity	193,191	-
Increase in capital improvements equity	<u>1,991,900</u>	<u>-</u>
	<u>\$ 15,250,662</u>	<u>22,786,186</u>
<b>Changes in components of working capital:</b>		
Increase (decrease) in current assets:		
Cash and certificates of deposit	(7,353,560)	(3,197,795)
Accounts receivable, net	(723,484)	(812,615)
Current installments of long-term receivables	-	(65,134)
Inventory of water in storage	259,080	1,366,464
Prepaid expenses	<u>(4,545)</u>	<u>30,350</u>
	<u>(7,822,509)</u>	<u>(2,678,730)</u>
Increase (decrease) in current liabilities, payable from current assets:		
Accounts payable	(1,227,317)	271,326
Advances and deposits by agencies	(121,899)	23,412
Accrued expenses	<u>101,809</u>	<u>59,250</u>
	<u>(1,247,407)</u>	<u>353,988</u>
Decrease in working capital	<u>\$ (6,575,102)</u>	<u>(3,032,718)</u>

See accompanying notes to financial statements.

FINANCIAL REPORT

SAN DIEGO COUNTY WATER AUTHORITY  
 Notes to Financial Statements  
 June 30, 1983 and 1982

(1) Summary of Significant Accounting Policies

Accounting Method:

The Authority operates and reports as an enterprise utilizing the accrual method of accounting.

Taxes Receivable:

Uncollected taxes receivable are recorded at the amount billed and an allowance is established for the amount estimated uncollectible within the ensuing year.

Inventories of Water in Storage:

Inventories of water in storage are stated at cost using the first-in, first-out method.

Property, Plant and Equipment:

Property, plant and equipment are recorded at cost. Depreciation of property, plant and equipment is computed on the straight-line method over the estimated lives of the respective assets.

Participation Rights:

Participation rights represent the cumulative amount of taxes levied and collected on properties within the Authority and direct payments by member agencies to the Metropolitan Water District (MWD). The taxes are remitted directly to MWD by the County of San Diego. The Authority records the amounts received by MWD as increases in participation rights and contributed capital. Participation rights represent the right to claim water from MWD. As of June 30, 1983, the Authority had the right to claim approximately 10% of all water available from MWD. Participation rights are not amortized.

Reclassification:

For comparability, certain of the prior year figures have been reclassified to conform with the current year financial statement presentation.

(Continued)

SAN DIEGO COUNTY WATER AUTHORITY

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SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements, Continued

(2) Property, Plant, Equipment and Participation Rights and Equity Therein

	<u>1983</u>	<u>1982</u>
Property, plant, equipment and participation rights:		
Property, plant and equipment	\$ 107,148,320	106,642,405
Construction work in progress	<u>35,141,386</u>	<u>25,090,843</u>
	142,289,706	131,733,248
Less accumulated depreciation	<u>19,135,561</u>	<u>18,064,393</u>
Net property, plant and equipment	123,154,145	113,668,855
Participation rights in Metropolitan Water District	<u>177,235,525</u>	<u>167,971,894</u>
Net property, plant, equipment and participation rights	300,389,670	281,640,749
Less total long-term debt including current installments	<u>73,814,395</u>	<u>76,497,715</u>
Equity in property, plant, equipment and participation rights	\$ <u>226,575,275</u>	<u>205,143,034</u>
Represented by:		
Equity in property, plant and equipment	61,976,635	50,001,769
Contributed capital	<u>164,598,640</u>	<u>155,141,265</u>
	\$ <u>226,575,275</u>	<u>205,143,034</u>
The property, plant and equipment was financed by:		
General obligation bonds	67,797,306	67,797,306
U.S. Government contract	14,873,408	14,873,408
Current revenues	22,745,045	22,486,606
Agencies contributions	<u>1,732,561</u>	<u>1,485,085</u>
	\$ <u>107,148,320</u>	<u>106,642,405</u>

Interest capitalized on construction work in progress totaled \$1,996,000 in 1983 and \$744,000 in 1982. Total interest costs incurred by the Authority was \$3,194,608 in 1983 and \$2,795,970 in 1982.

(Continued)

FINANCIAL REPORT

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SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements, Continued

(3) Long-Term Debt

	<u>Interest rate</u>	<u>1983</u>	<u>1982</u>
General obligation bonds:			
Waterworks bonds, 1957, maturing February 1, 1984-1994	11-6%	\$ 18,800,000	20,270,000
Waterworks bonds, 1966, maturing October 1, 1983-2004	4.5%-5.5%	<u>23,035,000</u>	<u>23,685,000</u>
Total bonds		<u>41,835,000</u>	<u>43,955,000</u>
U.S. Government contract due February, 1995:			
Authority's share; second pipeline	2.6%	2,023,672	2,195,899
Metropolitan Water District's share; second pipeline	2.6%	<u>2,318,838</u>	<u>2,516,186</u>
Total U.S. Government contract		<u>4,342,510</u>	<u>4,712,085</u>
Note payable to bank, maturing June 25, 1984-1988	7.1%	9,000,000	9,000,000
Contract notes payable, maturing May 1, 1988-1990	9.25%-10%	6,000,000	6,000,000
Annexation charges - Metropolitan Water District		<u>12,636,885</u>	<u>12,830,630</u>
Total long-term debt		73,814,395	76,497,715
Less current installments of long-term debt		<u>3,589,575</u>	<u>2,489,575</u>
Long-term debt, excluding current installments		\$ <u>70,224,820</u>	<u>74,008,140</u>

The Metropolitan Water District's share of the U.S. Government contract, \$2,318,838 and \$2,516,186 at June 30, 1983 and 1982, respectively, is also recorded as due from Metropolitan Water District.

(Continued)

SAN DIEGO COUNTY WATER AUTHORITY

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SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements, Continued

(3) Long-Term Debt, Continued

The Authority's liability, \$12,636,885 and \$12,830,630 at June 30, 1983 and 1982, respectively, for annexation charges due Metropolitan Water District (MWD) and interest thereon are paid by means of a special tax levied on the properties within the annexed areas. Since the collections of these taxes are remitted directly to MWD by the County of San Diego, the Authority records the net collections as a reduction of its liability to MWD and an increase in its equity in participation rights.

Maturities of long-term debt, excluding annexation charges, for the five years subsequent to June 30, 1983 are summarized as follows:

1984	\$ 3,589,575
1985	4,699,575
1986	4,794,575
1987	4,884,575
1988	5,999,575
Thereafter	<u>37,209,635</u>
	<u>\$ 61,177,510</u>

The Authority uses the services of paying agents to handle payment of long-term debt maturities and interest expense. The agents held \$796,547 and \$210,636 at June 30, 1983 and 1982, respectively for the payment of matured unredeemed principal and interest on bonded debt. The amounts held by the paying agent have not been included in the financial statements.

(4) Pension Plan

The Authority is a member of the California Public Employees' Retirement System which provided retirement benefits for all of its permanent employees. The total pension cost was \$192,665 in 1983 and \$182,476 in 1982, which included amortization of prior service costs to 1982. The Authority's contribution rate was 14.04% of annual payroll in 1983 and 1982.

FINANCIAL REPORT

Schedule I

SAN DIEGO COUNTY WATER AUTHORITY

Bonded Debt Maturities

June 30, 1983

Year ended June 30	Waterworks Bonds		Total principal	Total interest	Total payments
	1957 principal	1966 principal			
1984	\$ 1,540,000	680,000	2,220,000	1,767,890	3,987,890
1985	1,620,000	710,000	2,330,000	1,678,707	4,008,707
1986	1,680,000	745,000	2,425,000	1,584,486	4,009,486
1987	1,740,000	775,000	2,515,000	1,486,521	4,001,521
1988	1,815,000	815,000	2,630,000	1,384,475	4,014,475
1989	1,880,000	850,000	2,730,000	1,277,868	4,007,868
1990	1,960,000	890,000	2,850,000	1,166,815	4,016,815
1991	2,040,000	925,000	2,965,000	1,051,020	4,016,020
1992	2,100,000	970,000	3,070,000	930,117	4,000,117
1993	2,165,000	1,015,000	3,180,000	804,537	3,984,537
1994	260,000	1,060,000	1,320,000	694,630	2,014,630
1995	-	1,105,000	1,105,000	632,747	1,737,747
1996	-	1,155,000	1,155,000	577,377	1,732,377
1997	-	1,210,000	1,210,000	519,435	1,729,435
1998	-	1,265,000	1,265,000	458,797	1,723,797
1999	-	1,320,000	1,320,000	395,465	1,715,465
2000	-	1,380,000	1,380,000	329,315	1,709,315
2001	-	1,440,000	1,440,000	260,225	1,700,225
2002	-	1,505,000	1,505,000	188,072	1,693,072
2003	-	1,575,000	1,575,000	112,612	1,687,612
2004	-	1,645,000	1,645,000	37,012	1,682,012
	<u>\$ 18,800,000</u>	<u>23,035,000</u>	<u>41,835,000</u>	<u>17,338,123</u>	<u>59,173,123</u>