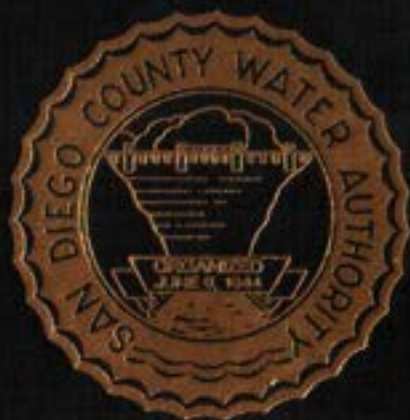


**SAN DIEGO
COUNTY WATER AUTHORITY**



**FORTY-FOURTH ANNUAL REPORT
1990**

SAN DIEGO COUNTY WATER AUTHORITY

Organized June 9, 1944

FORTY-FOURTH ANNUAL REPORT

of Authority Operations
for Fiscal Year Ending June 30, 1990

Lester A. Snow
General Manager

SAN DIEGO, CALIFORNIA
1990

SAN DIEGO COUNTY WATER AUTHORITY

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The New San Diego County
Water Authority Headquarters
3211 Fifth Avenue - San Diego, CA 92103
Occupied February 17, 1989

SAN DIEGO COUNTY WATER AUTHORITY

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SAN DIEGO COUNTY WATER AUTHORITY

Member Agencies, Date of Entry and

Representative on Board of Directors on June 30, 1990

CITIES

Del Mar	Nov. 23, 1962
Bob Stevens	
Escondido	Oct. 9, 1950
David A. Drake	
National City	June 9, 1944
Frank W. Chenelle	
Oceanside	June 9, 1944
James F. Turner	
Poway	April 21, 1954
Alan D. Archibald	
San Diego	June 9, 1944
Dr. Charles F. Cooper, Christine Frahm, Francesca M. Krauel, John M. Leach, Michael D. Madigan, Joseph Parker, Michael E. Parrish, Paul A. Peterson, Philip R. Pryde, John P. Starkey	

WATER DISTRICTS

Helix	June 9, 1944
Nat L. Eggert, Harry Griffen	
Otay	Oct. 26, 1956
Mark W. Watton	
San Dieguito	Dec. 13, 1948
Anne Orsted	

IRRIGATION DISTRICTS

Santa Fe	Dec. 13, 1948
Harold K. Friedland	
South Bay	Nov. 3, 1952
Cary F. Wright	
(Includes City of Chula Vista, an independent member agency, from June 9, 1944 to November 3, 1952)	

MUNICIPAL WATER DISTRICTS

Bueno Colorado	June 11, 1954
William D. Taylor	
Carlsbad	June 16, 1954
Eric Larson	
De Luz Heights	June 28, 1967
George C. Shippey	
Olivenhain	July 25, 1960
William Hollingsworth	
Padre Dam	June 7, 1956
W.E. Klostermann	
(Includes Lakeside I.D., an independent member agency, from June 9, 1944 to June 7, 1956)	
Rainbow	April 10, 1954
Herbert H. Stickney	
Ramona	August 27, 1957
Vernon L. Leming	
Rincon del Diablo	June 14, 1954
Sherwood D. Anderson	
Valley Center	May 9, 1955
Lewis C. Snavely	
Yuima	Dec. 16, 1963
Rollin P. Eckis	

PUBLIC UTILITY DISTRICT

Fallbrook	June 9, 1944
Gordon W. Tinker	

FEDERAL AGENCY

Pendleton Military Reservation	Dec. 16, 1977
Lawrence E. Carlson	

COUNTY WATER DISTRICT

Vallecitos	Feb. 25, 1980
Dale Mason	

COUNTY OF SAN DIEGO (ex officio)

.....	Feb. 13, 1986
Susan Golding	

OFFICERS OF BOARD OF DIRECTORS

1989-90



Chairman
DALE MASON
Vallecitos Water District
3-80 to 6-90



Vice Chairman
MICHAEL D. MADIGAN
City of San Diego
5-79 to 6-90



Secretary
HERBERT H. STICKNEY
Rainbow
Municipal Water District
3-85 to 6-90

BOARD OF DIRECTORS

1989-90



S.D. ANDERSON
Rincon del Diablo
Municipal Water District
8-78 to 6-90



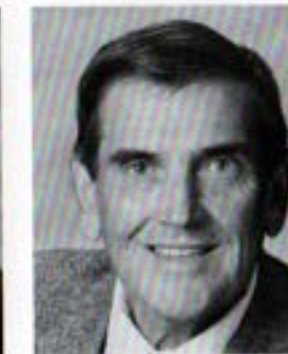
ALAN D. ARCHIBALD
City of Poway
10-82 to 6-90



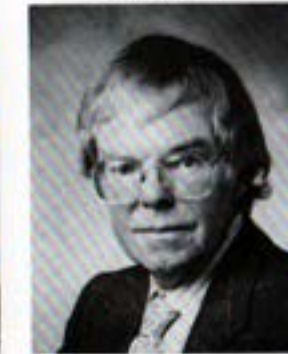
MARGARET J. BONAS
Carlsbad
Municipal Water District
3-87 to 1-90



LAWRENCE E. CARLSON
Pendleton Military
Reservation
12-86 to 6-90



FRANK W. CHENELLE
City of National City
3-90 to 6-90



DR. CHARLES F. COOPER
City of San Diego
4-73 to 6-90

BOARD OF DIRECTORS

1989-90
(Continued)



JOHN M. CRANSTON
Santa Fe
Irrigation District
10-64 to 3-90



TOM CROWNOVER
National City
6-76 to 3-90



DAVID A. DRAKE
City of Escondido
9-89 to 6-90



NAT L. EGGERT
Helix Water District
10-77 to 6-90



ROLLIN P. ECKIS
Yulma Municipal
Water District
9-89 to 6-90



CHRISTINE FRAHM
City of San Diego
3-88 to 6-90



HAROLD K. FRIEDLAND
Santa Fe
Irrigation District
3-90 to 6-90



SUSAN GOLDING
County of San Diego
2-86 to 6-90



HARRY GRIFFEN
Helix
Water District
7-56 to 6-90

BOARD OF DIRECTORS

1989-90
(Continued)



JOHN F. HENNIGAR
Valley Center
Municipal Water District
10-76 to 10-89



WILLIAM HOLLINGSWORTH
Olivenhain Municipal
Water District
5-86 to 6-90



W.E. KLOSTERMANN
Padre Dam Municipal
Water District
2-83 to 6-90



FRANCESCA M. KRAUEL
City of San Diego
7-78 to 6-90



ERIC LARSON
Carlsbad
Municipal Water District
1-90 to 6-90



JOHN M. LEACH
City of San Diego
5-86 to 6-90



VERNON LEE LEMING
Ramona
Water District
2-87 to 6-90



GEORGE M. LOHNES, JR.
City of Escondido
6-86 to 9-89



MICHAEL D. MADIGAN
City of San Diego
5-79 to 6-90

BOARD OF DIRECTORS

1989-90
(Continued)



DALE MASON
Vallecitos
Water District
3-80 to 6-90



ANNE OMSTED
San Dieguito
Water District
2-87 to 6-90



JOSEPH PARKER
City of San Diego
3-77 to 6-83
5-86 to 6-90



MICHAEL E. PARRISH
City of San Diego
4-89 to 6-90



PAUL A. PETERSON
City of San Diego
6-83 to 4-90



PHILIP R. PRYDE
City of San Diego
9-85 to 6-90



GEORGE C. SHIPPEY
De Luz Heights
Municipal Water District
12-88 to 6-90



JAMES H. SINGER
Yuima
Municipal Water District
5-86 to 6-90



LEWIS C. SNAVELY
Valley Center
Municipal Water District
11-89 to 6-90

BOARD OF DIRECTORS

1989-90
(Continued)



JOHN P. STARKEY
City of San Diego
10-75 to 6-90



BOB STEVENS
City of Del Mar
2-87 to 6-90



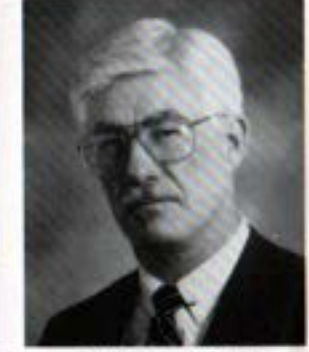
HERBERT H. STICKNEY
Rainbow Municipal
Water District
3-85 to 6-90



WILLIAM D. TAYLOR
Buena Colorado
Municipal Water District
4-88 to 6-90



GORDON W. TINKER
Fallbrook Public
Utility District
4-83 to 6-90



JAMES F. TURNER
City of Oceanside
8-86 to 6-90



MARK W. WATTON
Otay Water District
2-85 to 6-90



CARY F. WRIGHT
South Bay
Irrigation District
11-88 to 6-90

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

1989-90



HARRY GRIFFEN
1-63 to 6-90



JOHN F. HENNIGAR
10-86 to 10-89



FRANCESCA M. KRAUEL
10-83 to 6-90



MICHAEL D. MADIGAN
7-82 to 6-90



DALE MASON
12-86 to 6-90



JOHN P. STARKEY
1-81 to 6-90

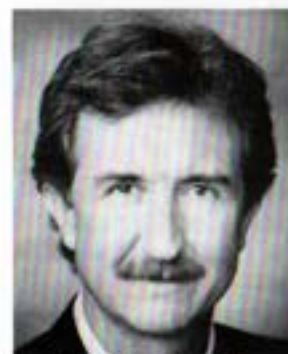


HERBERT H. STICKNEY
10-89 to 6-90

**WATER AUTHORITY MANAGEMENT
ON JUNE 30, 1990**



LESTER A. SNOW
General Manager



ERGUN BAKALL
Chief Engineer



SHIRLEY A. JACKSON
*Assistant General Manager—
Administration*



CHARLES N. RHODES
*Assistant General Manager
Water Resources*



HENRY G. LOZANO
*Director of Finance
and Treasurer*



CINDY M. HEINZ
Executive Secretary



PAUL D. ENGSTRAND
General Counsel

SAN DIEGO COUNTY WATER AUTHORITY

**ROSTER OF STANDING COMMITTEES
AS OF JUNE 30, 1990**

Administrative Policy

Anne Omsted, Chairman
Christine Frahm, Vice Chairman
George C. Shippey
Lawrence E. Carlson
Charles F. Cooper
William Hollingsworth
W.E. Klostermann
Francesca M. Krauel
James F. Turner
Cary F. Wright

Fiscal Policy

John M. Leach, Chairman
Nat L. Eggert, Vice Chairman
Herbert H. Stickney
Eric Larson
John P. Starkey
Rollin P. Eckis
James F. Turner
Michael E. Parrish
Harry Griffen
David A. Drake

Long Range Planning

Philip R. Pryde, Chairman
Gordon W. Tinker, Vice Chairman
Alan D. Archibald
Frank W. Chenelle
George C. Shippey
William Hollingsworth
John M. Leach
Harold K. Friedland

Water Policy

Charles F. Cooper, Chairman
Susan Golding, Vice Chairman
L.C. Snively
Harry Griffen
Francesca M. Krauel
Michael D. Madigan

Water Policy (Continued)

John P. Starkey
Herbert H. Stickney
Bob Stevens
Harold K. Friedland

Engineering & Operations

Sherwood D. Anderson, Chairman
Vernon L. Leming, Vice Chairman
Alan D. Archibald
Lawrence E. Carlson
William D. Taylor
Frank W. Chenelle
L.C. Snively
Michael E. Parrish
David A. Drake
Philip R. Pryde

Public Information

Joseph Parker, Chairman
Nat L. Eggert, Vice Chairman
Gordon W. Tinker
Cary F. Wright
Mark W. Watton
Christine Frahm
Susan Golding
Rollin P. Eckis
William D. Taylor

Water Reclamation

Mark W. Watton, Chairman
Vernon L. Leming, Vice Chairman
Bob Stevens
Sherwood D. Anderson
Eric Larson
W.E. Klostermann
Michael D. Madigan
Anne Omsted
Joseph Parker
Harry Griffen

SAN DIEGO COUNTY WATER AUTHORITY

**ROSTER OF STANDING COMMITTEES
AS OF JUNE 30, 1990
(Continued)**

TEMPORARY (AD HOC) COMMITTEES

Audit Subcommittee

Nat L. Eggert, Chairman
Joseph Parker
William Hollingsworth

Public Information Goals & Mission

Christine Frahm
Mark W. Watton

Touche Ross Study Subcommittee

Dale Mason
Michael D. Madigan
Herbert H. Stickney
Sherwood D. Anderson
John M. Leach
Mark W. Watton

Special Counsel Subcommittee

George C. Shippey, Chairman
Christine Frahm
William Hollingsworth

Encroachment Subcommittee

Anne Omsted, Chairman
Christine Frahm
Dale Mason
Sherwood D. Anderson
Lawrence E. Carlson

Ad Hoc Investor Relations Committee

John M. Leach, Chairman
Herbert H. Stickney
Mark W. Watton

Nominating Committee

Francesca M. Krauel, Chairman
Sherwood D. Anderson
Nat L. Eggert

Ad Hoc Financial Advisor Subcommittee

Christine Frahm
John P. Starkey
James F. Turner

**SAN DIEGO COUNTY WATER AUTHORITY
REPORT OF ACTIVITIES**

FISCAL YEAR 1989-90

The San Diego County Water Authority continues to face many challenges to providing supplemental water service to San Diego County. New demands will be made on both the quantity and quality of water to be delivered. Increased demand has caused record water sales to occur in each of the last several years. Monthly aqueduct flows set records during nine months of this fiscal year. Only in the months of September, April, and June were flows lower than the previous year. This increased demand has created a need for stepped up conservation efforts and development of additional sources of water supplies, as well as new and expanded storage and distribution facilities.

During the fiscal year, water use within the Authority's service area was 646,645 acre feet, an increase of 20,143 acre feet over the previous year. Authority-supplied water increased 38,665 acre feet to 613,444 acre feet as the continuing drought reduced available local supplies. The population within the Authority service grew from 2,346,208 in fiscal year 1989 to 2,435,903 in fiscal year 1990.

In 1990 the Water Authority's primary objectives have been to: (1) effectively manage existing resources, including the development of programs to manage supplies during periods of drought; (2) work to secure additional dependable water supplies to meet the increasing water needs of San Diego County; (3) identify water storage and distribution facilities required to serve existing and future water demands in the service area; (4) maintain or upgrade existing facilities to provide full system delivery capability and reliability; and (5) automate work activities to enhance operational efficiency. These objectives were met through the following accomplishments:

The eight-mile-long Ramona Pipeline was completed on schedule. This pipeline will deliver treated water from the Second Aqueduct to Olivenhain Water District, the City of San Diego, and the Ramona Municipal Water District.

Route selection for Pipeline 4 Extension through the cities of La Mesa and Lemon Grove was completed. Memorandums of agreement with these cities were completed.

The Water Resources Planning Department managed the Optimal Storage Study. The Study will recommend various storage and delivery enhancements to address emergency and seasonal storage needs. The study is closely coordinated with Metropolitan's Eastside Storage Reservoir studies. The department also developed an Emergency Water Management Ordinance, took an active leadership role in the State Water Resources

control Board's Bay-Delta process, and completed a report which will become the basis for establishing and implementing capacity charges.

The Water Reclamation Department continued to make significant progress during the year. The Board of Directors established regional policies and procedures related to mandatory use of reclaimed water, requirements for dual-plumbing in new construction, and source control measures to protect reclaimed water quality.

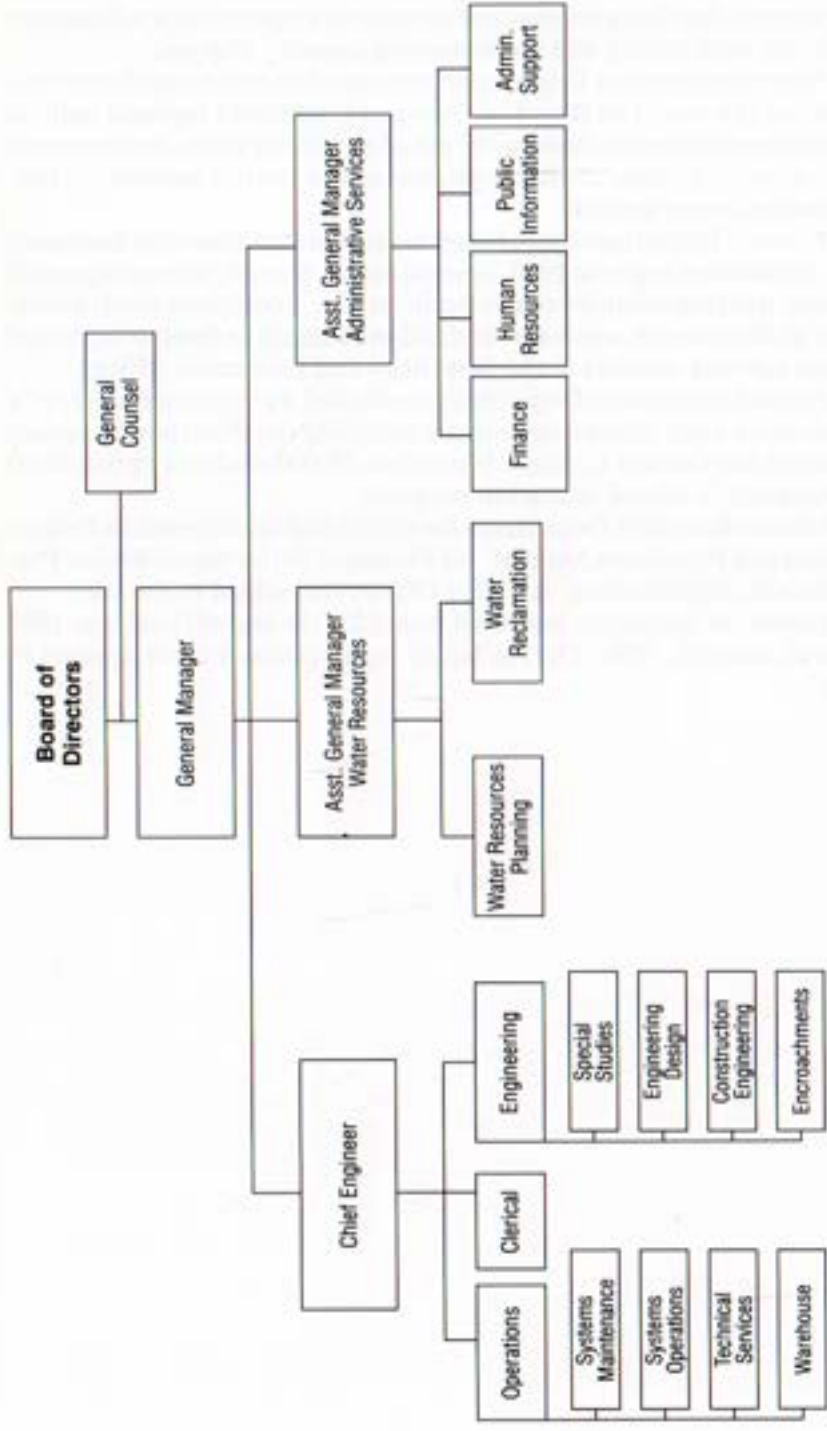
The Finance Department purchased an automated financial computer system. Installation began in 1990. General ledger, payroll, accounts payable and budget tracking modules were brought on line. A computer needs assessment for all departments was completed and work began to develop two linked computer network systems in the San Diego and Escondido offices.

The Public Information Department continued its implementation of a comprehensive water education program including the Waterhog campaign and Water(Less) Garden Contest. More than 25,000 students participated in the Authority's school education program.

The Human Resources Department developed and implemented a Personnel Policies and Procedures Manual. An Employee Performance Review Program was also implemented. A Safety Officer was added to the staff.

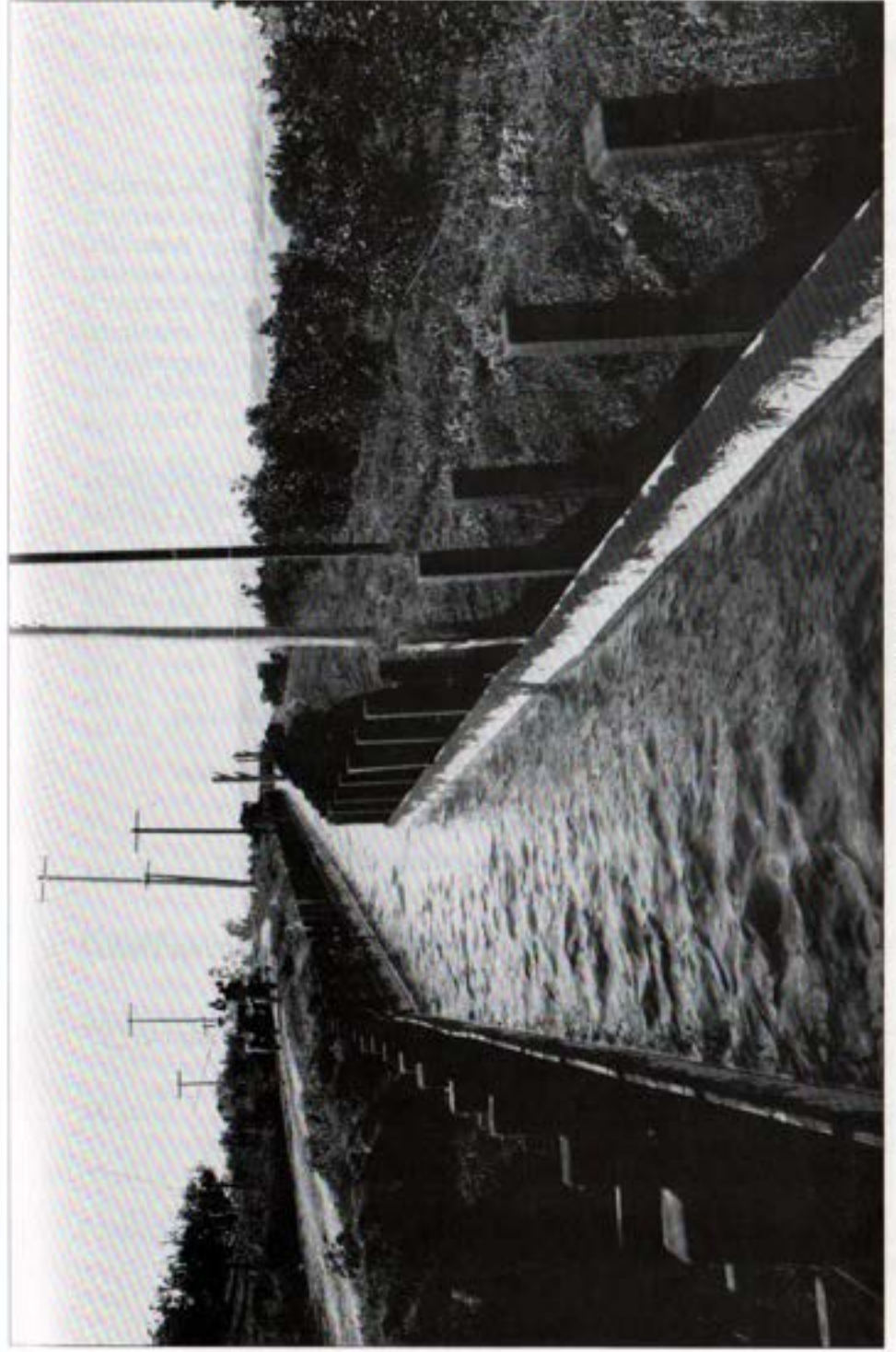
The number of employees increased from 82 at the end of fiscal year 1989 to 95 as of June 30, 1990. The Authority organizational chart appears in figure 1.

REPORT OF ACTIVITIES



SAN DIEGO COUNTY WATER AUTHORITY ORGANIZATION CHART

Figure No. 1



BOARD OF DIRECTORS

General

The San Diego County Water Authority is comprised of 24 member agencies and the County of San Diego as ex officio member. Each member agency is represented by at least one director. A member agency is entitled to one additional representative for each full five percent of total assessed valuation contained within its boundaries, as determined by the Assessor's Office of the County of San Diego. These representatives are appointed by the chief executive officer of the respective agencies with approval of the agencies' governing bodies. During the year, only two agencies were represented by more than one representative: the City of San Diego had 10 representatives and the Helix Water District had two.

Officers of the Board of Directors are elected in July of even-numbered years. In June, 1990, Michael D. Madigan was elected Chairman; Herbert H. Stickney, Vice Chairman; and John M. Leach, 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 seven standing committees:

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

Temporary committees that existed during this year were:

Audit	Nominating
Encroachment	Public Information Goals
Financial Advisor	& Mission
General Manager Evaluation	Special Counsel
Investor Relations	Touche Ross Study
Legal Issues	

During fiscal year 1989-90, the following Directors were presented with service emblems:

<u>Director</u>	<u>Length of Service</u>
Lawrence E. Carlson	3 years
Vernon L. Leming	3 years
Bob Stevens	3 years
Herbert H. Stickney	5 years
Mark W. Watton	5 years
Dale Mason	10 years

During the year, the following Directors were seated or reelected:

<u>Date</u>	<u>Director</u>	<u>Agency</u>	<u>Term Expires</u>
July 13, 1989	Harry Griffen	Helix W.D.	July 15, 1995
July 13, 1989	Nat L. Eggert	Helix W.D.	Aug. 18, 1995
Sept. 14, 1989	David Drake	City of Escondido	Oct. 18, 1992
Sept. 14, 1989	Rollin Eckis	Yuima W.D.	Jan. 15, 1992
Nov. 9, 1989	L.C. Snavely	Valley Center M.W.D.	Jan. 13, 1996
Jan. 11, 1990	Eric Larson	Carlsbad M.W.D.	June 17, 1990
Feb. 8, 1990	L.E. Carlson	Camp Pendleton	Jan. 13, 1996
Mar. 8, 1990	H. Friedland	Santa Fe I.D.	Dec. 13, 1990
Mar. 8, 1990	Frank Chenelle	City of National City	Mar. 8, 1996
Mar. 8, 1990	Mark W. Watton	Otay W.D.	Mar. 2., 1996

MAJOR BOARD ACTION

July 13, 1989

- Motion: Added an item to the Board agenda regarding employee agreements.
- Resolution: Approved memoriam for Elmer Leslie Balmer, Chairman of the Metropolitan Water District Board of Directors.
- Motion: Authorized a contribution of \$2,000 to the County Office of Education to assist in the completion of the video film "Fish On."
- Motion: Approved the list of surplus property and authorized the General Manager to dispose of the surplus property through the County of San Diego sale.

SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Approved Revision No. 2 to Work Order 11-58 and appropriated \$1,100,000 from the Capital Outlay Fund.
- Resolution: Approved Revision No. 2 to the 1988-89 budget.
- Resolution: Approved Revision No. 2 to Work Order 11-56.
- Resolution: Approved Revision No. 2 to Work Order 11-55.
- Motion: Rejected the Claim for damages of Francis V. and Margaret P. Howell.
- Resolution: Approved list of classified positions and a salary range for each position.
- Motion: Took a position of support on SB 488 – Stirling, Freeways: Installation of Utility Facilities and Reclaimed Water.
- Motion: Took a position of support on SB 1520 and AB 2355.
- Motion: Took a position of support on SB 583 and H.R. 1185.
- Motion: Approved the two-year agreements negotiated with the Teamsters Local 911, self-represented employees, and management and confidential employees.
- Motion: Instructed the General Manager to write letters to California Senators and members of the Appropriations Subcommittee requesting support of 1990 federal funding for the U.S. Bureau of Reclamation's Atmospheric Water Resources Management Program.

August 10, 1989

- Resolution: Honored James H. Singer upon his retirement from the SDCWA Board of Directors.
- Motion: Authorized recognition of Stan Mahr upon his retirement from the Vallecitos Water District.
- Resolution: Authorized the additional and continuing effort required for the adoption and certification of the final program EIR for the Water Distribution Plan and additional environmental certification for the Phase I projects. Also approved Revision No. 1 to Work Order 11-57 and appropriated \$175,000 plus trade-in of 1969 Cat 12 F motor grader.

BOARD OF DIRECTORS

- Motion: Authorized the General Manager to contract with Popoff Foam Roofing Company to provide positive drainage and new roof on the Escondido Office and Shop buildings.
- Motion: Authorized the General Manager to enter into a Joint Participation Agreement with the Metropolitan Water District and the Buena Sanitation District.
- Motion: Authorized the General Manager to enter into a Joint Participation Agreement with the Metropolitan Water District and the Ramona Municipal Water District.
- Motion: Authorized the expenditure of \$25,000 for the continued funding of the Mobile Irrigation Laboratory Evaluation Program.
- Resolution: Amended the Administration Code to implement the Memorandum of Understanding.
- Resolution: Added Article 26 to the Administrative Code to implement the Relocation Assistance Law.
- Resolution: Fixed the tax rate for fiscal year 1989-90.
- Resolution: Established the vote of representatives of member agencies as determined by assessed valuations for fiscal year 1989-90.
- Resolution: Established the amount due from the City of San Diego for the fiscal year 1989-90 for the in-lieu charge as a condition of providing water service.
- Resolution: Approved Revision No. 3 to the SDCWA 1988-89 budget.
- Ordinance: Fixed a water standby availability charge on land within the boundaries of the Authority for fiscal year 1989-90.
- Motion: Took a position of opposition to AB 1767 (Roos).
- Motion: Approved letter agreement between MWD, City of San Diego, SDCWA, Otay Water District and U.S. Bureau of Reclamation for delivery of water to Tijuana between May 25 and June 2, 1989.

SAN DIEGO COUNTY WATER AUTHORITY

- Motion: Took into consideration the FEIR public hearing comments and responses to comments from the July 13, 1989 FEIR public hearing in the decision to adopt and certify the FEIR and in action taken on individual first phase projects.
- Resolution: Certified completion of the final program environmental impact report for the water distribution plan which made findings regarding each of the significant effects of the project, gave a brief explanation behind the rationale for each finding, and approved certain Phase I projects and authorized the filing of a Notice of Determination.
- Resolution: Approved the Water Distribution Plan, a Capital Improvement Program, through the year 2010.
- Motion: Added an item regarding the Rainbow Chlorination Station to the Board Agenda.
- Motion: Instructed the General Manager to acquire the private residence located near the SDCWA Rainbow Canyon Chlorinating Structure and accept the appraisal report of J.P. Meek.
- Motion: Approved the Blue Ribbon Committee list with the understanding that other members may still be added.

September 14, 1989

- Resolution: Honored George Lohnes upon his retirement from the Board of Directors.
- Resolution: Declared the public necessity for the acquisition of property for SDCWA chlorine treatment facility.
- Motion: Approved Water Authority participation in the advertising and annual garden contest with San Diego Home/Garden Magazine and execution of a contract not-to-exceed \$17,530.
- Resolution: Approved the appraisal of J.P. Meek, authorizing the purchase of properties and authorizing the Notice of Intention to adopt a resolution of necessity to acquire property by eminent domain.

BOARD OF DIRECTORS

- Motion: Authorized the General Manager to execute an agreement with John Powell & Associates, Inc. to perform engineering services for the Sweetwater Bypass Pipeline and Pressure Reducing Station for a fee not-to-exceed \$115,000.
- Motion: Approved the establishment of the process to request authorization to attend conferences or meetings that are not specifically identified on the Administrative Code.
- Resolution: Amended Article 2.2(c) of the Administrative Code.
- Motion: Approved submittal of the City of San Diego's proposal to fund a plumbing retrofit program through MWD's Water Conservation Credits Program.
- Motion: Approved the form of the Model Conservation Ordinance and recommended that the Authority's member agencies adopt new ordinances, or amend existing ordinances, to be consistent with it.
- Motion: Authorized participation in the UNICEF campaign by assisting with training and allowing the Water Authority's name to be used in the campaign.
- Motion: Took a position of support on AB 444 and AB 1442.
- Motion: Authorized the General Manager to write letters of support to the appropriate Senate Committees urging additional funding for the National Weather Service's Colorado River Flood Warning System.

October 12, 1989

- Resolution: Declared the public necessity for the acquisition of property for the Pipeline 5 Extension and authorized procedures in eminent domain.
- Resolution: Honored John Hennigar upon his retirement from the Water Authority Board of Directors.
- Resolution: Consented to and approved the appointment of Herbert Stickney as a Water Authority representative on the MWD Board of Directors.

SAN DIEGO COUNTY WATER AUTHORITY

- Motion: Authorized the General Manager to execute an agreement with J.P. Meek Company to provide right-of-way appraisal services for Pipeline 4B for a not-to-exceed fee of \$29,250.
- Motion: Approved Relocation Plan for Pipeline 5 Extension and authorized the General Manager to execute an agreement with the firm of Marmac to provide relocation advisory assistance services for a not-to-exceed fee of \$3,500.
- Motion: Authorized staff to respond to Helix Water District's request for participation in expanding the R.M. Levy Treatment Plant and to establish a Capital Project for planning, design and legal expenses of \$1,700,000.
- Resolution: Authorized Water Authority participation in County of San Diego auctions of surplus vehicles and equipment.
- Motion: Approved the WARAC Review Committee's findings concerning the Financial Assistance Program applications and authorized the General Manager to enter into an agreement with each agency approved for funding.
- Resolution: Amended Section 2.2(f)(ii) of the Administrative Code to allow the General Manager to give written notification in case of an insufficient claim in accordance with Government Code Section 910.8.
- Motion: Approved contribution of \$5,000 to help fund the ACWA Joint Water Quality Task Force program.
- Motion: Approved the new classification of Principal Mechanic at range 27 and the deletion of Equipment Shop Supervisor at range 32 from the Authority's classification plan.
- Motion: Approved execution of Union Bank's Corporate Resolution to obtain credit and the Business Credit Card Agreement and Disclosure Statement to comply with their auditing requirements.
- Motion: Approved the standard terms and conditions for the concurrent annexation No. 7—Alborg to the San Diego County Water Authority and authorized the General Manager to request informal terms and conditions for annexation to Metropolitan Water District.

BOARD OF DIRECTORS

- Motion: Accepted the 1988-89 Report of Independent Public Accountants.
 - Motion: Gave conceptual approval to the Water Authority being the lead agency in a conference on greenhouse warming with a cap of \$5,000 in financial support.
 - Motion: Added an item regarding purchase of aqueduct control system remote terminal units to the Board agenda pursuant to Government Code Section 54954.2(b)(2).
 - Motion: Authorized the General Manager to approve the purchase of needed remote terminal units and modems from Systems Integrated of San Diego and Anaheim for an amount not-to-exceed \$104,841.81.
- November 9, 1989**
- Motion: Approved the General Manager Evaluation Form presented by staff to be used in the review process for the General Manager's annual evaluation.
 - Motion: Approved the Water Authority fact sheet for printing and distribution as presented by staff.
 - Motion: Approved the staff proposal for the Conservation/Education Program for January through June 1990.
 - Motion: Received and filed the audit management letter prepared by Ernst and Young and directed the Audit Subcommittee to monitor the implementation of its recommendations.
 - Motion: Instructed staff to write a letter of support for H.R. 3150 to the members of the Senate Finance Committee and requested that the Authority's member agencies also support H.R. 3150.
 - Motion: Authorized the General Manager to contract with Businessland, Inc. for the purchase of personal computers.
 - Ordinance: Refined the words "each parcel of land" and gave instructions to the General Manager for implementation, as a supplement to Ordinance No. 89-2.

SAN DIEGO COUNTY WATER AUTHORITY

- Motion: Approved establishment of a temporary bank account using facsimile signatures and directed the Board officers and staff to execute the necessary documents.
- Motion: Authorized the General Manager to negotiate and begin implementation of an agreement with the Sweetwater Authority for the installment purchase of water for storage and that the agreement be brought to the Board at a subsequent meeting for ratification.

December 14, 1989

- Motion: Added an item regarding General Manager's compensation to the Board agenda.
- Motion: Approved a 10 percent increase in salary for the General Manager, the substitution of a \$500 per month vehicle allowance instead of a company car, and two weeks of comp time, effective January 1, 1990.
- Motion: Approved the refund of water availability standby charge to identified Indian lands and the lands that have been verified as being detached from their member agencies.
- Motion: Authorized the General Manager to enter into escrow with Mary J. Price and purchase property located at 1624 La Mirada Drive, San Marcos for the price of \$161,000 plus the associated closing costs and additional relocation assistance.
- Motion: Authorized the General Manager to enter into escrow with Albert and Pearl Porritt and purchase the property located at 533 MacMahr Road, San Marcos for the price of \$148,381.50 plus associated closing costs and additional relocation assistance.
- Motion: Authorized staff to seek proposals from several public opinion polling firms in the area and return to the Public Information Committee in January with a proposed contract and budget amendment for consideration.
- Resolution: Approved adding Sections 16.3.1, 16.3.2, 16.3.3 and 16.3.4 to the Administrative Code establishing an operational surcharge program.

BOARD OF DIRECTORS

- Resolution: Authorized execution of the agreement with the City of San Diego for storage in San Vicente Reservoir.
- Resolution: Amended Article 2, Section 2.2(h) and added Article 2, Section 2.2(h)(iv) to the Administrative Code renaming the Administrative Policy Committee to the Administrative and Legal Committee and outlining its responsibilities.
- Resolution: Amended Article 2, Section 2.2(f)(ii) of the Administrative Code regarding handling of claims.
- Motion: Approved the policy of acquiring future pipeline rights-of-way in fee simple whenever feasible. Also approved giving staff discretion to acquire rights-of-way in easement or other form when dealing with other public entities or to avoid excessive severance damages and allow joint use with existing or pending development.
- Motion: Approved the Grant of Easement Document presented by staff with some minor revisions.
- Motion: Instructed staff to adopt the proposed six-month and two-month storage standards and to come back to the Board at a later date with a revised objective that contains more specific time horizons.
- Motion: Approved the Water Reclamation Ordinance Implementation Handbook with a minor change on page 45 and instructed staff to distribute copies to the appropriate reclamation agencies.
- Motion: Instructed staff to regularly schedule closed sessions for the Board meetings but only hold them when considered necessary and appropriate.
- Motion: Instructed the General Manager to write a letter to the Environmental Protection Agency requesting grant funding to further research on the CCBA process as proposed by the Department of Civil Engineering at the University of California at Davis.
- Resolution: Expressed appreciation to the Blue Ribbon Committee for the work done on reviewing the SDG&E Study.

SAN DIEGO COUNTY WATER AUTHORITY

Resolution: Reviewed actions taken pursuant to Resolution 89-4 and the MOU with the City of San Diego, accepted the final SDG&E Study, made findings and directed further actions.

January 11, 1990

Resolution: Honored Margaret Bonas upon her retirement from the Board of Directors.

Resolution: Revised Section 2.2(f)(i) to specify responsibility for standby and capacity charges.

Motion: Authorized the General Manager to retain specific counsel for the purpose of preparing contracts, agreements and other documents necessary to implement projects with the Sweetwater Authority and Helix Water District.

Motion: Approved the revised proposal to Metropolitan Water District for a San Diego Turf Audit Project funded through the Water Conservation Credits Program.

Motion: Ratified the agreement with the Sweetwater Authority for the installment purchase of water.

Resolution: Directed publication of a notice of public hearing to consider adoption of an ordinance providing for an increase in the number of days of compensation for members of the Board from six to 10.

Motion: Approved the cost increase for extra work to an upper limit not to exceed \$991,515 to Linden Burzell Engineers for engineering services for completion of preliminary and final design of Pipeline 5 Extension, Phase I.

Motion: Opposed conservation legislation by Assemblyman Klehs in its present form and adopted motion to seek amendment to it.

Motion: Approved the Memorandum of Agreement with the City of La Mesa.

Motion: Approved the purchase of property owned by Hancock for a total cost of \$155,204.

BOARD OF DIRECTORS

Ordinance: Amended Section 1.13(a)(b)(c) of the Administrative Code increasing per diem compensation from six to ten days per month for members of the Board of Directors.

Motion: Authorized staff to contract with Applied Behavioral Systems of San Diego for a not-to-exceed fee of \$15,000 to conduct a public attitude survey.

Motion: Directed staff to work with appropriate State Legislators to develop legislation designed to set water efficient performance standards for operation of reverse-osmosis drinking water systems.

Motion: Approved statutory amendments proposed by General Counsel and directed Legislative Advocate Clay to take appropriate steps to secure enactment.

Resolution: Deleted Section 16.8 (Preferential Rights) from the Water Authority's Administrative Code.

Motion: Authorized the General Manager to take the necessary actions to gain access to water storage sites identified as part of the Optimal Storage Study and subsequently report to the Board any legal actions initiated.

Motion: Approved the updated Appraisal Report for Pipeline 5 Extension and authorized staff to negotiate with the property owners for the acquisition of parcels on the basis of the appraisals.

Motion: Authorized the General Manager to execute an agreement with Black & Veatch to perform the engineering services for the conversion of the First Aqueduct to treated water and the Escondido Raw Water Pump Station for a not-to-exceed amount of \$328,100.

Motion: Authorized the General Manager to execute an agreement with Engineering Science, Inc. to perform engineering services for Pipeline 2A and Pump Station for a not-to-exceed fee of \$630,300.

Motion: Approved the appraisal report for the three lots required for construction of the Pipeline 4 Extension.

SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Amended Article 14 of the Water Authority Administrative Code regarding purchasing procedures.
- Motion: Took a position of support on AB 2594.
- Motion: Took a position of opposition to AB 2158.
- Motion: Authorized the General Manager to enter into a purchase agreement with Mazone Development & Investments to dispose of excess Pipeline 5 Extension Right-of-Way property.
- Motion: Approved the Memorandum of Agreement with the City of Lemon Grove and authorized the General Manager to execute the Agreement subject to minor revisions.
- Motion: Instructed staff to prepare a resolution of appreciation for Myron Holburt upon his retirement from the Metropolitan Water District.
- Motion: Instructed staff to prepare a resolution of appreciation for Director John Cranston upon his retirement from the Water Authority Board of Directors.
- Motion: Instructed staff to prepare a resolution of appreciation for Director Paul Peterson upon his retirement from the Water Authority Board of Directors.
- Motion: Instructed the General Manager to hire independent consultants to study the possible adverse effects of solid waste sites on water resources and/or Water Authority facilities.

March 8, 1990

- Motion: Continued the hearing giving the opportunity for property owners to appear and be heard in connection with the Pipeline 5 Extension to April 12, 1990 at 4:00 p.m.
- Motion: Continued the adoption of the Resolution of Necessity for the Pipeline 5 Extension to April 12, 1990.
- Resolution: Honored John Cranston upon his retirement from the Board of Directors.

BOARD OF DIRECTORS

- Resolution: Honored Tom Crownover upon his retirement from the Board of Directors.
- Motion: Approved the appointment of Director Freidland to the Long Range Planning and Water Policy Committees, Director Chenelle to the Engineering and Operations and the Long Range Planning Committees, the appointment of Director Leming as Vice Chairman of the Water Reclamation Committee and Director Tinker as the Vice Chairman of the Long Range Planning Committee.
- Motion: Approved the Conflict of Interest Code as prepared by the Fair Political Practices Commission, with the "designated employees" and their disclosure categories as recommended, to take effect upon approval by the San Diego County Board of Supervisors.
- Resolution: Amended Section 13.9 of the Administrative Code regarding award of service emblems with the amendment of giving the recipients the choice of a logo or a seal on their award.
- Resolution: Amended Sections 2.2(h)(iii) and 2.3 of the Administrative Code regarding the Administrative and Legal Committee and added Section 3.2.1 regarding Special Counsel.
- Resolution: Amended Sections 15.2 and 15.3 of the Administrative Code regarding Water Rates.
- Resolution: Authorized the design and construction of Oceanside No. 5 Flow Control Facility (Raw) and authorized the General Manager to enter into an agreement with the City of Oceanside for the reimbursement of all design and construction costs incurred by the Water Authority.
- Motion: Approved the revised Appraisal Report and authorized staff to make offers and negotiate with the property owners on the basis of the appraisals.
- Motion: Approved finding that the proposed changes in the project do not involve new significant environmental impacts not considered in the FEIR, that there are no unmitigatable significant adverse effects of this portion of the project, that no further environmental documents needs be prepared and that the Pipeline 4 Extension Phase I Western Route Alignment is approved.

SAN DIEGO COUNTY WATER AUTHORITY

- Motion: Approved the two draft water reclamation brochures and instructed staff to proceed with final production.
- Motion: Approved staff's funding recommendations for the Financial Assistance Program applications and authorized the General Manager to enter into a joint participation agreement with the agencies involved.
- Resolution: Opposed the proposed Water Quality Control Plans for inland Surface Waters and Enclosed Bays and Estuaries and instructed staff to send a letter expressing the concerns of the Water Reclamation Committee to the State Water Resources Control Board along with the resolution.
- Resolution: Supported the proposed amendments to the Comprehensive Water Control Plan San Diego Basin (9) and instructed staff to take the appropriate steps to convey the Board's position.
- Motion: Instructed staff to schedule a special Fiscal Policy Committee meeting to review budget issues.
- Motion: Authorized the General Manager to initiate the Request for Proposals for a Financial Advisor and instructed the Chairman of the Fiscal Policy committee to appoint an ad hoc committee to assist staff in screening the proposals.
- Motion: Approved the continuance of the water rates for the 1990-91 fiscal year as established effective July 1, 1989. The untreated water rate will continue to be \$40 per acre foot and the treated water rate will be \$47 per acre foot.
- Resolution: Fixed the time and place for a public hearing regarding the proposed water availability standby charge for 1990-91.
- Motion: Found the draft EIR/EIS for the proposed North County Landfill inadequate and therefore not in compliance with the California Environmental Quality Act with respect to the analysis of the protection of MWD and CWA aqueducts and protection of surface and groundwater; instructed the General Manager to convey the Board's concerns to the County of San Diego and to coordinate the appearance of the consulting team consisting of J.M. Montgomery Engineers and G. Fred Lee and Associates at one of the public hearings to be conducted by the County.

BOARD OF DIRECTORS

- Motion: Approved the proposed language establishing the terms and conditions for deferral of annual charges that will be incorporated into the Water Availability Standby Ordinance to be presented for consideration at the public hearing on April 12, 1990, including the amendments made by the Fiscal Policy Committee.
- Motion: Approved the addition of an item regarding County of San Diego water conservation and reclamation ordinances to the Board agenda pursuant to Government Code Section 54954.2(b) (2).
- Motion: Supported the three ordinances related to water conservation and reclamation scheduled to be acted upon by the County Board of Supervisors.
- April 12, 1990**
- Resolution: Necessity for Pipeline 5 Extension.
- Resolution: Water Standby Availability Charge.
- Resolution: Honored Paul Peterson upon his retirement from the Board of Directors.
- Motion: Authorized the General Manager to negotiate and execute an agreement with Boyle Engineering Corporation to perform engineering services for the Oceanside No. 5 Flow Control Facility for a not-to-exceed fee of \$110,000.
- Resolution: County of San Diego's Draft EIR/EIS for the proposed North County Class II Landfill.
- Motion: Authorized the General Manager to sign an agreement with PacTel for the purchase and installation of a voice mail system for a cost not-to-exceed \$19,500.
- Motion: Authorized the General Manager to enter into a contract for architectural services for the renovation of the third floor of the San Diego office.

SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Elected to receive allocation of taxes pursuant to provisions of the Community Development Law for the San Diego Central Imperial Redevelopment Project.
- Resolution: Elected to receive allocation of taxes pursuant to provisions of the Community Redevelopment Law for the Barrio Logan Redevelopment Project.
- Motion: Authorized the General Manager to sign the revised Ramona Storage contract for the installment purchase of water.
- Motion: Requested that member agencies review and comment on the proposed amended Emergency Water Management Ordinance and policy to encourage the use of reclaimed water where reasonably available and consider concurrent adoption in May 1990. Considered for adoption in May 1990 the draft resolution authorizing a higher water rate for water deliveries by the Authority to member agencies for water actually supplied to greenbelt areas where reclaimed water is found by the SDCWA Board of Directors to be reasonably available for such uses.
- Motion: Instructed staff to distribute the proposed revenue enhancement program and water reclamation policies to the member agencies, WARAC, Metro Sewer Task Force and others for review and comment.
- Motion: Recommended that the Board of Directors take a position of opposition to SB 2688.
- Motion: Concurred with the Governance Advisory Group's selection of the Special Act District for Governance of the Clean Water Program and designated a representative to the Governance Advisory Group.
- Motion: 1990 Water Conditions and Drought Management Action Plan.

May 17, 1990

- Resolution: Encinitas Redevelopment Project.

BOARD OF DIRECTORS

- Motion: Accepted capacity charge report as presented, directed staff to post and publish the notice of public hearing for the Capacity Charge and CEQA compliance to be held at 4:00 p.m. on July 12, 1990 and to prepare the ordinance for adopting the Capacity Charge.
- Resolution: Provided for Deferral of Water Availability Standby Charges established by Ordinances 89-2 and 89-3 for 1989-90 fiscal year.
- Resolution: Committed the Authority to use certain savings for programs to store or conserve water to meet domestic and municipal demands and created a special account therefor.
- Motion: Approved an amendment to J.M. Montgomery Engineer's contract for the design of La Mesa/Lemon Grove Pipeline (Pipeline 4 Extension, Phase I) for a new contract amount not-to-exceed \$3,207,370.
- Resolution: Authorized the purchase of properties and authorized the noticing of the intention of the Board of Directors of the San Diego County Water Authority to adopt a Resolution of Necessity to acquire property by eminent domain.
- Motion: Authorized the General Manager to negotiate and execute an agreement with the Nolte Associates and Howard Chang joint venture to provide engineering services to study sand mining in the San Luis Rey River for a not-to-exceed fee of \$88,500.
- Motion: Authorized costs for construction of the Bypass Pipeline for Padre Dam MWD No. 6 with the conditions that Padre Dam pay for the engineering expenses and staff developed an explicit 15 year agreement.
- Resolution: Authorized the design and construction of San Diego No. 5C Flow Control Facility (raw) and authorized the General Manager to enter into an agreement with the City of San Diego for the reimbursement of all design and construction costs incurred by the San Diego County Water Authority.
- Resolution: Added Section 15.7 to the Administrative Code.

SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Amended Article 2, Organization of the Board of Directors, Section 2.1(b), Nominating Committee and Section 2.1(c), Executive Officers—Term, of Administrative Code.
- Motion: Ratified the action of the Chairman appointing the Nominating Committee in April 1990 and accepted its report at the May meeting.
- Motion: Instructed staff to send a letter to the County of San Diego in support of the concerns raised by Sweetwater Authority.
- Resolution: Enacted an Emergency Water Management Policy regarding the use of reclaimed water for greenbelt purposes.
- Motion: Referred Mr. Somer's correspondence to staff for consideration in its negotiation efforts to resolve the acquisition price.

June 14, 1990

- Resolution: Declared the public interest and necessity for the acquisition of properties for the Pipeline 4 Extension in the Spring Valley area.
- Resolution: Reaffirmed participation in the "California Disaster and Civil Defense Master Mutual Aid Agreement" and authorized staff to encourage and work with all member agencies to reaffirm or adopt similar agreements.
- Motion: Confirmed the San Diego County Water Authority's commitment and participation in the MARS Program.
- Motion: Renewed application for purchase of surplus property through the California State Agency for Surplus Property.
- Motion: Approved the sale of surplus materials and equipment.

BOARD OF DIRECTORS

- Motion: Authorized the General Manager to execute an agreement with Sweetwater Authority regarding the construction, operation, and maintenance of the Sweetwater Bypass Facility and the modifications to the raw water pump station at the Purdue Water Treatment Plant; and that the agreement include a provision to advance the full cost of \$828,000 for the pump station improvements.
- Motion: Denied the appeal and supported the Chief Engineer's recommendation to remove and restore the Authority's property.
- Resolution: Established positions and salary ranges for fiscal year 1990-91.
- Motion: Authorized the General Manager to retain special counsel for the purpose of preparing agreements and other necessary documents to implement the construction of the Padre Dam Connection No. 6 Bypass Pipeline and define what each agency's responsibilities were for the future.
- Motion: Opposed SB 65 and authorized staff to send a letter to Senator Kopp with copies to Governor Deukmejian and the Ways and Means Committee.
- Motion: Opposed the State Department of Fish and Game proposal and authorized staff to send a letter to State Board Chairman, W. Don Maughan with a copy to the East Bay Municipal Utility District.
- Motion: Continued to fund the Mission Resource Conservation District (MRCD) Mobile Lab Program at the current level of \$25,000 during fiscal year 1990-91 and authorized the signing of agreements with MWD, MRCD, and Greater Mountain Empire Resource Conservation District for operation of the MWD Conservation Credits Program Turf Audit Project.
- Resolution: Approved the Water Authority Budget for fiscal year 1990-91 in the total amount of \$222.6 million.

WATER AUTHORITY COMPOSITION

General

The San Diego County Water Authority consists of six cities, three water districts, two irrigation districts, ten municipal districts, one public utility district, one federal agency, one county water district, and the County of San Diego as an ex officio member. 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 the distinguished water attorney, 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 augment local water supplies which were rapidly becoming inadequate.

Area

The Authority encompasses 908,945 acres (1,420.3 square miles), a net increase of 876 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 210,717 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. The statement was filed with Metropolitan Water District, the San Diego County Assessor, and the State Board of Equalization on December 31, 1989.

The statement for calendar year 1989 contained one annexation which changed the Authority and MWD boundary in addition to annexations and detachments that affected the area of the Authority's member 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

On April 1, 1990, the population of San Diego County was estimated to be 2,509,914 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 1990 was 3.96 percent. The population within the Authority service area was estimated to be 2,435,903 on April 1, 1990, an increase of 89,695 or 3.8 percent from the April 1, 1989 estimate of 2,346,208. Population statistics are contained in Tables 2 and 3.

The City of San Diego, largest member agency of the Authority in area, leads the member agencies in population with 1,118,282 persons, approximately 46 percent of the Authority total. De Luz Heights Municipal Water District has the smallest population with 390 and the lowest density of 0.03 persons per acre. The highest population density within an agency is 9.24 persons per acre in the City of National City.

The average population density of the Authority increased during the fiscal year from 2.58 to 2.68 persons per acre or 1,715 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

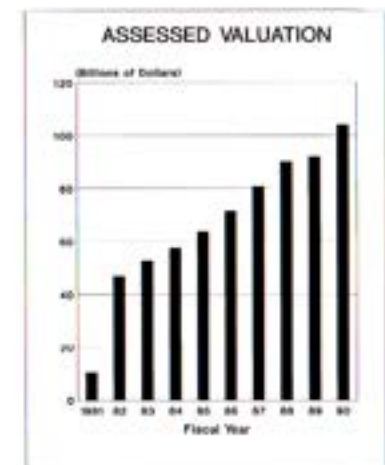
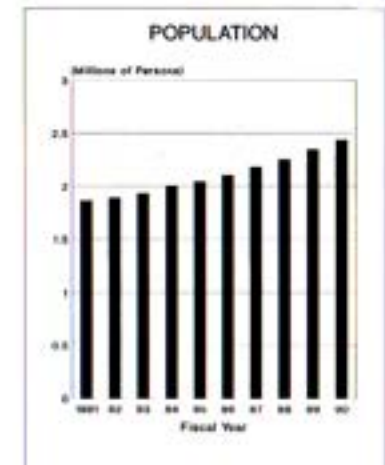
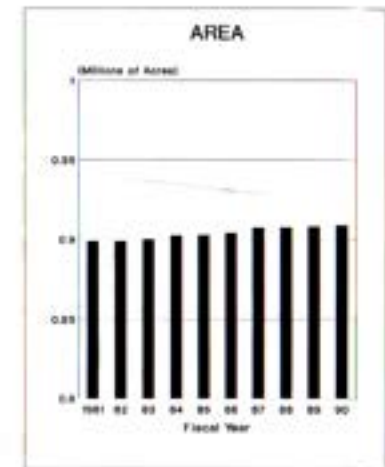


Figure No. 2

number of directors and the number of votes to which each member agency is entitled is 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 1989-90, according to the County Auditor's certification, was \$103,686,252,840, an increase of \$11,693,275,136 or 11.4 percent from the 1988-89 certified valuation of \$91,992,977,704.

The average assessed valuation of property within the Authority service area increased from \$101,306 per acre in 1988-89 to \$114,073 per acre in 1989-90. 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 is 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 26.9 percent of MWD's supply in 1989-90. The Authority has a preferential right to 12.08 percent of MWD's total supply but MWD has never invoked preferential rights as a basis for curtailment of water deliveries.

MWD Facilities

Metropolitan Water District supplies a blend of Colorado River water and State Project water. Water from the Colorado River Aqueduct to the terminus at Lake Havasu 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 where it is blended with Colorado River water which then flows into Lake Skinner. A portion of the water from Lake Skinner flows directly into Pipelines 3 and 5 while another portion is processed through the Skinner Filtration Plant before entering Pipeline 4. By the end of June 1990, the blend in Lake Skinner was 71 percent Colorado River water and 29 percent State Water Project water.

Lake Skinner is the major storage facility for the San Diego Aqueduct with a maximum capacity of 44,000 acre-feet of storage. 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 340 million gallons per day (mgd). These facilities are located in Riverside County south of Winchester.

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, the other untreated pipeline, is the crossover diversion structure at San Marcos. The Tri-Agencies Pipeline, a branch line that extends about 4.4 miles westerly from San Marcos, delivers treated water to service areas of Buena Colorado Municipal Water District and the City of Oceanside. The Ramona Pipeline, an 8 mile pipeline scheduled for completion in 1990, will deliver water from the Second Aqueduct to the Olivenhain Water District, City of San Diego, and the Ramona Municipal Water District.

To maximize the flexibility of the system, several crossover connections have been constructed since 1965. One such facility is the pipeline from the Second Aqueduct at the diversion structure in Twin Oaks Valley to the First Aqueduct in 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 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 raw water in Pipeline 3 is chlorinated at the Rainbow Chlorination Station.

The design capabilities of the Authority pipelines at the point of delivery from the Metropolitan Water District are:

*Flume Caulkers at work - 1887-88
San Diego Historical Society - Ticor Collection*

Pipelines 1 and 2 combined	196 cubic feet/second
Pipeline 3	250 cubic feet/second
Pipeline 4	380 cubic feet/second
Pipeline 5	450 cubic feet/second

One cubic foot equals 7.48 gallons. One cubic foot per second flowing twenty-four 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 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 acre-foot for the maximum amount of water in storage each year. In addition, the Authority pays the City of San Diego \$4.00 per acre-foot for pumping water from storage into the City's system. The above storage charges may be adjusted once per year to reflect the cost of operating the reservoirs or changes in electric rates. The agreement also provides that the first water which may be lost over the spillway is that stored by the Authority. No water was spilled during the fiscal year. During the fiscal year, water was placed in storage at San Vicente Reservoir 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 acre-feet 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 acre-foot 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 acre-foot depending on water elevation.

In July 1985, two hydroelectric plants were completed. The Miramar Plant has two turbine/generator units with a name plate generating capacity of 400 kilowatts per unit. The Alvarado Plant has two units with generator ratings of 1,050 kilowatts per unit.

Supervision and control of the San Diego Aqueduct system and the hydroelectric plants are conducted from the Fred A. Heilbron Operations Center in Escondido, where delivery requests from member agencies are received. Aqueduct flows and deliveries are monitored and controlled through a computer and telemetering system. Communications with operating and maintenance field staff and with MWD's East Valley Operations Section at Lake Skinner is by two-way radio.

Deliveries and Rates

The San Diego County Water Authority aqueducts received 647,481 acre-feet from MWD during the fiscal year. Untreated water accounted for

457,854 acre-feet, and the balance of 189,628 acre-feet of water was treated at the Skinner Treatment Plant in Riverside County. The total flow of 647,481 acre-feet was 50,364 acre-feet more than the previous fiscal year which represents an 8.4 percent increase. The lowest flow rate averaged 637 cubic feet per second (cfs) in February 1990. The highest average delivery of 1075 cfs occurred during July 1989. The average for the entire year was 894 cfs. Water deliveries to member agencies and others during the fiscal year are shown in Table 8. Purchases by member agencies totaled 674,993 acre-feet. Annual water sales to individual agencies for the eight-year period 1982-83 through 1989-90 and total water sales from 1947-1990 are shown in Table 7.

Capital costs for the First and Second Pipelines have been financed by the United States Government. The Third and Fourth Pipelines were financed by 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 California First Bank under Section 8 of the Water Authority Act and accrued reserves from general purpose revenues, including property tax allocations from the County of San Diego, from the one percent general purpose levy. The tax revenues from assessed valuations of property within the Authority for fiscal year 1989-90, as determined by the County Assessor, was set at \$.00432 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 when water was \$58 an acre-foot, water rates have been increased annually to \$197 an acre-foot in fiscal year 1983-84. For the years 1984-85 and 1985-86, the rate remained the same at \$197 an acre-foot due to the leveling off of inflation and the cost of energy for pumping. With a return to a higher demand for water because of lower rainfall and increased water sales, MWD decreased the water rate \$5 to \$192 per acre-foot for the fiscal year 1985-86. The rate since 1986-87 has remained at \$197 per acre-foot.

The MWD rate for untreated, non-interruptible water for municipal and industrial use was \$197 for 1989-90 to which was added the Authority's surcharge of \$40 per acre-foot. Treatment charges by MWD at the Skinner Treatment Plant were \$33 per acre-foot 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 and with limited or no access to the filtered water pipelines. The commodity charge by the Authority for treatment of water for fiscal 1989-90 was an additional \$7 per acre-foot.

SUMMARY OF WATER RATES
(Dollars Per Acre-Foot)

SAN DIEGO COUNTY WATER AUTHORITY

METROPOLITAN WATER DISTRICT				COUNTY WATER AUTHORITY			
		Total Rate		CWA Rate		Total Rate (Rate Charged to Member Agencies)	
From	To	Non-Interruptible Untreated	Interruptible Treated	Untreated	Treated	Non-Interruptible Untreated	Interruptible Treated
7/01/58	12/31/60	\$15.00	-	\$2.00	-	\$17.00	-
1/01/61	12/31/61	\$17.00	-	\$2.00	-	\$19.00	-
1/01/62	12/31/62	\$19.00	-	\$2.00	-	\$21.00	-
1/01/63	12/31/63	\$21.00	-	\$2.00	-	\$23.00	-
1/01/64	6/30/64	\$24.00	-	\$2.00	-	\$26.00	-
7/01/64	8/31/64	\$25.00	-	\$2.00	-	\$27.00	-
9/01/64	6/30/65	\$25.00	-	\$1.25	-	\$26.25	-
7/01/65	6/30/66	\$28.00	-	\$1.25	-	\$29.25	-
7/01/66	6/30/67	\$31.00	-	\$1.25	-	\$32.25	-
7/01/67	6/30/68	\$34.00	-	\$1.25	-	\$35.25	-
7/01/68	6/30/69	\$37.00	-	\$1.25	-	\$38.25	-
7/01/69	6/30/70	\$40.00	-	\$1.25	-	\$41.25	-
7/01/70	6/30/71	\$44.00	-	\$1.25	-	\$45.25	-
7/01/71	6/30/72	\$48.00	-	\$1.25	-	\$49.25	-
7/01/72	8/12/73	\$52.00	-	\$1.25	-	\$53.25	-
8/13/73	6/30/75	\$56.00	-	\$1.25	-	\$57.25	-
7/01/75	6/30/76	\$58.00	-	\$2.00	\$2.00	\$64.00	\$64.00
7/01/76	6/30/77	\$62.00	\$75.00	\$2.00	\$2.00	\$69.00	\$86.00
7/01/77	6/30/78	\$67.00	\$84.00	\$2.50	\$2.50	\$76.50	\$97.50
7/01/78	12/31/78	\$74.00	\$95.00	\$3.00	\$3.00	\$82.00	\$109.00
1/01/79	6/30/79	\$79.00	\$100.00	\$3.00	\$5.00	\$84.00	\$109.00
7/01/79	6/30/80	\$79.00	\$104.00	\$5.00	\$5.00	\$89.00	\$124.00
7/01/80	6/30/81	\$90.00	\$115.00	\$9.00	\$9.00	\$99.00	\$130.00
7/01/81	6/30/82	\$96.00	\$121.00	\$9.00	\$9.00	\$105.00	\$130.00
7/01/82	6/30/83	\$114.00	\$140.00	\$10.00	\$10.00	\$124.00	\$150.00
7/01/83	12/31/83	\$144.00	\$172.00	\$10.00	\$10.00	\$154.00	\$182.00
1/01/84	6/30/84	\$197.00	\$225.00	\$10.00	\$16.00	\$207.00	\$245.00
7/01/84	6/30/85	\$197.00	\$229.00	\$10.00	\$17.00	\$207.00	\$247.00
7/01/85	6/30/86	\$197.00	\$224.00	\$10.00	\$17.00	\$207.00	\$247.00
7/01/86	12/31/87	\$197.00	\$230.00	\$15.00	\$22.00	\$212.00	\$252.00
1/01/88	6/30/88	\$197.00	\$230.00	\$20.00	\$27.00	\$217.00	\$257.00
7/01/88	12/31/88	\$197.00	\$230.00	\$25.00	\$32.00	\$222.00	\$262.00
1/01/89	6/30/89	\$197.00	\$230.00	\$40.00	\$47.00	\$237.00	\$277.00
7/01/89	6/30/90	\$197.00	\$230.00	\$40.00	\$47.00	\$237.00	\$277.00
							\$89.00
							\$115.00
							\$110.00
							\$163.00
							\$163.00
							\$158.00
							\$168.00
							\$173.00
							\$178.00
							\$193.00
							\$201.00
							\$205.00
							\$208.00
							\$213.00
							\$218.00
							\$233.00

Note: From October 1 until April 30 a seasonal water rate was in effect, beginning in the year 1989. The seasonal rate was \$152 for untreated water and \$185 for treated water.
Figure No. 3

WATER SUPPLY AND CONSUMPTION

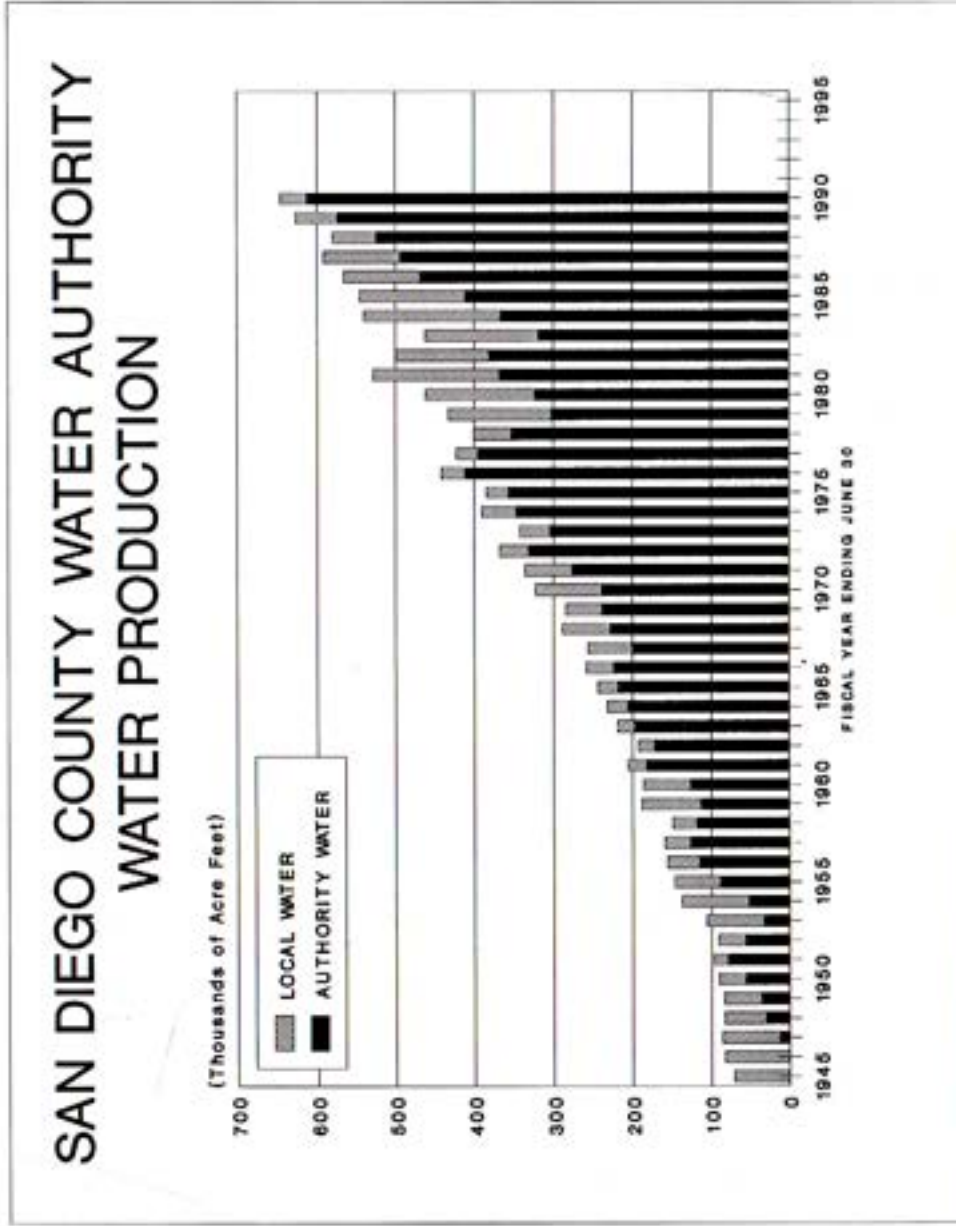


Figure No. 4. Water Production of Authority member Agencies

As shown in the summary above, MWD encourages better local control and management of water supplies through an interruptible water rate. 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. The total storage that qualifies for the municipal and industrial interruptible rate was 120,000 acre-feet.

Ramona Storage Agreement

In May of 1990 the storage agreement between the Authority and the Ramona Municipal Water District was amended. The purpose of the amended agreement is to increase the amount of water in storage which can be used to help meet maximum day demands of the aqueduct. Under the terms of the agreement the Authority will deliver and the Ramona Municipal Water District will purchase up to 7,500 acre-feet of water to be stored in Lake Ramona. In order to encourage Ramona to purchase this water the Authority agreed to permit Ramona to pay for the water on an installment basis as provided for in the agreement. The Authority can request Ramona to draw upon this stored water during times of peak water use in order that the Authority may meet the peak demands of other member agencies.

Sweetwater Storage Agreement

In November 1989 an agreement between the Authority and the Sweetwater Authority was signed. The purpose of the agreement is to encourage Sweetwater to purchase treated water for storage during the winter months for use in peak summer months. Withdrawals of water from storage during the summer helps the Authority meet maximum day demands by agencies in the south county. Under this agreement, payment for water purchased and placed into storage is deferred until the water is removed from storage. Payment for all water is at the untreated rate, and payment on all water remaining in storage on September 30 is due, with interest, in October. In 1990, 9,648 acre-feet of water was placed into storage under this program.

Water Production of Member Agencies

The term "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 operating reservoirs, and metering discrepancies.

Sources include impounding reservoirs, wells, and the Authority system.

Total water production from each of the 24 member agencies of the Authority is shown in Table 4. During 1988-89, the total water production was 626,502.0 acre-feet. The water production for the current year 1989-90 is 646,645.2 acre-feet which is an increase of 20,143.2 acre-feet or 3.2 percent. The highest monthly production occurred during July 1989 when 73,920.8 acre-feet were used. This was more than the record high month of August 1986 when 72,930.3 acre-feet were used. The lowest monthly production occurred during February 1990 when 31,627.5 acre-feet were used. The Authority supplied a high of 98.0 percent of the water production during the month of April 1990 and 94.9 percent of the production for fiscal year 1989-90.

Rainfall for 1989-90 was below normal as shown below:

Location	Rainfall	Percent of Normal
Lindbergh Field	6.04 inches	65%
Lake Cuyamaca	20.77 inches	55%
Lake Henshaw	15.77 inches	61%

Local and imported water stored in regional reservoirs decreased from 274,410 acre-feet on June 30, 1989, to 271,288 acre-feet on June 30, 1990 which is a decrease of 1.2 percent.

The City of San Diego maintains the most extensive system of impounding reservoirs in the Authority service area. This system produced 16,657.4 acre-feet during the fiscal year, and out of this, the City of San Diego sold 6,030.1 acre-feet to the California-American Water Company for delivery to Coronado and Imperial Beach. Helix Water District produced 1,844.3 acre-feet from Lake Cuyamaca and its wells in the El Monte Basin. The Vista Irrigation District (part of the Bueno Colorado Municipal Water District) produced 3,336.0 acre-feet from Lake Henshaw and the Warner Ranch wells. The City of Escondido produced 4,468.2 acre-feet from the Henshaw-Wolford system, and 2,085.0 acre-feet were produced within Yuima Municipal Water District from the Pauma Valley wells. Sweetwater Authority produced 1,852.5 acre-feet from the Sweetwater system and wells 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 98.9 percent (De Luz Heights) to 51.0 percent (Yuima Municipal Water District) dependence on water from the Authority.

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 De Luz Heights Municipal Water District, is similar to more urbanized areas but per capita use is considerably higher.

Average daily per capita consumption of municipal and industrial water for fiscal year 1989-89 was 192 gallons per day. This is a decrease from the 195 gallons per capita per day of last year. It is estimated that the Authority serves approximately 53 percent of the geographical area within its boundaries.

The combined water production of Authority member agencies is shown in Figure 4. The unshaded area indicates the proportion obtained from local sources compared with that supplied by the Authority.

Water Quality

The general quality of water entering the Authority system remained good. However, some variation in raw water turbidity still occurs due to seasonally high algae levels. This is serious only for users of Colorado River water which is not filtered prior to distribution.

Algae growth in Authority pipelines is controlled through a program of chlorination. The rate of chlorine

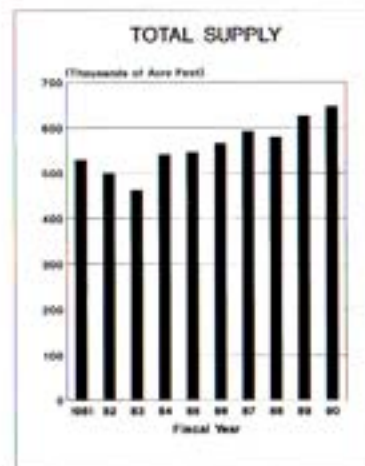
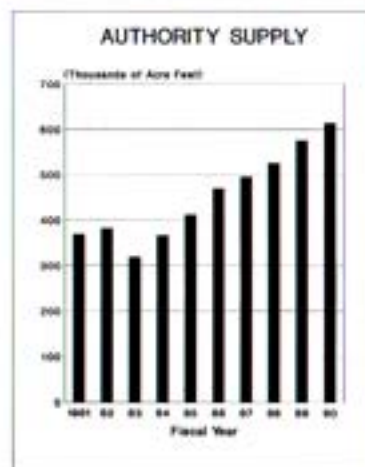
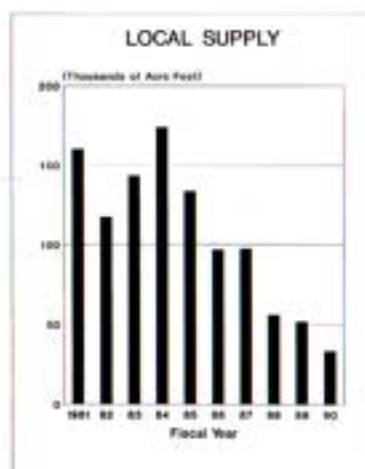


Figure No. 5

applied during the year was 0.75 parts per million (ppm) to flows in Pipeline 1 and 1.00 (ppm) in pipelines 2 and 3 at the Rainbow Chlorination Station. This program has effectively controlled the residual algae from the Colorado River Aqueduct and provides continuous chlorination of untreated water in Pipeline 3 from Lake Skinner. Pipeline 5 is chlorinated periodically at Lake Skinner to control the algae inside the pipe. Treated water is delivered to the Authority from the Robert A. Skinner Treatment Plant where it is chlorinated and filtered.

Chemical constituents of the dissolved solids in the Colorado River water are shown in Table 10. The analyses are based on samples taken from the West Portal of San Jacinto Tunnel and treated by MWD. Total hardness ranged from a high of 298 milligrams per liter (mg/l) to a low of 285 mg/l. Water temperature varied from a high of 79°F (26°C) in August 1989 to a low of 54°F (12°C) reported in February 1990.

The chemical constituents of the dissolved solids of treated, blended water at Lake Skinner are shown in Table 11. Total hardness ranged from a high of 283 mg/l to a low of 194 mg/l. Water temperature ranged from a high of 79°F (26°C) recorded in August 1989 to a low of 54°F (12°C) in February 1990.

Agricultural Water Use

Agricultural water use by member agencies of the Authority during 1989-90 was 122,296.8 acre-feet which is 7,121.4 acre-feet more than the previous year's use of 115,175.4 acre-feet. The percentage of agricultural water to the total water production was 18.9 percent, an increase from 18.4 percent in 1988-89. About 97 percent of water used for agricultural purposes is supplied by the Authority while 95 percent of the total amount of water produced is from the Authority. 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 put into operation in May 1979. This expansion, together with the 100 mgd Skinner No. 2 Plant completed in 1985-86, provides treated water to 13 agencies within the Water Authority requiring treated water.

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 Oceanside, City of Poway, Ramona Municipal Water District, and Sweetwater Authority (operating agency for South Bay Irrigation District and National City). The Authority purchases treated water from Helix and Poway to supply Otay Water District, Padre Dam Municipal Water District, and Ramona Municipal Water District. 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 enlarged Skinner Treatment Plant and the Auld Valley pipeline connection to the First Aqueduct will provide treated, blended water in these pipelines in 1991. This treated water is disinfected by the chloramination method which introduces ammonia and chlorine into the water and reduces the formation of trihalomethanes (THM). The termination of a filtered water line at Escondido, presents serious operating problems that will require modification of existing facilities.

The Water Authority, as agent of water districts in North County served from the First Aqueduct, measures and reports aqueduct water turbidity to meet the California Safe Drinking Act daily monitoring requirements. The results of additional water quality sampling and measurement by Authority member agencies are collected for a more complete daily water quality record.

Allocation of Water to Member Agencies

The County Water Authority Act (Section 5.11), which provided a preferential entitlement for the purchase of water by each of the Authority member agencies, was amended in 1989. In the event of shortages the amendment requires that the Board of Directors adopt reasonable rules, regulations, and restrictions so that the available supplies are allocated among its member agencies for the greatest public interest and benefit.

The Authority's Administrative Code (Section 16.4 and 16.5) 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.

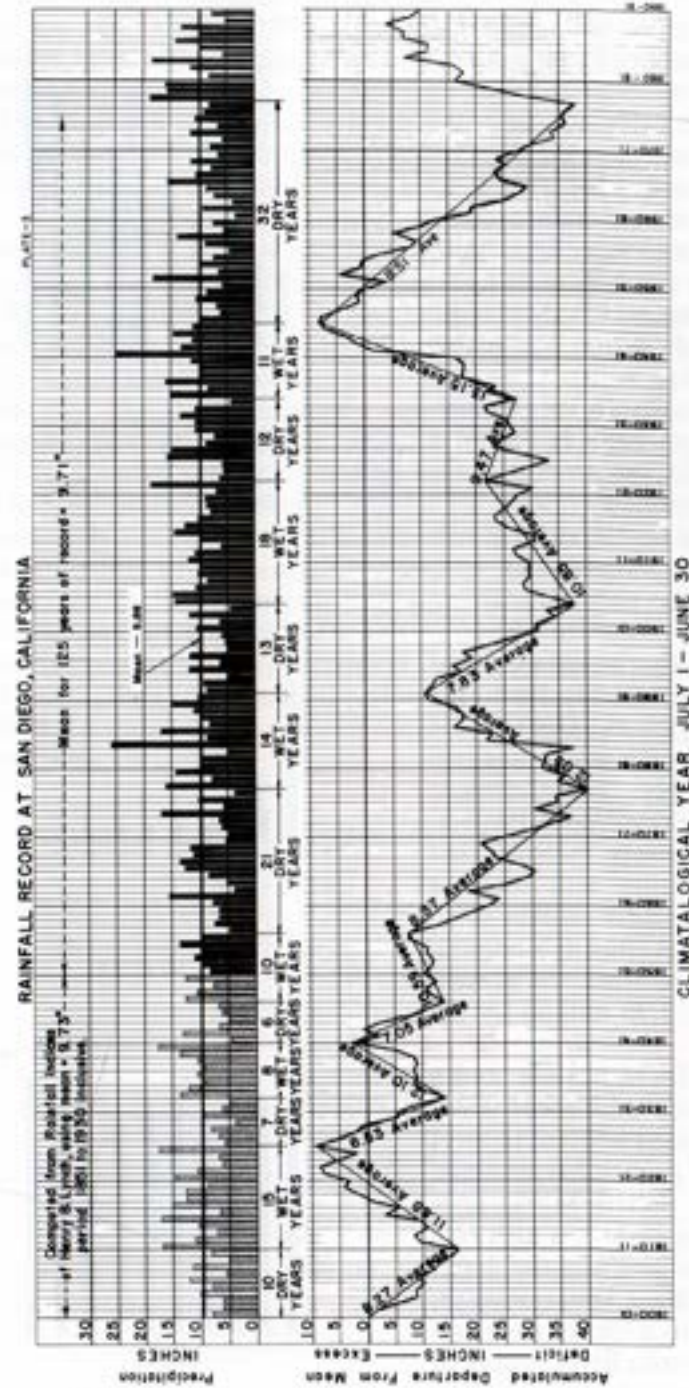


Figure No. 6 Rainfall Record at San Diego, California

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. Nevertheless the Authority recognizes its responsibilities 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.

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. Population forecasts indicate that MWD's population will increase from the present 14.9 million to 16 million, and the Authority's population will increase from the present 2.44 million to 2.70 million by the year 2000.

The MWD Board has adopted a policy to provide additional water and/or facilities, as needed, to meet the 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

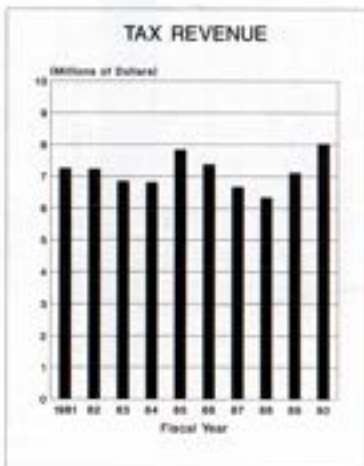
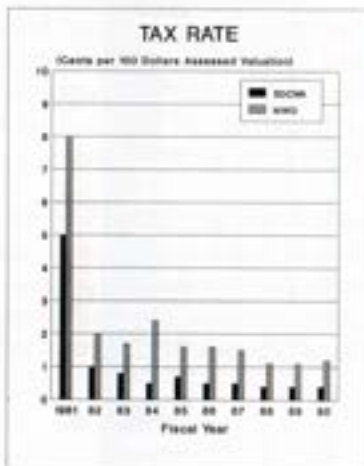
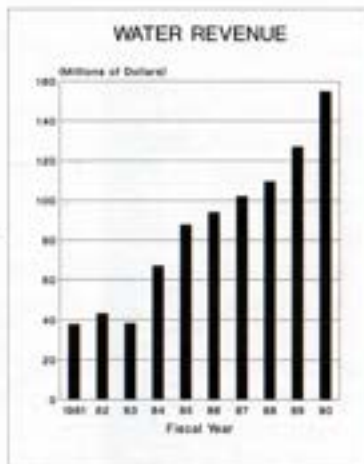


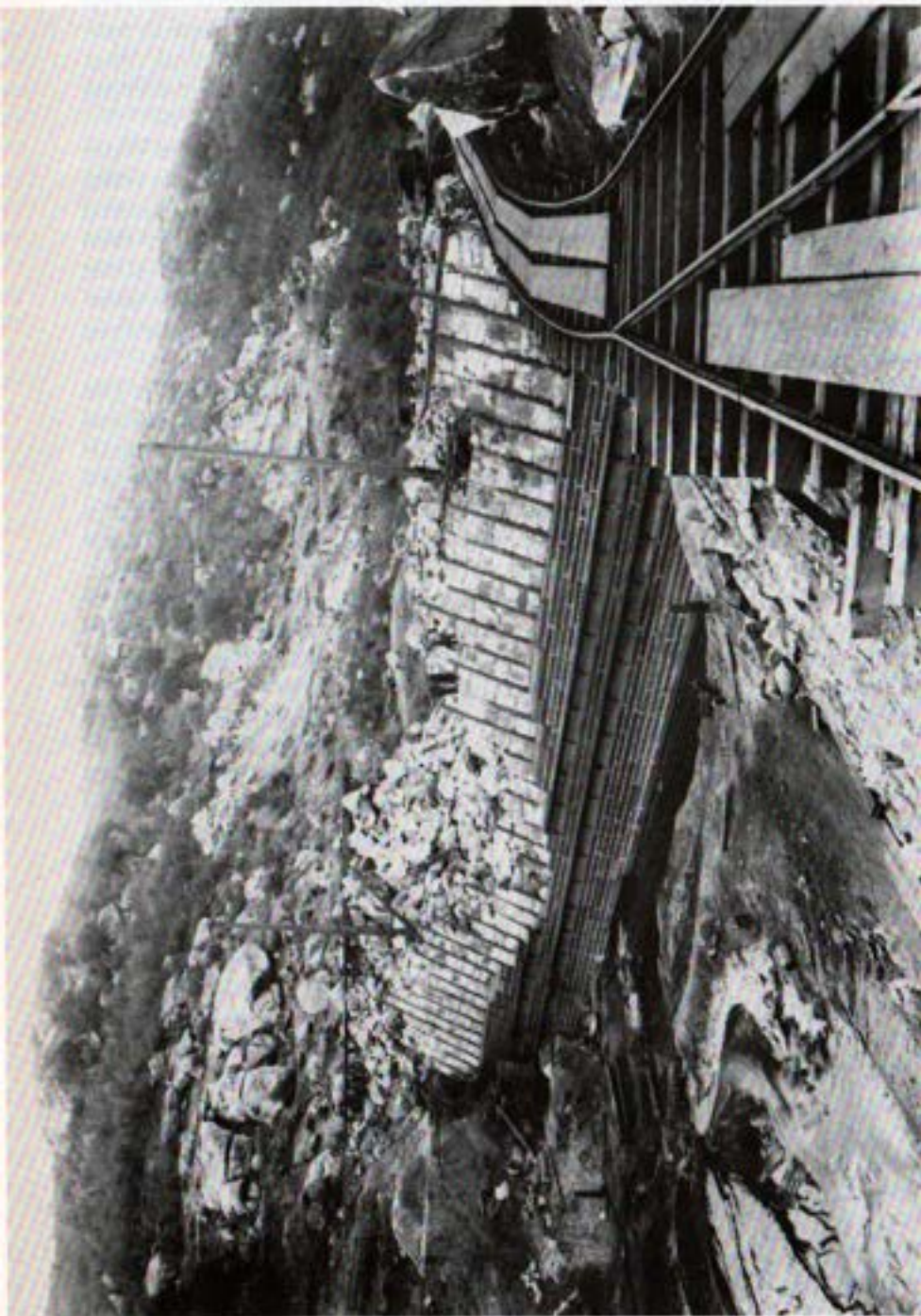
Figure No. 7

1,212,000 acre-feet because of the U.S. Supreme Court's decision in *Arizona vs. California* in 1964, MWD amended its contract with the State to provide an additional 500,000 acre-feet per year. Annexations and other changes have increased that MWD-State contract to 2,011,500 acre-feet 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. The blended water then flows south into Lake Skinner.

Additional water resources must be developed during the 1990's. The Authority, MWD, the State of California, various federal agencies, and many private organizations are presently conducting investigations of feasible alternate water sources and on ways to increase the present yield of the State Water Project. Water reclamation and water conservation are being aggressively pursued as both an alternative water source and as a means of augmenting current water supplies. The Board of Directors of the San Diego County Water Authority supports local projects of member agencies such as the City of San Diego's Aquaculture Project and Otay Water District's plans to supply reclaimed water to irrigate parks, golf courses, and open space in a planned residential development.

Figure 4 shows the increase in water requirements within the Authority since 1945.



*Escondido Dam under construction
San Diego Historical Society - Ticor Collection*

OPERATIONS 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 Operations Center, 610 W. Fifth Avenue, Escondido, California. The Authority's operation and maintenance force of 39 employees operates the aqueduct system and normally perform all maintenance and repair of the aqueducts, as well as construction and modification of metering and control buildings.

On January 2, 1990, Gene Nordgren was hired as Superintendent of Operations and Maintenance, replacing Irwin E. Nichols, who became Operations Program Advisor.

The operations staff consists of three Assistant Superintendents for Operations, Technical Support, and Maintenance; eight system operators, seven system technicians, three shop mechanics, 15 maintenance technicians, and a storekeeper-buyer. A three-member secretarial/clerical group supports all engineering, construction, operation, and maintenance activities.

The Fred A. Heilbron Operations Center occupies one city block with five major buildings. The main building houses both the aqueduct computerized control system and offices for operation, maintenance, technical service, engineering and construction personnel. A shop building has facilities for the repair and service of all Authority vehicles, heavy equipment and steel fabrication work. It also contains a small machine shop, a meter shop, and an equipment maintenance office. Materials, supplies, tools, and small equipment are stored in warehouse, which also provides a security storage area for equipment and vehicles and contains the valve repair and carpentry shops. A training center building contains two classrooms equipped for waterworks technology training. This building is used for employee assemblies and in-house training, as well as a waterworks training program for the benefit of all San Diego County water agencies that are associated with Palomar College. An on-site resident employee increases security and provides night-time assistance to the aqueduct system operators. The resident is also responsible for having equipment ready for the emergency response crews, thus reducing emergency response time.

A dual radio system with four frequencies using two different radio relay sites on Palomar Mountain connects the Authority base stations at the Operations Center with the San Diego office, 42 Water Authority mobile units, Metropolitan Water District's Robert A. Skinner Treatment Plant in Riverside County, all of the major San Diego County water purveyors, and all water treatment plants connected to the aqueducts. If either or both relay stations failed, the relays can be bypassed and radio units can be contacted directly. A touch tone call system can call up a specific

interagency radio independently. Vehicles assigned to key employees are equipped with mobile telephones for a greater range of communications.

A standby generator supplies emergency power to the Operation Center's Control Room, as well as the offices and shops. The aqueduct system control, radios, and telephone system have a separate uninterruptible power supply and emergency generator. A larger standby generator can be used as a second backup power supply for the aqueduct control and communication systems.

Operations

The Systems Operations Section operates the Authority's water delivery system, which consists of five major pipelines, ranging in size from 48 inches to 96 inches. The total capacity of the system is more than 750 MGD. The Systems Operations section is staffed by eight employees, divided into Control Room Operations and Field Operations.

These operators control water flows to member agencies by using telemetry and computer control systems. The system supplies three qualities of water, including treated water. As a result, all Operation personnel are certified by AWWA and the State Health Department.

Field Operations personnel make daily checks, minor repairs and calibrations as required on all meters, pump stations, pressure control stations, chlorination stations and valves located throughout the County. They are also responsible for the operations and maintenance of two hydroelectric power plants. Typical duties include reading meters, changing charts and calculating water flows.

The Operations Center Control Room is staffed everyday, including weekends and holidays, from 7:30 a.m. to 4:00 p.m. During off-hours, Water Authority phone calls are transferred to the home of the Systems Operator on duty. The Duty Operator can respond with a utility vehicle equipped with both Authority and interagency mobile radios. A voice pager will notify the Duty Operator if telephone contact cannot be made. In emergencies, the Duty Operator is assisted by the Superintendent or the Assistant Superintendents, who also have vehicles with interagency radios for quick response and field coordination with other agencies.

Charts of the service connection meters are changed weekly. Flow charts and meter readings are compared for indications of inaccuracies. The calibration of each active meter is checked at least three times per year. Meter accuracy is also checked when requested by a member agency or if accuracy is questioned.

Flow into both the treated and raw water aqueducts is controlled, either locally or remotely, by the Metropolitan Water District at the Robert A. Skinner Treatment Plant Operations Center. The plant operates round-the-clock and can respond to requests for emergency flow changes. Nor-

mally aqueduct flow changes are made daily at 8:30 a.m. and 2:30 p.m. for the convenience of the treatment plant operations. At other times flows are usually shifted by the Authority from one service connection to another, with agency approval, to keep the pipeline flow in balance.

Water deliveries in the aqueduct system are displayed and controlled on the Authority's Operation Center automatic computerized control system. The computer warns the daytime operator of problems with alarm displays and a synthesized voice, and the night-time duty operator by telephone. Using portable computer equipment, the night-time operator can also monitor and instruct the computer control system from home by telephone. A security system of lockout and codes prevents misuse of this or similar equipment.

The aqueduct system in San Diego County has no built-in operational storage. All flow changes must be carefully coordinated to keep the system in balance and maintain the proper flow to the service connections at or near the end of the pipelines. The computer and a large aqueduct flow status board show the amount of water available to meet the member agencies' needs. Each pipeline's current flow, requested flows, meter sizes, maximum allowable capacity flows, critical pipeline flows, and telemeter and valve information are displayed on the status board and computer terminals.

An aqueduct operations van is equipped so that it can function as a mobile emergency operations center to monitor radio, telephone, and certain telemeter functions.

Authority water is stored, by contract, in several water agencies' reservoirs, principally in the City of San Diego's San Vicente Reservoir. Except in minor amounts, these water storage facilities cannot return stored water to the aqueduct for use elsewhere.

The Bueno Colorado Water District, the Helix Water District, and the City of San Diego do have service connections through which small flows of treated water can be put into the aqueduct when needed.

Three pumps at the Authority's Miramar pump station are available to pump flows up to 140 cfs of treated water from the City of San Diego's Miramar treatment plant into the treated water aqueduct for delivery to the City of San Diego's and other agencies' aqueduct connections south of that point. Except for short periods of time, these flows are available only when excess untreated water can be delivered from the aqueduct to the treatment plant, because of limited storage capacity at Lake Miramar.

Maintenance

Maintenance activities include service, repair and maintenance of the Operations Center buildings, shops and yard; about 230 miles of major pipelines; 132 miles of rights-of-way; 110 miles of Authority roads; 79 major



*Base of University Heights Water Tower—1920's
Storage Tank for City Water
San Diego Historical Society—Ticor Collection*

flow control facility buildings; a large chlorine station; a pump station containing three pumps with motors up to 1,000 horsepower, two hydroelectric plants, more than 900 underground valve vaults, and two material storage compounds.

Maintenance equipment includes two motor graders, a bulldozer, two skiploaders, a backhoe, one 25-ton and two 5-ton cranes, two forklifts, dump trucks, truck tractors and equipment trailers, compressors, generators, welders, an eight-inch dewatering pump, and other portable pumps.

A maintenance force of 15 employees normally provides all of the aqueduct facility maintenance and repair. They also check the pipelines for encroachment and inspect for hazards or potential damage to pipelines or easements.

In addition to daily and weekly checks of pipeline easements and patrol roads, all pipelines are checked by foot patrol semi-annually. This past year, as in most years, exposed pipelines were found while walking the steep hills where patrol roads do not exist.

The Water Authority continued its policy of participating on a one-share basis with local property owners in upgrading or paving aqueduct patrol roads for mutual benefit.

The Water Authority is a member of the Underground Services Alert program which notifies the Water Authority of any excavations within 500 feet of Authority pipelines. About 10 alerts per day must be checked by telephone and in the field.

Technical Services

The primary responsibilities of the technical services section are the design, installation, repair, and maintenance of a wide variety of equipment and controls at about 100 locations throughout the county.

Systems Technicians operate and maintain a variety of electrical and electro-mechanical equipment, including meters, chlorination equipment, water quality monitors, pump stations, power plants, valve operators, computer control and telemetry systems, and various electrical wiring. Many of the Authority's computerized aqueduct and hydroelectric plant control systems were designed by Authority technicians.

Employee Training

The Water Authority Earthquake Response Plan has been updated and rewritten in an outline form for quicker reference use. Staff and employee training sessions have been held to discuss use of the new manual. New safety manuals were issued to all employees. Safety topic discussions are held weekly, and a general safety training session is held monthly.

ENGINEERING DEPARTMENT

General

The Engineering Department is responsible for the design and construction of facilities for the Authority as well as the management of all Authority rights-of-way. Activity within the Department increased immensely during the past year with the beginning of the \$1.5 billion Water Distribution Plan Capital Improvement Program. The engineering staff operates from both the Escondido and San Diego offices of the Authority, each under the direction of an Engineering Manager. Major design and construction activities of the department for fiscal year 1989-90 were:

Ramona Pipeline

A well-attended Ramona Pipeline Completion Ceremony was held at the new Ramona Flow Control Facility on June 20, 1990. Treated water now flows in this eight-mile pipeline that provides service from the Second Aqueduct to Olivenhain MWD, the City of San Diego (Rancho Bernardo area), and Ramona MWD. The pipeline follows Rancho Bernardo Road and Espola Road through the busy communities of Rancho Bernardo and Poway.

The contractor, Chilcote, Inc. of El Cajon, installed the 57-inch to 36-inch diameter pipeline. The project design engineer was Camp, Dresser & McKee of Carlsbad. Authority staff provided contract administration, inspection, and surveying services for the project.

Water Distribution Plan/Environmental Impact Report

The program Environmental Impact Report for the Water Distribution Plan Capital Improvement Program was completed and certified by the Board in August 1989. The Brian F. Mooney firm prepared the document specifically addressing the Phase I and Phase II capital projects. Public input for this regional program was gathered throughout the county.

An additional supplementary report, "Route Selection Analysis" was prepared for the La Mesa-Lemon Grove Pipeline (Pipeline 4 Extension - Phase I) in November 1989. This report was instrumental in the development of construction agreements with both La Mesa and Lemon Grove.

San Marcos Pipeline (Pipeline 5 Extension - Phase I)

This 11-mile, nine-foot diameter pipeline will provide the first segment of a new pipeline that will extend the full length of the county, generally following the Second Aqueduct. The project will initially allow additional treated water to be brought into the county, but eventually be used as the major raw water pipeline in the Second Aqueduct. The project starts at the Crossover Pipeline in the Twin Oaks Valley north of San Marcos, and will extend to the Paint Mountain area of Elfin Forest in the south.

The project was designed by the Linden R. Burzell firm. Project completion is expected in the latter part of 1992. Authority staff will provide contract administration and inspection services for the construction of this project.

Scripps Ranch Pipeline (Pipeline 4B - Phase I)

This eight-mile, eight-foot diameter pipeline will allow additional water to flow around the Miramar area to the south county areas. The project starts just north of Scripps Ranch and extends to the Tierrasanta area on the south, generally following the Second Aqueduct.

The project design engineer is Boyle Engineering Corporation. The project is expected to be ready for construction in early 1991 with a construction time of about two years.

La Mesa-Lemon Grove Pipeline (Pipeline 4 Extension - Phase I)

The portion of the county south of Interstate 8 is presently served only by Pipeline 3. This 11-mile, eight-foot diameter pipeline will provide not only needed aqueduct capacity to the area, but also much needed operational flexibility and reliability. The project will extend from Mission Gorge Road at Jackson Drive southerly to Sweetwater Reservoir, and will include a 7,000-foot hard rock tunnel through Cowles Mountain.

The project is being designed by James M. Montgomery. Memorandums of Agreement have been developed with both the communities of La Mesa and Lemon Grove to better define the project limits, community impacts, and mitigation measures. Construction is expected to begin in early 1991 and continue for about two years.

New Agency Flow Control Facilities

Work was initiated on four new flow control facilities in the past year. Rincon No. 3 is presently being constructed off the First Aqueduct in north Escondido. The structure is scheduled for completion in the fall of 1990.

San Diego No. 5C was designed and is being constructed by Authority staff. This Second Aqueduct service will allow more raw water to be delivered to Lake Miramar and prevent lake drawdown during high usage periods. This project will be operational in the fall of 1990.

Oceanside No. 5 will be a new raw water service off Pipeline 5 and Olivenhain No. 4 will be a new raw water service off Pipeline 4. Both projects are being designed by Boyle Engineering Corporation and the project construction of the facilities is expected in 1991.

Sweetwater Bypass and Flow/Pressure Control Facility

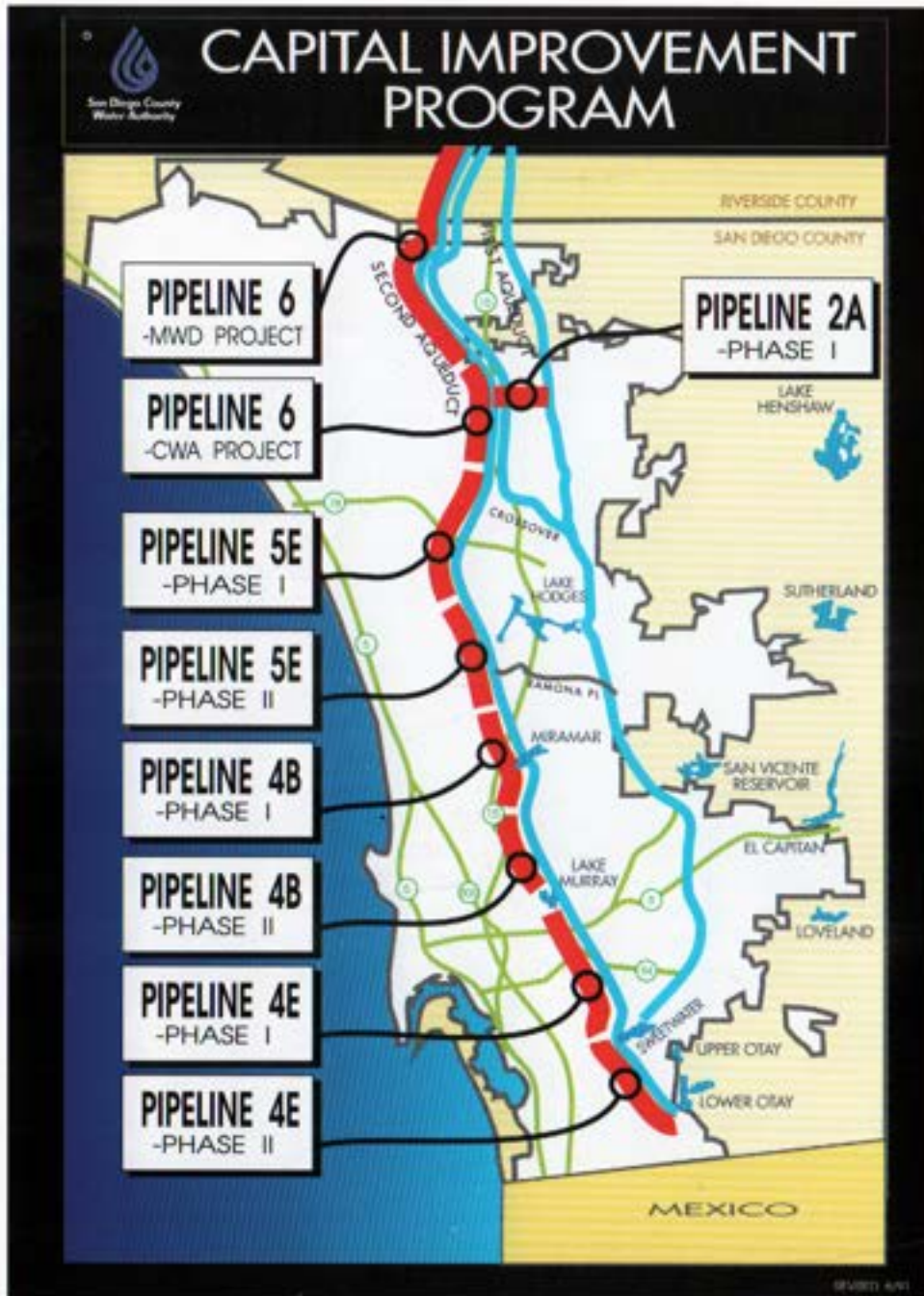
The Sweetwater Bypass and Flow/Pressure Control Facility will serve two primary purposes. First, it will allow water from Pipeline 3 to be directly discharged into Sweetwater Reservoir, allowing the Authority to deliver large amounts of water to the Sweetwater Authority during the winter and spring months. Treated water deliveries from Pipeline 3 to Sweetwater can then be decreased during the peak summer months so that other agencies can receive additional amounts of water. This will benefit several agencies in the south county since Pipeline 3 currently operates at peak capacity for almost the entire year. The Authority will have limited capability of delivering treated water until the completion of the Pipeline 4 Extension to Sweetwater Reservoir. The second purpose for the project is to provide pressure relief control for Pipeline 3 to protect the pipeline from transient pressure surges.

The Authority retained the firm of John Powell and Associates to provide engineering services for the design of the Sweetwater Bypass project. Preliminary design was completed in January 1990 and final detailed design continued through June 1990. Authority staff worked closely with the consultant to prepare the design. Staff also prepared the environmental analysis to comply with the California Environmental Quality Act. The facility is designed to deliver a nominal flow of 70 cubic feet per second to the reservoir. It will also have an intermittent capacity during pressure relief of 140 cubic feet per second.

Escondido Raw Water Pump Station And Modifications to the First San Diego Aqueduct

The Authority will convert the First San Diego Aqueduct from raw Colorado River water to treated water in the Fall of 1991. The First Aqueduct will continue to carry untreated water from the Crossover Pipeline south of the Terminal Structure after the conversion. In conjunction with the conversion, the City of Escondido will lose its raw water Connection No. 2 for Dixon Reservoir on the First Aqueduct. A new connection to the

Ramona Pipeline Project - 1989-90



Map No. 2. Capital Improvement Program

Crossover Pipeline and a pump station is planned to replace the lost connection. The pump station is required to pump the water to the reservoir during high flows in the Crossover Pipeline.

A professional services agreement was awarded to Black & Veatch, Engineers—Architects to provide the engineering services for the project. The scope of work for the project included improvements on the Vent Structures at Hubbard Hill on the First Aqueduct to separate the treated and untreated portions of the pipelines. A preliminary design report analyzed the various alternatives for delivering water to Dixon Reservoir under all operating conditions.

Pipeline 2A and Pump Station

The Water Distribution Plan identified Pipeline 2A and Pump Station as a required project to supplement the treated water demands north of Escondido along the First Aqueduct. The project is being designed to connect Pipeline 4 of the Second Aqueduct with the First Aqueduct in the Valley Center area. The project will also increase the reliability of the treated water system in the event of an emergency.

A professional services agreement was awarded by the Board in February 1990 to Engineering-Science to provide the engineering services for the project. During the preliminary design phase, 15 possible alignments were identified and are being evaluated on the basis of engineering and environmental criteria.

Study of the Effects of Sand Mining on the San Luis Rey River Aqueduct Crossings

The First and Second Aqueducts cross the San Luis Rey River in areas where there is extensive sand mining. Staff began preliminary investigations of the sand mining operations and their effect on the Authority's pipelines in January 1990. A survey of the river crossings indicated the First Aqueduct had experienced little erosion over the pipelines. The Second Aqueduct had experienced erosion of approximately five feet.

Staff discussed the potential for exposure of the pipelines with recognized experts in the field of river analysis. A professional services contract was awarded to the team of Nolte and Associates and Dr. Howard Chang in May 1990 to study the impacts of mining and other activities in the river on the aqueducts.

Right-of-Way Management

In April 1989, the Board adopted Article 25, Encroachment Permits, of the Administrative Code to deal with right-of-way encroachments. The policy also provided uniform standards to protect the Authority's interests and manage the rights-of-way.

Staff and the Board's General Counsel drafted revisions to Article 25 to authorize the Chief Engineer to determine whether a proposed use within the right-of-way was unduly detrimental to the Authority's needs and rights. When adopted, the revised article will also allow for the issuance of construction permits.

Throughout the year, staff worked with property owners in reviewing plans, issuing encroachment permits, and inspecting construction for authorized improvements within the Authority's right-of-way. The Authority increased the routine patrolling of the right-of-way to identify unauthorized encroachments.

Other Activities

Some of the other important engineering activities for 1989-1990 are:

- The Board authorized staff to negotiate an agreement with Padre Dam Municipal Water District to construct a bypass pipeline around the proposed Helix Water District Grossmont Pump Station. The pipeline is needed to maintain treated water service to Padre Dam's Connection No. 6.
- Helix Water District has been supplying treated water to the Authority for use by Padre Dam and Otay Water Districts. To meet the projected demands through 2010, the Water Distribution Plan recommended increasing the capacity of the R.A. Levy Water Treatment Plant from the current 67 million gallons per day to 100 million gallons per day. The Board has authorized staff to negotiate with Helix to participate in the expansion of the plant.

WATER RECLAMATION DEPARTMENT

Fiscal year 1990 saw the continued progress of the recently-created Water Reclamation Department in its goal of expanding the use of reclaimed water. Recognizing the need for policy direction and funding to further the water recycling effort, the Board of Directors acted upon a number of related recommendations from the Water Authority Reclamation Advisory Committee (WARAC). WARAC advises the Authority on water reclamation matters and is comprised of water and wastewater entities, state regulatory agencies and potential reclaimed water users.

Water Reclamation Projects

Eleven water reclamation projects, with a combined reuse potential of 80,000 acre-feet per year, received funding from the Authority in fiscal year 1990 for planning and development. The Clean Water Program for Greater San Diego continues to represent the most significant planning effort, with an ultimate water reuse potential of 64,000 acre-feet per year.

Two master-planned communities, Aviara in Carlsbad and East Lake in Chula Vista, began construction of the first community-wide reclaimed water systems for the San Diego area. Each dedicated reclaimed water distribution system will begin delivery of reclaimed water to schools, parks, playgrounds, golf courses and common residential landscaping in 1991.

Reclaimed water use within the Authority service area for fiscal year 1990 is summarized in figure 8. These deliveries have been listed by production facility, member agency and corresponding reclaimed water use. The reclaimed water use is categorized into municipal and industrial (M&I), agricultural, and groundwater replenishment.



Pasture land within the Olivenhain Municipal Water District has been irrigated with reclaimed water since 1986. The reclaimed water is supplied by the Whispering Palms Community Services District.

Policy Development

The Board of Directors continued to establish regional policies and procedures to further the water reclamation goal. Among the policies and procedures that have been developed and implemented in fiscal year 1990 are those related to mandatory use of reclaimed water, requirements for dual-plumbing in new construction and source-control measures to protect reclaimed water quality. Additionally, the Board of Directors conceptually approved a program to provide supplemental financing for water reclamation projects capable of relieving a demand on the Authority.

The Authority was an active participant in a number of state-wide programs focused on eliminating constraints affecting the feasibility of water reclamation. The Department was a strong advocate for regulations and supporting legislation that would support these goals.

RECLAIMED WATER PRODUCTION

In SDCWA Service Area
Fiscal Year 1989-1990
(Acre-Feet)

Location	Treatment Facility	M&I	Ag.	G.W. Replenish	Total
City of Oceanside	Fallbrook SD	175			175
Olivenhain MWD	Whispering Palms WRF		113		113
Otay Water Dis.	Jamacha Basin	281			281
Padre Dam MWD	Santee WRF	446			446
Pendleton	Pendleton	384		4,431	4,815
Ramona MWD	Santa Vicente WRP		365		365
Ramona MWD	Santa Maria WRP		593		593
San Diego, City of	Aqua II	25			25
San Diego, City of	Wild Animal Park WRP	17			17
Olivenhain	Fairbanks Ranch WPCF			168	168
Santa Fe WD	Rancho Santa Fe WPCF			258	258
Vallecitos WD	Meadowlark	5			5
Valley Center MWD	Lower Moosa Canyon			233	233
TOTAL:		1,333	1,071	5,090	7,494

Figure No. 8

WATER RESOURCES PLANNING DEPARTMENT

The Water Resources Planning Department's mission expanded in fiscal year 1990, including Authority computer services, responsibility for the Annual Report and management of the San Diego Office building. Along with the Reclamation Department and activities of the General Manager, the Water Planning Department was responsible for the Authority's new visibility on statewide water issues. As it became clear that meager statewide precipitation during the winter of 1989-1990 would result in a rare fourth year of drought, the Planning staff was active in developing drought management strategies. This culminated in the Board of Director's call for implementation of Stage II of the Authority's Emergency Water Management Ordinance and a request that the region cut back on water use by 10% to maintain water storage levels.

Water Resources Planning

Development of a Water Resources Plan for the Authority continued during the year with the focus on refinement of water demand forecasting and development of a 5-year demand management conservation program. Department staff worked with planners from SANDAG and the Metropolitan Water District to calibrate and refine the forecasts of the MWD-MAIN water demand forecasting model. A five-year program for improving the efficiency of water use in the region was developed, building on existing activities and expanding activities that will result in reliable long-term water savings without changes in lifestyle. In March of 1990 a workshop on developing of the Water Resources Plan was held during the Board's annual retreat.

Water Supply Development

Department participation in the State Water Resources Control Board's Bay-Delta process expanded during the year. Along with reclamation department personnel, planning staff members were involved in process workgroups covering conservation, reclamation and public trust topics. The State Board's process will have a significant impact on future supplies available to the Authority via the State Water Project, which pumps water from the Sacramento-San Joaquin River Delta.

Planning staff was also active on two Association of California Water Agencies task forces dealing with the Clean Water Act Section 404 permit

permit process and wetlands issues and on the Water Transfers and Exchanges Task Force. Developments in the State Water Project were also closely followed by the regular attendance of State Water Contractors meetings.

At the end of the year, staff began preliminary discussions with San Diego Gas and Electric Company to evaluate the development of a joint desalinated water and power production plant that would supply a portion of future water and regional power needs.

Water Storage Evaluation

Work continued during the year on development of a regional optimal water storage strategy. This work is part of the Optimal Storage Study being performed under contract by James M. Montgomery Consulting Engineers. Storage needs were quantified and both surface and groundwater storage site alternatives were reviewed. Starting with 25 surface sites and 29 groundwater sites, the study narrowed attention to eight surface sites and four groundwater basins for detailed review. Review of these sites will ultimately result in the selection of a project that will meet the emergency and seasonal water storage needs of the region to the year 2030. This work is being coordinated with the Metropolitan Water District's study of reservoir storage in Riverside County. Responsible federal agencies were apprised of study developments.

Water Conservation Program

Highlights of the department's water conservation program included the development of a long-term water demand management conservation program, legislative activity and implementation of short-term drought management techniques. A five-year conservation program was developed that focused on long-term water savings, using both water-conserving hardware and innovative management techniques. This program will form a portion of the Water Resources Plan and will involve the addition of two department staff members to develop and manage conservation credit projects. This program includes low-flow plumbing retrofit projects, leak detection services, turf and agricultural audit services, and single family and industrial/commercial water audits. Each project will include a data analysis element to evaluate water savings.

The conservation staff was active in state-wide conservation activities, including the Bay-Delta process and meetings of urban water conservation officials. In April 1990, conservation officials from California and Arizona participated in a two-day workshop at the Authority to share conservation program experiences and ideas. The department helped develop

legislation, along with the reclamation department staff, that was carried by State Senator Lucy Killea to regulate and improve the efficiency of home and commercial undersink reverse osmosis water treatment devices.

The Authority's Emergency Water Demand Management Model Ordinance was put to its first test in May of 1990. The Board called for implementation of Stage II of the Ordinance and requested a 10 percent cut in regional water use. This was done to maintain storage levels and prepare for a potential fifth year of drought. The department also developed additional short-term drought management techniques to help Authority member agencies manage the drought. These techniques included development of a computerized water waster database tracking system, purchase and distribution of 70,000 low-flow shower head conservation kits, automatic sprinkler setting guides, lawn water guides and model door hangers. The call for water conservation resulted in a 12 percent water savings for the month of June 1990.

Computer Services

During the year the function of Computer Services was added to the department. Computer Services will provide microcomputer and network hardware and software services for all of the Authority's departments. After a computer specialist was hired, a needs assessment of the Authority's computer service requirements was made. The department developed a plan to meet those needs and began purchasing computer equipment and software, based on a set of organization standards. The plan calls for linked microcomputer networks in both the San Diego and Escondido offices and envisions a two-year program for upgrading the computer capabilities of the Authority.

Database Management

An important ongoing function of the department is the compilation of monthly and annual water use statistics. These data are used for billing purposes, water use forecasting, bases for design of new pipelines and service connections, financial forecasting, monthly reports to the Board of Directors and the production of the Annual Report. With the advent of Metropolitan's Seasonal Storage Program, a new water storage tracking program was created. Methods to assess conservation efforts were also being developed at the end of the fiscal year in response to the call for conservation.

PUBLIC INFORMATION

As it became apparent that the three-year drought affecting the region was stretching inexorably into a fourth year, the Authority's public information and education effort took on added significance.

The Public Information Department in fiscal 1989-90 expanded its program to educate the public about the nature of San Diego County's water supply and the need to develop wise water-use habits.

To accomplish this goal, the department continued using the award-winning Waterhog character, began a year-round conservation education plan and developed several new programs.

Water Conservation Information

In January, the department launched an unprecedented winter water conservation campaign designed to drive home the fact that wise water use is always important, even when it's cold and rainy. The campaign, consisting primarily of radio publicity and print advertisements, marked the start of a year-round effort that emphasized conservation in outdoor water use.

As summer approached, the department stepped up its informational program as part of the Authority's overall Drought Management Action Plan. The campaign included a series of three ads featuring the "Don't Be a Waterhog" jingle in operatic, jazz and country-western arrangements. Also included in the campaign were newspaper ads highlighting various community "water heroes" and sponsored messages on commute-traffic reports.

When the Board of Directors recommended in April that all member agencies adopt the Stage 2 Water Alert, the department was deluged by calls from the public about the decision. More than 15,000 pieces of Authority and Metropolitan Water District literature were distributed in April and May alone.

The "Don't Be a Waterhog" campaign won several awards for its effectiveness in promoting the conservation message. It was honored by the San Diego chapter of the International Association of Business Communicators, the *San Diego Union-Tribune* and the California Newspaper Advertising Executives Association.

Water(Less!) Garden Awards Contest

As part of the conservation promotion campaign, the Authority joined forces with *San Diego Home/Garden* magazine to sponsor an annual

Waterhogs never know when to stop. They happily scrub down the hood, getting their pride and joy to gleam.

And behind them, the hose gushes gallon after gallon of water down the gutter.

How do you know when you're using too much of a good thing?

If it's beginning to look like you could wade across your driveway, you've gone too far.

Long before you reach that point, however, you can go from waterhog to water tight.

Use a nozzle with an automatic shut-off on all your hoses. Use a bucket to soap your car. Spray to wet. Spray to rinse. It's easy.

Let's make waterhogs an endangered species.

The more we conserve, the better. For example, replace your old shower head with a nice new one that uses less water. Make sure to check all your faucets and pipes for leaks, then fix 'em. And wait for full loads before turning on your dishwasher or washing machine.

Conservation. Our way of life.

There's a lot we can do to be water tight. Quench your thirst for more information. Just give us a call at 619/297-3218.



San Diego County Water Authority

Waterhogs use 15 gallons to wash the car, and another 75 to flood the driveway.



The award-winning Waterhog character continued to represent the Authority in fiscal 1990, starring in a series of advertisements promoting wise water habits.

Water(Less!) Garden Awards contest. The contest is a way to bring the principles of xeriscaping—the use of drought-tolerant plants and efficient garden design and maintenance techniques—into the mainstream of gardening.

Open to landscape professionals and weekend gardeners alike, the first contest drew a variety of entrants from throughout the county. The winners in seven categories received engraved old English watering cans and were recognized at the spring Home/Garden Show.

Water Awareness '90

The department coordinated the Authority's participation in Water Awareness '90, the annual statewide campaign to promote the importance of water in California. The theme of this year's month-long campaign was "Every Drop Counts."

The San Diego County campaign began with public ceremonies sponsored by the Authority at the San Diego Community Concourse. Representatives of the water industry and other community organizations attended, as did the media, Girl Scouts and Cub Scouts and about 200 interested private citizens. Dale Mason, chairman of the Authority Board of Directors, spoke about the region's water situation.

The kickoff event was the start of a month filled with activities sponsored by the Authority's member agencies. The events included tours, contests, speakers' forums and community gatherings.

Media Activity

Many of the Authority's activities drew considerable attention from the media during the fiscal year, keeping the department busy issuing news releases, answering phone calls and arranging numerous interviews.

One issue that attracted keen media interest was the Authority's release in October of its draft study of the potential impact on county water rates of the proposed merger between San Diego Gas & Electric and Southern California Edison. Another such issue was the Board of Directors' recommendation in April that the Authority's member agencies adopt a series of mandatory water-use restrictions designed to bring about a 10 percent reduction in water consumption.

Other issues that particularly interested the media were the new water availability standby assessment, the proposed capacity charge, the Bay-Delta water quality proceedings, the potential impact of earthquakes or other natural disasters on the Authority's aqueducts, pipeline construction and the Capital Improvement Program.



Cub Scouts who helped with the flag ceremony at the 1990 Water Awareness kickoff event introduce themselves to Jeanne Cavitt of KFMB radio. The Water Authority sponsored the event, held April 30, 1990, at the San Diego Community Concourse to mark the start of Water Awareness '90 events in the county. Cavitt and her radio partner, Clark Anthony, did their show live from the concourse for the kickoff event.

Major articles were prepared for the front page of *The San Diego Union* Sunday opinion section and *San Diego Executive* magazine.

School Education Program

The department operates the Authority's school education program, started in 1977, to teach area youngsters good water habits while they're young and impressionable.

Two education specialists offer free classroom presentations to fourth grade students throughout San Diego County. About 25,000 students heard the presentations during the fiscal year. In addition, the specialists began instructing area educators how to present water information to their students.

The education specialists discuss the origin of San Diego's water, the water cycle, the water treatment process and the need for conservation. The overall message is that children can make a positive impact through wise water use. To reinforce the message, students received Waterhog buttons, magnets, stickers and bags that they hopefully took home and left in prominent places.

Department staff prepared a localized section to supplement Metropolitan Water District's new education unit for seventh graders on geography.

Department staff was active in several organizations, including the education advisory committees of Metropolitan Water District and the state Department of Water Resources and the San Diego Science Educators Association.

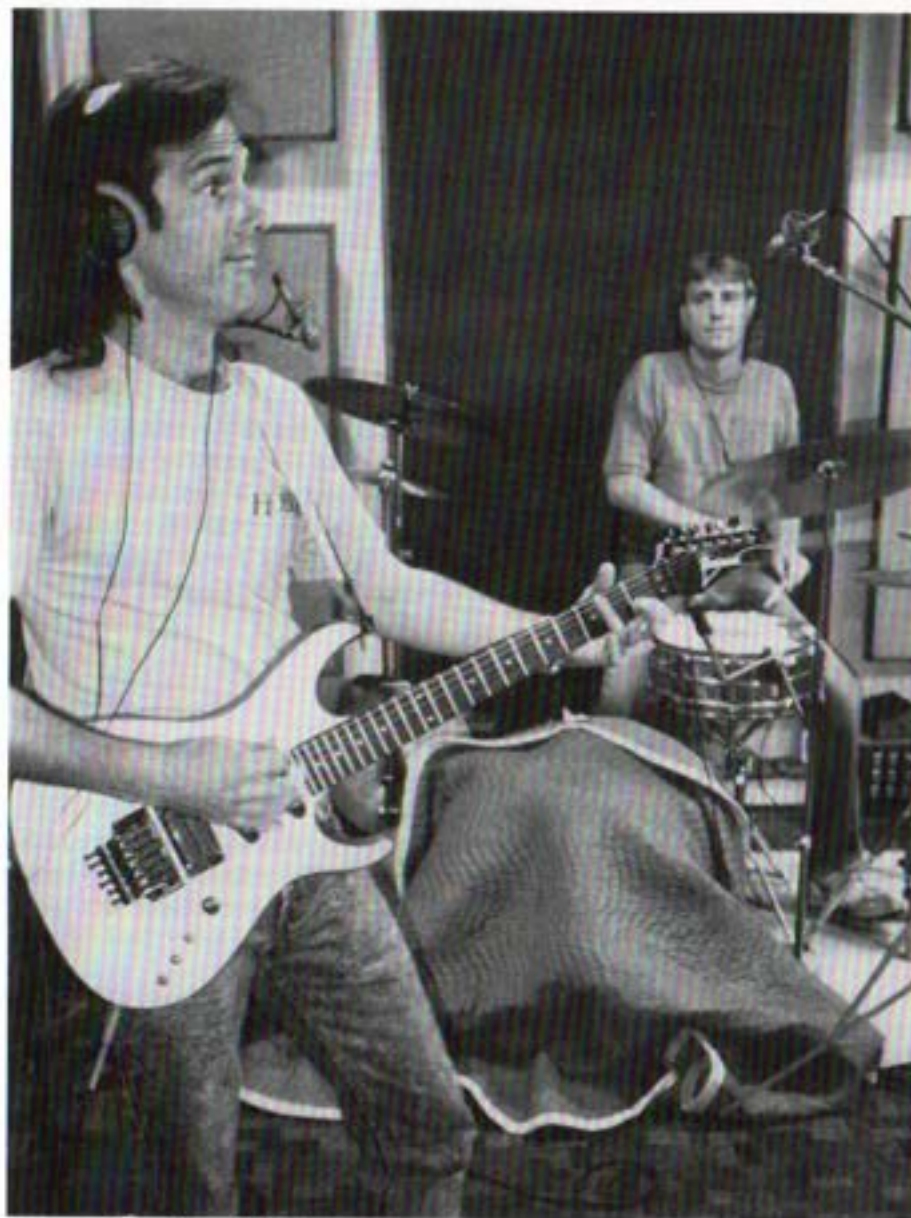
Department staff researched the idea of contracting with a theater company to make dramatic presentations on water to schools.

Publications

The department's two publications were released on a regular schedule during the fiscal year.

WaterTalk, published quarterly, keeps community leaders and interested private citizens informed about the Authority's activities. Two issues featured special themes. One highlighted the journey water takes from the Rocky Mountains through the Colorado River to San Diego. The other put a spotlight on the Authority's response to the four-year drought.

Connections, the monthly employee newsletter, continued to keep personnel up to date about Authority plans and policies, major water-related developments and interesting activities of their fellow employees.



Members of California Republic, a San Diego band, perform the country-western version of the "Don't Be A Waterhog" jingle. Three different versions of the jingle were recorded as part of the Authority's summer radio advertising campaign. Originally recorded in a light-pop arrangement, the jingle was adapted for country-western, jazz and operatic versions.

Public Opinion Survey

The department commissioned Applied Behavioral Systems of La Jolla to conduct a survey to determine San Diego County residents' knowledge of the region's water supply and their opinions about water issues.

The poll consisted of 411 telephone calls to randomly selected county residents. Among its findings were that 75 percent of respondents ranked water supply among the top five problems facing the county. Seventy-two percent saw a great need for long-term water conservation.

Speakers Bureau

The department coordinated the Speakers Bureau, through which Authority representatives made presentations to a variety of service and community groups throughout San Diego County. Group members primarily were interested in the region's water supply situation and what they could do to help conservation efforts. An average of two presentations were given per week; many utilized a slide show prepared by staff.

Joint Public Information Council

The Joint Public Information Council, comprising public information personnel from the Authority and its member agencies, met several times during the fiscal year to discuss activities.

The council also took on two major projects. A subcommittee drew up the model water conservation ordinance, which was adopted by the Board of Directors in September. Another subcommittee coordinated the Water Awareness '90 kickoff event.

HUMAN RESOURCES

The Human Resources Department expanded areas of responsibility, continued enhancement of operations and provided a variety of support services to the Water Authority during the fiscal year.

The Department was assigned responsibility for the development and administration of an Authority-wide safety program. A staff safety professional was hired to research, develop, implement, and monitor the safety program. This program will ensure safe employee work areas and equipment and conform to OSHA and CAL-OSHA legislation.

The Human Resource staff continued to develop personnel policies and procedures that would enhance the Authority's ability to achieve its goals and allow for equitable and consistent application to all employees. One significant step was the development and distribution to all employees of a Water Authority Employee Handbook, which gives a general description of the basic rules and obligations concerning employment with the Authority. Another significant step has been the ongoing development of a human resource computer program which is expected to be completed and implemented in fiscal year 1991.

Employment

On July 1, 1989, the Water Authority had 82 employees. By June 30, 1990, the number had increased to 95. During this period, the Human Resources Department recruitment program was involved in hiring 24 new employees and promoting 13 employees. During this same time span, seven employees retired and three employees terminated their services.

The following positions were filled during the year, by division:

Administrative Services Division

Accounting Specialist	Public Information Assistant
Clerical Assistant	Public Information Specialist
(2) Personnel Analysts	(2) Student Interns

Water Resources Division

Senior Secretarial Specialist	Water Resource Assistant
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Engineering, Operations, and Maintenance Division

Engineering Manager	Mechanic
Senior Civil Engineer	(3) Maintenance Workers
(2) Associate Civil Engineers	Senior Secretarial Specialist
(3) Engineering Technicians	Secretarial Specialist
Operations & Maintenance Superintendent	

Employee Relations

The Human Resources Department implements and monitors the various personnel-related components of employee salary and benefits packages. During fiscal year 1990, the department successfully coordinated the transition into a negotiated two-year salary and benefits package. This agreement will end on June 30, 1991. The department will continue to resolve or assist in the resolution of any related issues.

The Human Resources Department maintains the Authority's classification and compensation structure based upon the principle of "equal pay for equal work." During this year, the department conducted six studies that resulted in reclassification of positions and three studies that resulted in the reallocation to three classifications to different salary ranges. The department also conducted several studies that resulted in the creation of seven new classifications, effective for fiscal year 1991. These positions are in addition to the 57 that currently exist in the Authority's classification plan. The new classifications are Principal Civil Engineer, Principal Systems Operator, Education Resource Supervisor, Library Specialist, Planning Services Coordinator, Water Resource Supervisor, and Water Resource Associate.

The Authority encourages additional education for employees and provides reimbursement for the costs of tuition and books. Courses must be work-related, taken during off-duty hours, and successfully completed at an accredited institution of learning. During fiscal year 1990, the Human Resources Department processed full reimbursements of tuition and books for six employees pursuing their education.

Recognizing that a strong program of incentive awards improves both employee morale and performance, the Authority has established an incentive program that includes awards for Employee of the Quarter and Employee of the Year, and awards for suggestions and attendance.

The recipients of the Employee of the Quarter, Employee of the Year and attendance awards for fiscal year 1990 were honored at the annual Incentive Awards Banquet, hosted by the Authority and attended by employees, spouses, and guests. The suggestion awards program received greater attention during the year. The program resulted in 11 suggestions being submitted by employees, of which two suggestions merited cash awards.

Safety

During the last six months of fiscal year 1990, the Safety Program identified safety issues related to the operation of the Authority; established a priority list of issues to be pursued; coordinated implementation of several safety policies and procedures; developed and coordinated ongoing super-



CWA Summer Picnic

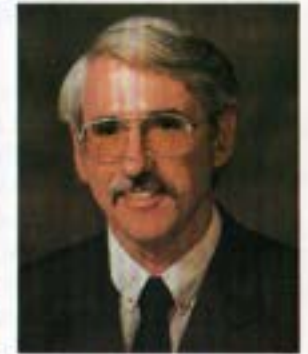
visory safety procedures; developed and coordinated ongoing supervisory safety training and Authority-wide training such as defensive driver training, earthquake preparedness, and confined spaces; and completed a number of safety inspections of Authority facilities and equipment.



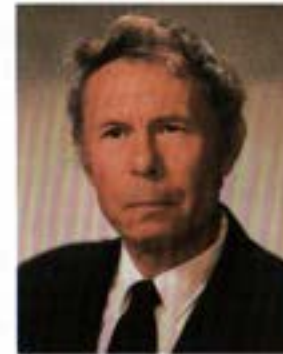
GORDON HESS
*Employee of the 1st Quarter
September 89*



GREG TUCKER
*Employee of the 3rd Quarter
March 90*



FRED CLARK
*Employee of the 4th Quarter
June 90*



DON BANDICK
*Employee of the 2nd Quarter
December 89
and
Employee of the Year
Fiscal year 1989-90*

TREASURER'S REPORT

For the fiscal year ending June 30, 1990, total Water Authority income was \$186,014,781. Total disbursements during the year were \$146,377,173. At the fiscal year end, the Treasurer was accountable for funds and investments totaling \$175,803,610.

The Director of Finance, Henry G. Lozano, also acts as the San Diego County Water Authority Treasurer and is responsible for all funds not immediately required for the conduct of business. Funds are invested under Board of Directors policy in interest bearing time deposits and in savings accounts.

A monthly report is presented to the Board of Directors that shows monthly activity consistent with investment policy. The report outlines investments by amount, type, rate, institution, number of days invested, and maturity date.

The Water Authority Administrative Code requires the Treasurer to report a summary of financial transactions monthly and for each fiscal year-end. For fiscal year 1989-90, the summary is as follows:

SUMMARY (Dollars in Thousands)

	1989	1990
Water Sales	\$127,020	\$154,757
Cost of Sales	113,804	125,308
Operating Expenses	5,862	8,552
Depreciation	<u>1,949</u>	<u>2,229</u>
Operating Income	5,404	18,667
Nonoperating Income/Expense	<u>7,513</u>	<u>20,970</u>
Net Income	<u>12,917</u>	<u>39,637</u>

TREASURER'S REORT

As of June 30, 1989 and 1990, the Treasurer's cash accountability was as follows:

	June 30	
	1989	1990
Insured demand deposits	\$ 59,840	\$ 847,911
Certificates of deposit	28,311,031	33,366,755
U.S. government securities	9,106,425	32,633,806
Guaranteed investment contract deposits	<u>125,976,897</u>	<u>108,955,138</u>
	<u>\$163,454,193</u>	<u>\$175,803,610</u>

LEGAL DEPARTMENT

Principal responsibility for legal advice and representation comes from the General Counsel, Paul D. Engstrand. Other members of the firm Jennings, Engstrand & Henrikson, provide assistance from time to time. Mr. Wallace R. Peck and Mr. Gregory V. Moser generally assist in all areas, while Mr. Bruce W. Beach handles eminent domain proceedings.

Routine Matters

Legislation was enacted which permits members of the Board of Directors of a County Water Authority to receive compensation not to exceed \$105 per diem for 10 days in any month. This legislative authority became effective for Authority members in April of 1990.

Other routine matters included advice about Brown Act changes, disclosure statement requirements, changes in the Authority Administrative Code, minor ongoing litigation, examination of credentials of Board members, and staff-related activities.

Water Distribution Plan

In August 1989 the board certified a Final Program Environmental Impact report for the Water Distribution Plan. Also, it adopted the Water Distribution Plan, a Capital Improvement Program, through the year 2010.

These major actions required legal review and resulted in many related activities. These included evaluating appraisals for property acquisition, preparing Resolutions of Necessity for Pipeline 5, Pipeline 4B, Pipeline 4, Phase One, reviewing Memorandum of Understandings with the Cities of La Mesa and Lemon Grove, documenting settlements with property owners, reviewing contracts with EIR and design consultants and other related matters.

Standby and Availability Charges

In August 1989, the Board adopted Ordinance 89-2, which for the first time implemented Section 5.2 of the County Water Authority Act. This authorized a \$10-per-parcel or per-acre charge for the 1989-1990 fiscal year on land within the Authority's boundaries.

In May 1990, the Board began to implement, for the first time, Section 5.9 of the County Water Authority Act that authorized establishment of connection and capacity charges. The Board accepted the Capacity Charge

Report which, as required by law, analyzed the economic justification for various rates for capacity charges. Staff was instructed to publish notice of a public hearing for July 12, 1990 to comply with the California Environmental Quality Act and prepare an ordinance establishing such capacity charges as may be deemed appropriate by the Board.

SDG&E

The Board concluded a study of the feasibility of public ownership of San Diego Gas and Electric company's utility system and related potential economic consequences on December 14, 1989 by adoption of Resolution 89-59. It was entitled:

RESOLUTION OF THE BOARD OF DIRECTORS OF THE SAN DIEGO COUNTY WATER AUTHORITY REVIEWING ACTIONS TAKEN PURSUANT TO RESOLUTION NO. 89-4 AND AN MOU WITH THE CITY OF SAN DIEGO ACCEPTING THE FINAL SDG&E STUDY, MAKING FINDINGS, AND DIRECTING FURTHER ACTIONS

The Resolution contains an extended recital of background events about the proposal to merge SDG&E into Southern California Edison and of a Memorandum of Understanding made with the City of San Diego. The MOU provided that the City would pursue matters pending before the regulatory bodies (California Public Utilities Commission (CPUC) and the Federal Energy Regulatory Commission (FERC) and that the Authority would complete the feasibility of a public ownership study.

Eight preliminary reports and a draft report were prepared and distributed to the Board, the City, a Blue Ribbon Committee formed by the Board to evaluate objectivity and other interested groups and persons. They were entitled:

- Background and Program Plan, July 1989
- Background Information on Publicly-Owned Utilities, July 1989
- Primer on Municipal Finance, July 1989
- Comparison of Current SDG&E and SCE
- Agricultural Rates, September 1989
- Water Desalination Potential, September 1989
- A Preliminary Analysis of SDG&E Water Rights, September 1989
- Issues in Valuation of Investor-Owned Utility Assets Proposed for Public Acquisition, September 1989

- Institutional Structures Available for Public Ownership, September 1989
- Draft Report, SDG&E Study; Public Ownership Alternatives, October 1989

The final report was made in three volumes:

- SDG&E Study: Public Ownership Alternatives (November 1989, Volume I)
- Individual Reports on SDG&E (November 1989, Volume II)
- Comments received by SDCWA on SDG&E Study Public Ownership Alternatives (November 1989, Volume III)

The Board accepted the Final Report, instructed the General Manager to make specific and wide distribution of it, and concluded that its obligations to the City as undertaken by the MOU had been fulfilled. The Board concluded, in part:

- “h) The principal economic difference between public and private ownership of SDG&E’s utility system is that rate payers of publicly owned gas and electric systems, like publicly owned water and sewer systems, do not pay charges to cover federal or state income taxes, while ratepayers of privately owned utilities must pay charges to cover the incomes taxes due from privately owned utilities;
- i) In addition, the cost of debt to finance capital improvements is significantly less for publicly owned utilities because interest payments are exempt from federal and state income taxes;
- j) The principal political difference between public and private ownership is that the policy making body of a publicly owned utility is chosen by, and responsive to, the voter-consumers, while the owners of the stock of an investor owned (“private”) utility choose its board of directors;
- p) The conclusion in the Final SDG&E Study that ‘. . . if the people of San Diego want control over their gas and electric utilities . . . they can do so while achieving significant financial benefits . . .’ is credible.”

The case brought by SDG&E against the Authority challenging the expenditure of public funds for the study was dismissed by the Company after the Final Report was accepted.

Reclamation Activities

During 1990-1991 the Authority worked closely with the San Diego Regional Water Quality Control Board to facilitate reclamation projects of member agencies. Agreements were made to provide staff to the Board to process reclamation project applications, enact basin planning policies related to reclamation, and coordinate the activities of the Board and the Health Department in permitting temporary use of reclaimed water as a drought-relief measure.

The Authority adopted a local projects program through which the Authority committed itself to contracts with member agencies under which the Authority would pay up to \$100 million between 1990 and 2010 for reclaimed water actually delivered to end users, as long as the use displaces existing demand on imported water deliveries.

The local assistance program continued to fund studies by local agencies, on a matching basis, of the feasibility of reclamation projects.

Legislation restricting the control of self-regenerating water softener, which make water reclamation infeasible in some areas by discharging high levels of brine into community sewage collection systems, was defeated. The Authority continues to seek legislation ensuring continued local control of the location of automatic water softeners to protect opportunities for water reclamation.

The Authority participated in formulating the Bay-Delta process committee report setting the goals for water to be produced by reclamation in Southern California, which will be used by the State board to establish the needs of San Diego for imported water.

MWD Matters

The Authority continued to monitor MWD’s efforts to improve the availability of water for the South Coastal Plain. The 1988 conservation agreement between MWD and the Imperial Irrigation District, which had been subjected to legal attack by Coachella Valley Water District, was reinstated by an “Approval Agreement of December 19, 1989” between MWD, IID, Coachella, and the Palo Verde Irrigation District. This Agreement contemplates the creation of about 100,000 acre-feet of conserved water by IID after constructing facilities to improve water delivery and conveyance efficiencies that were being funded by MWD.

No program has been developed to solve the inconsistency between MWD’s Section 135 (preferential rights) and the Laguna Declaration (meet all supplemental needs of each member agency). MWD continues to plan in a manner consistent with fulfilling its commitments under the Laguna Declaration.

Legislation**Legislation Sponsored by the Authority:**

SB 2334 Killea—Reverse Osmosis-Water Treatment Devices

This measure set efficiency standards for reverse osmosis (RO) drinking water purification systems, which waste as many as nine gallons of water while purifying one gallon. After major discussions with the industry, this bill was amended to address its concerns and still conserve water. This bill was signed by the Governor and became law January 1, 1991.

Legislation Opposed by the Authority:

SB669—Rogers—Water Softeners

This measure was opposed by the Authority and its member agencies. The measure, which was designed to preclude a water agency from adopting an ordinance to ban self-regenerating water softeners in reclamation areas, was stopped in the Assembly Water Parks and Wildlife committee. Some 70 water agencies were opposed to this measure.

During the legislative year the Authority opposed or supported some 30 legislative measures, ranging from Bay/Delta standards to water meters.

METROPOLITAN WATER DISTRICT MEMBERSHIP

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

The Metropolitan Water District was approved by the State Legislature in 1927. Early the following year, MWD was organized. The original act provided for membership by cities but an amendment was passed by the Legislature that permitted annexation of water districts. MWD's membership now includes the original 13 cities, one city added in 1971, 12 municipal water districts, and the San Diego County Water Authority.

The Authority joined MWD on December 17, 1946, as one of the 27 member agencies of the 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 represented, subject to 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. These district member agencies are listed in Figure 9.

The Water Authority has six representatives on the MWD Board of Directors, all of whom are members of the Water Authority Board.

Harry Griffen, who has served on the MWD Board for 27 years, is a member of the Executive Committee, the Finance and Insurance Committee, the Water Problems Committee, the Special Budget Committee, and the Audit Subcommittee.

On October 12, 1989 Herbert H. Stickney was appointed to fill the unexpired position held by John F. Hennigar, who represented the Water Authority on the MWD board for three years. Director Stickney serves on the Engineering and Operations Committee and the Legal and Claims Committee.

Francesca M. Krauel, who has been a MWD Director for six years, is a member of the Finance and Insurance Committee, the Legal and Claims Committee and the Special Committee on Water Quality.

Michael D. Madigan has been on the MWD Board for eight years. He is an ex officio member of the Executive Committee, Chairman of the Land Committee, and a member of the Engineering and Operations Committee, the Special Committee for Communications Study, the Special Committee on Department Head Compensation, the Ad Hoc Committee on Energy

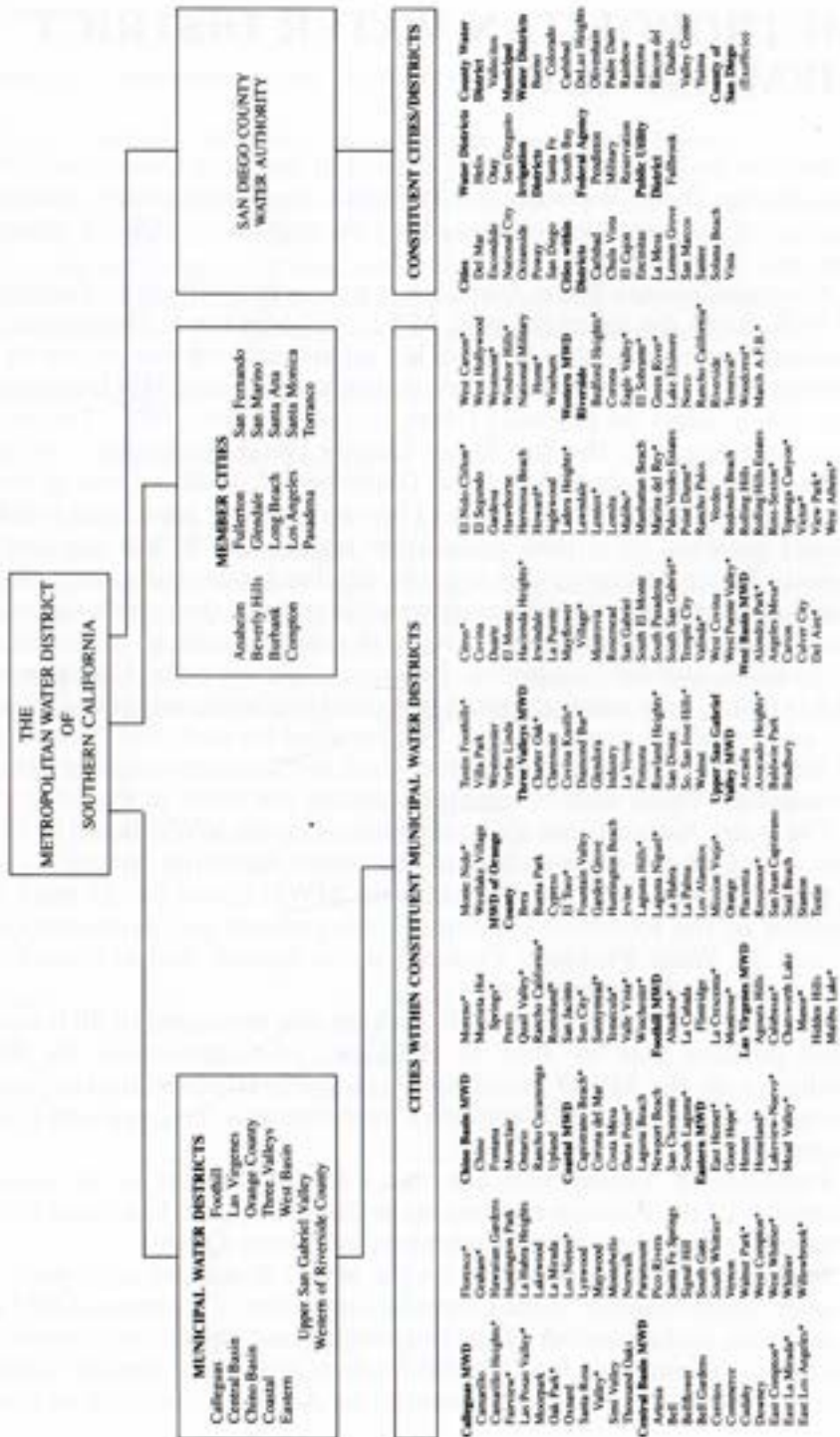


Figure No. 9 Composition of the Metropolitan Water District of Southern California

and Desalination and the Bay Delta Political Advisory Ad Hoc Committee.

Dale Mason, who was appointed on December 19, 1986, is a member of the Finance and Insurance Committee and the Organization and Personnel Committee.

John P. Starkey has been on the MWD Board for 10 years. He serves as an ex officio member of the Executive Committee, Chairman of the Finance and Insurance Committee, member of the Land Committee, the Water Problems Committee, the Special Nominating Committee, the Special Committee on Department Head Compensation, and the Ad Hoc Committee on Energy and Desalination.

As of August 1989, the Authority representatives had a total of 11,060 votes out of 73,631 or 15.02 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 service area is shown in Map No. 3. About 14.9 million people living within those portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties are served by MWD. There are 142 incorporated cities within the District. MWD's service area contains 5,138.68 square miles which is an increase of 0.79 square miles during the fiscal year. Of this, 1,420.23 square miles, or 27.6 percent, lie within the Authority's boundaries.

Total assessed value of taxable property lying within the boundaries

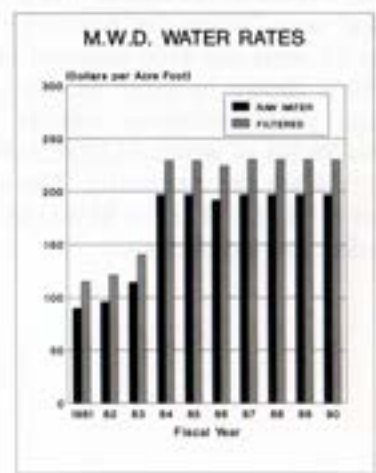
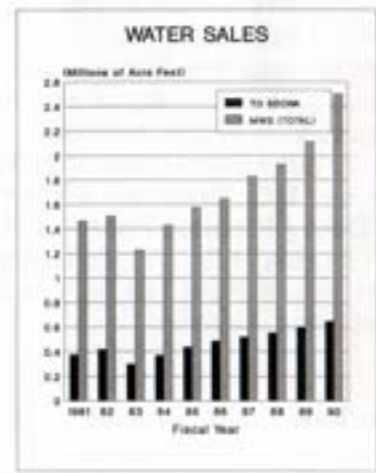
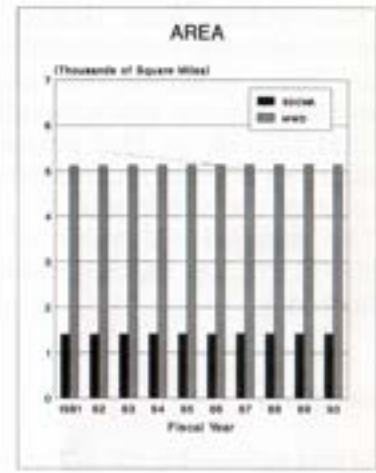


Figure No. 10

SAN DIEGO COUNTY WATER AUTHORITY

of Metropolitan Water District was \$671,699,558,661. Assessed value is determined by the assessors of the counties served for use in levying 1989-90 taxes. These valuations were increased \$74,799,199,703, or 12.5 percent, above the previous year's valuation of \$596,900,358,958. An amount of \$11,693,275,136, or 15.6 percent of this increase, occurred within the Authority's boundaries. Assessed valuation within the Authority is 15.4 percent of the MWD total.

The assessed valuation of MWD established for 1990-1991 is \$750,992,873,309 which includes \$117,128,102,257 for the Authority's valuation.

Water Sales

MWD delivered 2,500,661 acre-feet of water during fiscal year 1989-90. Delivery to the Authority of 672,844 acre-feet represented 26.9 percent of MWD's total deliveries.

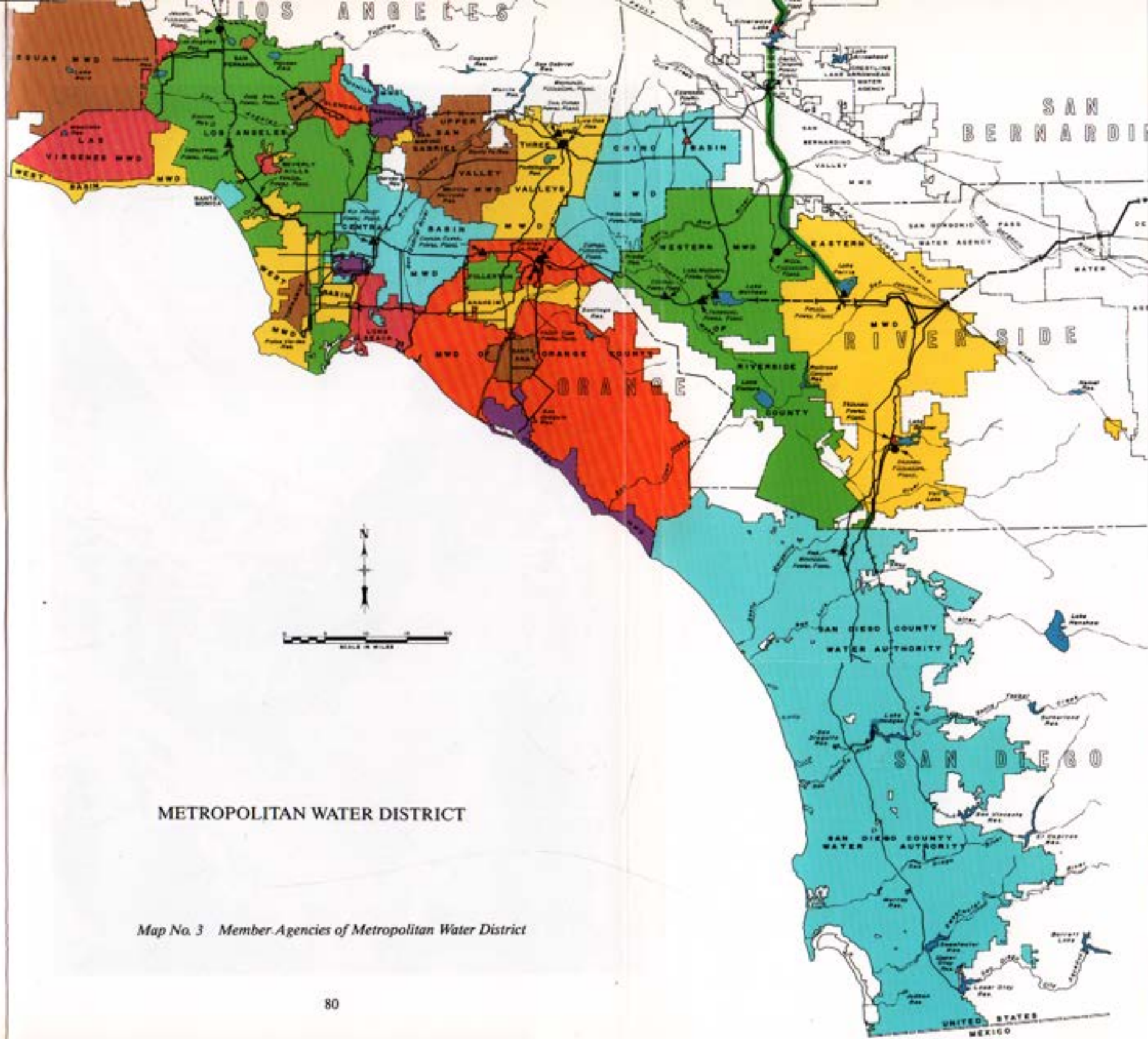
MWD has five filtration plants in operation. The Skinner Filtration Plant, with a capacity of 340 mgd, serves a portion of the treated water requirement of the Authority.

The other plants operated by MWD, none of which can serve the Authority, are: F.E. Weymouth Memorial Filtration Plant in La Verne; Robert B. Diemer Filtration Plant near Yorba Linda; Joseph Jensen Filtration Plant at Granada Hills; and the Henry J. Mills Filtration Plant near Riverside. The Jensen Plant can only receive water from the West Branch of the California Aqueduct,

Tax Rate

MWD set its tax rate at .012 percent of assessed valuation for the 1989-90 fiscal year. When the Authority annexed to MWD in 1946, the tax rate was 50 cents per \$100 assessed valuation. The tax rate for each year since 1930 is shown in Table 12. The total MWD tax levy during the 1989-90 fiscal year, including regular and special taxes, was approximately \$90,439,141 of which \$12,886,364, or 14.3 percent, was levied against property within the Authority. The estimated tax level for the 1989-90 fiscal year is \$84,533,323 for MWD as a whole and includes \$11,472,247 for the Authority's service area.





METROPOLITAN WATER DISTRICT

Map No. 3 Member Agencies of Metropolitan Water District

COLORADO RIVER BOARD MEMBERSHIP

The Colorado River Board of California is an agency of the State dedicated to the protection of California rights and interests in Colorado River system water and power resources.

The Board members were originally selected by the Governor from a list of persons submitted by each of the six agencies having rights to Colorado River resources. The six agencies are: San Diego County Water Authority, Metropolitan Water District of Southern California, City of Los Angeles Department of Water and Power, Coachella Valley Water District, Palo Verde Irrigation District, and Imperial Irrigation District.

The Board was reorganized in April 1977 and enlarged from six to eleven members pursuant to legislation enacted in 1976. The five new members consist of two State officers, the Director of the Department of Fish and Game, and the Director of the Department of Water Resources as ex officio members; and three public Board members appointed by the Governor. The Board elects from among its members, other than the two State officers, a Chairman who is ex officio the Colorado River Commissioner. Under the revised statutes, the Governor is to appoint both a member and an alternate member to the Board from a list of nominees designated by each of the six agencies.

Additional legislation, effective in 1985, was enacted in 1983 and 1984 to improve the method of appointment and replacement of the six agencies' representatives on the Board and the selection of a Chairman. The legislation also reduced the size of the Board to ten members, eliminating one public member. The member and the alternate representing each of the six agencies are chosen by the Governor from two lists, each containing not less than three persons, that are submitted by each of the agencies. John P. Starkey represents the Water Authority on the Board, and Herbert H. Stickney serves as his alternate.

Once fully funded 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.



*San Diego Cuyamaca tunnel and camp for flume—Circa 1887
San Diego Historical Society—Photograph Collection*

SAN DIEGO COUNTY WATER AUTHORITY

Table 1
STATISTICAL SUMMARY

	1988-89	1989-90	Percent Change
GROWTH OF AREA			
Number of Agencies	24	24	-0-
Total Area - Acres	908,069	908,945	-0-
Population	2,346,208	2,435,903	+ 3.8
Assessed Valuation	91,992,997,704	103,686,252,840	+ 12.7
OPERATIONS			
Water Imported by Authority-af	597,117	647,481	+ 8.4
Water Production of Agencies-af	626,502	646,645	+ 3.2
*Local Water Used-af	51,722	33,201	- 35.8
Authority Water Used-af	574,780	613,444	+ 6.7
Miles of Pipeline	222	222	-0-
Miles of Patrol Roads Maintained	105	105	-0-
Number of Service Connections	78	82	+ 5.1
FINANCIAL			
Water and Other Sales	\$ 127,019,817	\$ 154,757,249	+ 21.8
Operating Expenses:			
Cost of Sales	113,803,502	125,308,572	+ 10.1
Depreciation and Amortization	1,949,410	2,229,086	+ 14.3
Operations and Maintenance	1,559,786	3,149,737	+ 101.9
Planning and Reclamation	1,144,156	1,763,282	+ 54.1
General and Administrative	3,158,810	3,639,249	+ 15.2
Total Operating Expenses *	121,615,664	136,089,926	+ 11.9
Operating Income	5,404,153	18,667,323	+ 245.4
Other Revenues (Expenses):			
Property Taxes and In-lieu Charges	7,116,183	8,028,207	+ 12.8
Water Availability Charges	-0-	10,705,941	0
Interest Expense	(3,057,191)	(10,287,247)	+ 236.5
Interest Income	2,844,402	12,523,384	+ 340.3
Other Income	609,228	-0-	-0-
Total Other Revenues	7,512,622	20,970,285	+ 179.1
Net Income	12,916,775	39,637,608	+ 206.9
Undesignated Retained Earnings at			
Beginning of Year	110,282,545	123,199,320	+ 11.7
Transfer to Designated Retained Earnings	-0-	(31,000,000)	-0-
Undesignated Retained Earnings at End of Year	\$123,199,320	\$131,836,928	+ 7.0

*Does not include Pendleton Military Reservation

TABLES

Table 2
POPULATION GROWTH - COUNTY AND AUTHORITY AREA
1910 to 1990

(Includes Resident Military Personnel)

Year (as of April 1)	COUNTY		AUTHORITY		Percent of County Population in Authority
	Total Population	Annual Growth	Total Population	Annual Growth	
1910(1)	61,665	5,058			
1920(1)	112,248	9,741			
1930(1)	209,659	7,969			
1940(1)	289,348				
1946(3)	502,804	26,746	(3) 440,659	2,807	88
1950(1)	556,808	42,478	(2) 451,886	50,083	81
1955(4)	769,200	52,762	(2) 702,300	50,820	91
1960(1)	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(1)	1,310,800	49,850	(5) 1,255,000	54,500	96
1975(6)	1,560,038	49,632	(5) 1,527,520	54,027	98
1980(1)	1,808,200	91,800	(5) 1,797,655	66,635	99
1981(7)	1,900,000	44,000	(5) 1,864,290	25,075	98
1982(7)	1,944,000*	42,035	(5) 1,889,365	45,222	97
1983(7)	1,986,035	54,853	(5) 1,934,587	71,652	97
1984(7)	2,040,888	42,471	(5) 2,006,239	40,761	98
1985(7)	2,083,359	82,810	(5) 2,047,000	58,500	97
1986(7)	2,166,169	74,490	(5) 2,105,500	75,000	97
1987(7)	2,240,659	87,025	(5) 2,181,000	72,216	97
1988(7)	2,327,684	90,492	(5) 2,253,216	92,992	97
1989(7)	2,418,176	91,738	(5) 2,346,208	89,695	97
1990(7)	2,509,914		(5) 2,435,903		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 Department of Planning and Land Use, San Diego County.
- * Corrected estimate by Integrated Planning Office, San Diego County.

SAN DIEGO COUNTY WATER AUTHORITY

Table 3
AREA—AUTHORITY MEMBER AGENCIES

C	Areas Within Authority			Percent of Total Authority Area 6/30/90	
	As of 6/30/89 (acres)	Changes During Year (acres)	As of 6/30/90 (acres)		
	Bueno Colorado M.W.D. (2)	19,802	-42	19,760	2.17
	Carlsbad M.W.D. (3)	20,369	0	20,369	2.24
	Del Mar, City of	1,159	0	1,159	0.13
	De Luz Heights M.W.D.	11,789	0	11,789	1.30
	Escondido, City of (12)	21,444	91	21,535	2.37
	Fallbrook P.U.D.	16,199	0	16,199	1.78
	Helix Water District (4)	31,278	0	31,278	3.44
	National City, City of	5,573	1	5,574	0.61
	Oceanside, City of	25,698	876	26,574	2.92
	Olivenhain M.W.D. (5)	30,815	-12	30,803	3.39
	Otay M.W.D. (6)	63,063	0	63,063	6.94
	Padre Dam M.W.D. (8)	54,462	0	54,462	5.99
	Pendleton Military Res.	134,625	0	134,625	14.81
	Poway, City of	23,214	0	23,214	2.55
	Rainbow M.W.D. (10)	47,237	0	47,237	5.20
	Ramona M.W.D.	46,524	0	46,524	5.12
	Rincon del Diablo M.W.D. (7)	10,447	-90	10,357	1.14
	San Diego, City of	210,717	0	210,717	23.18
	San Dieguito W.D.	5,640	12	5,652	0.62
	Santa Fe Irrigation District	10,179	0	10,179	1.12
	South Bay I.D. (9)	15,569	-1	15,568	1.71
	Vallecitos Water District (15)	28,467	41	28,508	3.14
	Valley Center M.W.D. (11)	60,986	0	60,986	6.71
	Yuima M.W.D.	12,813	0	12,813	1.41
	Total Authority Area	908,069	876	908,945	100.00
	San Diego County	2,725,100	0	2,725,100	

- (1) Includes Vallecitos W.D. (San Marcos C.W.D. which became a member agency of Authority on February 25, 1980.
- (2) Does not include 2,806 acres overlapping in City of Oceanside, and 37 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 25 acres overlapping in City of San Diego.
- (6) Does not include 4,682 acres overlapping in City of San Diego.
- (7) Does not include 16,346 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 718 acres overlapping in National City.

TABLES

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

Population—U.S. Census				Density of Population 1990		
1970 (13)	1980 (13)	Decade Increase 1970-80 Percent	1990 Estimate (14)	Annual Increase 1989-90 Percent	Per Acre	Per Sq. Mile
39,000 (1)	51,000	31	76,729	4.41	3.88	2,485
15,500	31,500	103	54,400	2.24	2.67	1,709
3,900	5,040	29	5,215	1.64	4.50	2,880
150	225	50	390	1.56	0.03	21
36,000	64,100	78	105,515	5.13	4.90	3,136
12,000	18,700	56	23,576	2.38	1.46	931
163,000	203,500	25	226,928	0.49	7.26	4,643
39,000	47,200	21	51,488	1.24	9.24	5,912
40,700	77,800	91	128,500	11.74	4.84	3,095
2,000	23,000	1,050	43,480	2.79	1.41	903
19,400	51,600	166	98,400	18.55	1.56	999
46,000	89,000	93	112,000	5.74	2.06	1,316
—	33,150	—	50,000	0.00	0.37	238
14,000	33,620	140	44,368	2.89	1.91	1,223
4,200	7,800	86	13,442	15.55	0.28	182
6,800	16,000	135	32,000	4.92	0.69	440
18,900	13,800	-27	25,000	0.00	2.41	1,545
675,800	849,600	26	1,118,282	2.92	5.31	3,397
21,800	30,900	42	34,657	0.84	6.13	3,924
8,600	14,700	71	19,335	1.76	1.90	1,216
80,000	99,200	24	106,243	0.37	6.82	4,368
—	24,200	—	47,235	3.62	1.66	1,060
7,000	10,200	46	16,900	19.01	0.28	177
1,250	1,820	46	1,820	0.00	0.14	91
1,255,000	1,797,655	43	2,435,903	3.82	2.68	1,715
1,310,800	1,808,200	38	2,509,914	3.79	0.92	589

- (10) Does not include 701 acres overlapping in City of Oceanside.
- (11) Does not include 1,177 acres overlapping in City of Escondido.
- (12) Includes 1,177 acres overlapping in Valley Center M.W.D., 405 acres overlapping in Vallecitos W.D., 37 acres overlapping in Bueno Colorado M.W.D., and 16,346 acres overlapping in 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 405 acres overlapping in City of Escondido.

* Corrected figures per agencies.

SAN DIEGO COUNTY WATER AUTHORITY

Table 4
 WATER PRODUCTION, AGRICULTURAL USE, AND AUTHORITY STORAGE
 FISCAL YEAR 1989-90
 (Compilation of data furnished by member agencies)

Member Agencies	SOURCE OF WATER (3)				Total Water Production Ac. Ft.	Gross Area (2) Acres	Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	Water Production Per Acre Ac.Ft./Ac./Yr.	Estimated Population	Water Production Per Capita Ac. Ft./Cap./Yr.	WATER USED FOR AGRICULTURE		
	Local Supply		Authority Supply									From Local Supply		From Authority
	Amount Ac. Ft.	Percent	Amount Ac. Ft.	Percent								Amount Ac. Ft.	Percent	Amount Ac. Ft.
Bueno Colorado M.W.D.	3,336.0	14.9	19,083.8	85.1	22,419.8	19,760	16,478	83.4	1.36	76,729	0.29	447.6	17.6	2,092.7
Carlsbad M.W.D.	0.0	0.0	17,844.2	100.0	17,844.2	20,369	19,575	96.1	0.91	54,400	0.33	0.0	0.0	2,227.9
Del Mar, City of	0.0	0.0	1,449.9	100.0	1,449.9	1,159	1,082	93.4	1.34	5,215	0.28	0.0	0.0	0.0
De Luz Heights M.W.D.	36.4	1.1	3,417.6	98.9	3,454.0	11,789	2,780	23.6	1.24	390	8.86	35.3	1.1	3,297.4
Escondido, City of	4,468.2	15.3	24,725.9	84.7	29,194.1	21,535	18,703	86.8	1.56	105,515	0.28	1,051.5	15.4	5,771.0
Fallbrook P.U.D.	0.0	0.0	13,767.0	100.0	13,767.0	16,199	11,207	69.2	1.23	23,576	0.58	0.0	0.0	7,134.2
Helix W.D.	1,844.3	4.2	41,772.2	95.8	43,616.5	31,278	30,252	96.7	1.44	226,928	0.19	35.3	5.9	560.0
National City, City of	1,852.5	26.4	5,174.9	73.6	7,027.4	5,574	5,078	91.1	1.38	51,488	0.14	0.0	0.0	0.0
Oceanside, City of	0.0	0.0	28,763.1	100.0	28,763.1	26,574	19,926	75.0	1.44	128,500	0.22	0.0	0.0	2,985.4
Olivenhain M.W.D.	0.0	0.0	13,480.8	100.0	13,480.8	30,803	15,250	49.5	0.88	43,480	0.31	0.0	0.0	1,402.9
Otay W.D.	0.0	0.0	22,809.5	100.0	22,809.5	63,063	38,000	60.3	0.60	98,400	0.23	0.0	0.0	864.9
Padre Dam M.W.D.	0.0	0.0	21,068.2	100.0	21,068.2	54,462	36,926	67.8	0.57	112,000	0.19	0.0	0.0	1,651.2
Pendleton Military Res.	-	-	156.8	-	156.8	134,625	N.A.	-	-	50,000	-	-	-	-
Poway, City of	21.4	0.2	13,589.0	99.8	13,610.4	23,214	10,078	43.4	1.35	44,368	0.31	2.0	0.2	850.8
Rainbow M.W.D.	0.0	0.0	33,629.4	100.0	33,629.4	47,237	17,631	37.3	1.91	13,442	2.50	0.0	0.0	28,485.7
Ramona M.W.D.	47.6	0.4	12,868.3	99.6	12,915.9	46,524	11,415	24.5	1.13	33,000	0.40	2.7	0.0	5,827.4
Rincon del Diablo M.W.D.	0.0	0.0	8,740.6	100.0	8,740.6	10,357	8,552	82.6	1.02	25,000	0.35	0.1	0.0	1,131.2
San Diego, City of (1)	16,657.4	6.9	225,863.7	93.1	242,521.1	210,717	134,496	63.8	1.80	1,118,282	0.22	0.0	0.0	928.8
San Dieguito W.D.	1,092.0	12.8	7,467.2	87.2	8,559.2	5,652	5,480	97.0	1.56	34,657	0.25	202.0	14.0	1,243.8
Santa Fe I.D.	1,760.0	14.1	10,691.7	85.9	12,451.7	10,179	10,179	100.0	1.22	19,335	0.64	218.3	17.6	1,018.6
South Bay I.D.	0.0	0.0	18,844.3	100.0	18,844.3	15,568	12,130	77.9	1.55	106,243	0.18	2.4	7.4	30.2
Vallecitos W.D.	0.0	0.0	13,436.3	100.0	13,436.3	28,508	13,246	46.5	1.01	47,235	0.28	0.0	0.0	3,305.2
Valley Center M.W.D.	0.0	0.0	52,628.6	100.0	52,628.6	60,986	40,044	65.7	1.31	16,900	3.11	0.0	0.0	45,391.1
Yuima M.W.D.	2,085.0	49.0	2,171.4	51.0	4,256.4	12,813	4,000	31.2	1.06	1,820	2.34	1,984.4	48.4	2,114.8
Total and Average	33,200.8	5.1	613,444.4	94.9	646,645.2	908,945	482,508	53.1	1.34	2,435,903	0.27	3,981.6	3.3	118,315.2

(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) Figures include losses from transmission and distribution system but not from reservoirs.
 N.A. - Not Applicable

Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	Water Production Per Acre Served Ac.Fl./Ac./Yr.	Estimated Population	Water Production Per Capita Ac. Ft./Cap./Yr.	WATER USED FOR AGRICULTURAL PURPOSES					Percent of Agricultural Water to Total Production	MEMBER AGENCIES' POOLED STORAGE IN SAN VICENTE RESERVOIR						
					From Local Supply		From Authority		Total Ac. Ft.		Total Quantity in Storage 6/30/90 Ac. Ft.	Placed into Storage During Fiscal Year Ac. Ft.	STORED WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/90 Ac. Ft.	
					Amount Ac. Ft.	Percent	Amount Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.		
16,478	83.4	1.36	76,729	0.29	447.6	17.6	2,092.7	82.4	2,540.3	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19,575	96.1	0.91	54,400	0.33	0.0	0.0	2,227.9	100.0	2,227.9	12.5	1,606.0	105.6	0.0	105.6	0.0	1,606.0	0.0
1,082	93.4	1.34	5,215	0.28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,780	23.6	1.24	390	8.86	35.3	1.1	3,297.4	98.9	3,332.7	96.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18,703	86.8	1.56	105,515	0.28	1,051.5	15.4	5,771.0	84.6	6,822.5	23.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11,207	69.2	1.23	23,576	0.58	0.0	0.0	7,134.2	100.0	7,134.2	51.8	1,606.0	105.6	0.0	105.6	0.0	1,606.0	0.0
30,252	96.7	1.44	226,928	0.19	35.3	5.9	560.0	94.1	595.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,078	91.1	1.38	51,488	0.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19,926	75.0	1.44	128,500	0.22	0.0	0.0	2,985.4	100.0	2,985.4	10.4	3,211.9	211.3	0.0	211.1	0.0	3,212.1	0.0
15,250	49.5	0.88	43,480	0.31	0.0	0.0	1,402.9	100.0	1,402.9	10.4	535.3	35.2	0.0	35.1	0.0	535.4	0.0
38,000	60.3	0.60	98,400	0.23	0.0	0.0	864.9	100.0	864.9	3.8	1,606.0	105.6	0.0	105.6	0.0	1,606.0	0.0
36,926	67.8	0.57	112,000	0.19	0.0	0.0	1,651.2	100.0	1,651.2	7.8	2,141.3	140.9	0.0	140.8	0.0	2,141.4	0.0
N.A.	-	-	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10,078	43.4	1.35	44,368	0.31	2.0	0.2	850.8	99.8	852.8	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17,631	37.3	1.91	13,442	2.50	0.0	0.0	28,485.7	100.0	28,485.7	84.7	535.3	35.2	0.0	35.1	0.0	535.4	0.0
11,415	24.5	1.13	33,000	0.40	2.7	0.0	5,827.4	100.0	5,830.1	45.1	2,141.3	140.9	0.0	140.8	0.0	2,141.4	0.0
8,552	82.6	1.02	25,000	0.35	0.1	0.0	1,131.2	100.0	1,131.3	12.9	642.3	42.3	0.0	42.2	0.0	642.4	0.0
134,496	63.8	1.80	1,118,282	0.22	0.0	0.0	928.8	100.0	928.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5,480	97.0	1.56	34,657	0.25	202.0	14.0	1,243.8	86.0	1,445.8	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10,179	100.0	1.22	19,335	0.64	218.3	17.6	1,018.6	82.4	1,236.9	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12,130	77.9	1.55	106,243	0.18	2.4	7.4	30.2	92.6	32.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13,246	46.5	1.01	47,235	0.28	0.0	0.0	3,305.2	100.0	3,305.2	24.6	535.3	35.2	0.0	35.1	0.0	535.4	0.0
40,044	65.7	1.31	16,900	3.11	0.0	0.0	45,391.1	100.0	45,391.1	86.2	535.3	35.2	0.0	35.1	0.0	535.4	0.0
4,000	31.2	1.06	1,820	2.34	1,984.4	48.4	2,114.8	51.6	4,099.2	96.3	107.1	7.0	0.0	7.0	0.0	107.1	0.0
482,508	53.1	1.34	2,435,903	0.27	3,981.6	3.3	118,315.2	96.7	122,296.8	18.9	15,203.1	1,000.0	0.0	999.1	0.0	15,204.0	0.0

Table 5
 ASSESSED VALUATION AND TAX COLLECTIONS
 FISCAL YEAR 1989-90

Member Agencies	ASSESSED VALUATION – SECURED AND UNSECURED				Area 6/30/90 Acres	1989-90 Valuation Per Acre	Tax Assessments to Date	Uncollected 6/30/90	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes
	1988-89 Total	1989-90 Total	1988-89 to 1989-90 Percent Change	1990-91 Total							
Bueno Colorado M.W.D.	\$ 3,727,447,729	\$ 4,471,133,007	20.0	\$ 5,194,479,066	19,760	\$226,272	\$ 4,741,755	\$ 30,502	\$ 4,711,253	\$ 34,211	\$ 10,803
Carlsbad M.W.D.	3,570,926,600	4,102,706,010	14.9	4,652,720,181	20,369	201,419	4,791,188	29,915	4,761,273	32,086	33,275
Coronado, City of (2)	0	0	0.0	0	0	0	0.00	0	0	0	187
De Luz Heights M.W.D.	49,684,360	53,828,772	8.3	0	11,789	4,566	96,388	647	95,740	1,078	1,000
Del Mar, City of	459,717,402	524,344,832	14.1	638,006,193	1,159	452,411	898,140	4,302	893,838	6,707	531
Escondido, City of	2,345,425,433	2,555,098,153	8.9	2,799,055,420	21,535	118,649	3,580,271	14,093	3,566,178	21,284	29
Fallbrook P.U.D.	825,387,469	950,597,192	15.2	1,153,934,239	16,199	58,682	1,476,963	8,116	1,468,846	9,332	3,420
Helix W.D.	6,723,213,945	7,292,453,070	8.5	7,947,335,004	31,278	233,150	14,581,302	47,034	14,534,268	64,431	4,931
National City, City of	844,611,323	891,693,211	5.6	967,927,749	5,574	159,974	2,223,195	5,739	2,217,456	8,071	6,828
Oceanside, City of	3,320,798,760	3,856,150,310	16.1	4,513,354,403	26,574	145,110	4,745,592	26,158	4,719,434	29,353	2,601
Olivenhain M.W.D.	2,611,724,054	3,136,390,840	20.1	3,730,179,953	30,803	101,821	2,527,286	18,908	2,508,378	20,818	1,250
Otay W.D.	3,342,911,362	3,984,277,437	19.2	4,804,072,582	63,063	63,179	3,823,388	29,363	3,794,024	24,772	4,455
Padre Dam M.W.D.	2,967,420,228	3,336,933,812	12.5	3,740,746,624	54,462	61,271	4,530,562	25,452	4,505,110	35,201	3,003
Pendleton Military Res.	121,243,037	125,869,814	3.8	128,761,952	134,625	935	2,294,465	67	2,294,398	0	0
Poway, City of	1,767,715,363	2,077,256,920	17.5	2,444,194,645	23,214	89,483	2,268,992	10,325	2,258,667	20,563	15
Rainbow M.W.D.	915,125,159	1,045,086,381	14.2	1,258,685,240	47,237	22,124	1,613,787	9,124	1,604,664	18,974	23,680
Ramona M.W.D.	918,488,265	1,045,860,862	13.9	1,195,491,565	46,524	22,480	1,484,181	8,553	1,475,628	14,459	5,400
Rincon del Diablo M.W.D.	1,920,611,220	2,267,339,938	18.1	2,619,962,830	10,357	218,919	2,519,762	13,958	2,505,804	16,968	58,801
San Diego, City of (1)	45,487,581,636	50,792,933,056	11.7	56,760,734,240	210,717	241,048	21,560,342	69,284	21,491,058	70,723	51,006,888
San Dieguito W.D.	1,592,691,450	1,779,117,955	11.7	1,971,595,058	5,652	314,777	2,517,108	13,097	2,504,011	13,242	5,426
Santa Fe I.D.	2,151,067,655	2,411,306,258	12.1	2,756,285,734	10,179	236,890	3,176,812	18,383	3,158,429	17,104	2,893
South Bay I.D.	3,345,781,253	3,600,046,541	7.6	3,893,135,350	15,568	231,247	7,266,128	23,907	7,242,221	24,675	629,977
Vallecitos M.W.D.	1,873,856,784	2,126,883,030	13.5	2,510,901,487	28,508	74,607	2,388,094	14,363	2,373,731	12,410	0
Valley Center M.W.D.	987,686,833	1,127,737,322	14.2	1,303,460,614	60,986	18,492	1,615,772	10,550	1,605,222	17,572	1,011
Yuima M.W.D.	121,860,374	131,208,117	7.7	143,082,128	12,813	10,240	316,769	1,283	315,486	1,814	1,500
Total Authority	\$91,992,977,704	\$103,686,252,840	12.7	\$117,128,102,257	908,945	\$114,073	\$97,038,240	433,125	96,605,115	515,849	51,807,904
San Diego County (1)	\$103,108,087,158	\$114,724,892,087	11.3	\$131,974,942,027	2,725,100	\$ 42,099					

(1) Excluding 1,450,000 acres of non-taxable land in San Diego County.

(2) Excluded from CWA.

TIONS

Member Agencies	ASSESSED VALUA		Receipts in Lieu of Taxes
	1988-89		
Bueno Colorado M.W.D.	\$ 3,727,447,729	\$ 45	10,803
Carlsbad M.W.D.	3,570,926,600	4	33,275
Coronado, City of (2)	0		187
De Luz Heights M.W.D.	49,684,360		1,000
Del Mar, City of	459,717,402		531
Escondido, City of	2,345,425,433	2	29
Fallbrook P.U.D.	825,387,469		3,420
Helix W.D.	6,723,213,945	7	4,931
National City, City of	844,611,323		6,828
Oceanside, City of	3,320,798,760	3	2,601
Olivenhain M.W.D.	2,611,724,054	3	1,250
Otay W.D.	3,342,911,362	3	4,455
Padre Dam M.W.D.	2,967,420,228	3	3,003
Pendleton Military Res.	121,243,037		0
Poway, City of	1,767,715,363	2	15
Rainbow M.W.D.	915,125,159	1	23,680
Ramona M.W.D.	918,488,265	1	5,400
Rincon del Diablo M.W.D.	1,920,611,220	2	58,801
San Diego, City of (1)	45,487,581,636	50	51,006,888
San Dieguito W.D.	1,592,691,450	1	5,426
Santa Fe I.D.	2,151,067,655	2	2,893
South Bay I.D.	3,345,781,253	3	629,977
Vallecitos M.W.D.	1,873,856,784	2	0
Valley Center M.W.D.	987,686,833	1	1,011
Yuima M.W.D.	121,860,374		1,500
Total Authority	\$91,992,977,704	\$ 103	51,807,904
San Diego County (1)	\$ 103,108,087,158	\$ 114	

- (1) Excluding 1,450,000 acres of non-taxable land in San Diego C
- (2) Excluded from CWA.

Miscellaneous Tax	Net Total Collections	Amount Paid for Service Connections to 6/30/90	Total Amount Paid by Each Member Agency to 6/30/90	Water Avail. Charge	Water Avail. Remaining Rec.
\$ 124	\$ 4,756,391	\$ 207,439	\$ 4,963,830	\$ 403,549	\$ 14,904
11	4,826,645	7,931	4,834,576	338,922	16,232
0	187	0	187	0	0
0	97,818	0	97,818	94,846	3,346
1	901,077	0	901,077	34,108	2,809
29	3,587,519	9,254	3,596,773	185,252	5,077
43	1,481,641	67,773	1,549,414	155,074	7,738
784	14,604,413	28,906	14,633,319	609,630	21,048
96	2,232,451	0	2,232,451	79,836	2,894
100	4,751,488	126,369	4,877,858	429,221	21,809
0	2,530,446	89,024	2,619,470	345,631	11,311
45	3,823,297	208,574	4,031,871	716,144	78,581
132	4,543,446	45,244	4,588,690	619,375	59,374
0	2,294,398	0	2,294,398	2,884	16
9	2,279,254	103,875	2,383,129	261,093	11,168
1	1,647,319	193,484	1,840,803	460,849	25,124
59	1,495,546	3,379	1,498,924	436,044	26,780
1	2,581,575	14,527	2,596,102	277,670	8,051
2,467	72,571,136	610,595	73,181,731	0	0
131	2,522,810	47,206	2,570,016	120,561	3,987
1,914	3,180,340	58,878	3,239,127	194,586	9,037
143	7,897,016	0	7,897,016	278,995	8,676
0	2,386,141	14,769	2,400,910	297,876	16,766
26	1,623,832	162,555	1,786,387	701,052	41,262
0	318,800	28,424	347,224	105,793	4,100
6,117	148,934,985	2,028,116	150,963,101	7,148,990	400,092

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

Table 6
WATER PRODUCTION - FISCAL YEARS 1979-80 TO 1989-90

(All Figures in Acre Feet)
From Local and Authority Supplies

Member Agencies	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Buena Colorado M.W.D.	15,038	17,565	15,446	14,720	18,351	16,988	17,584	17,928	18,781	20,457	22,420
Carlsbad M.W.D.	12,554	13,385	12,749	11,879	12,895	12,880	13,686	14,644	15,146	16,475	17,844
Del Mar, City of	999	1,075	1,045	1,055	1,235	1,097	1,107	1,456	1,481	1,474	1,450
De Luz Heights M.W.D.	1,339	1,757	1,794	1,792	2,531	2,373	2,586	3,186	2,459	3,042	3,454
Escondido, City of	22,113	26,052	22,534	20,269	24,214	23,281	23,712	24,913	24,871	26,950	29,194
Fallbrook P.U.D.	12,174	14,698	12,386	10,156	12,600	11,606	12,270	12,346	11,766	12,904	13,767
Helix W.D.	37,676	41,613	39,284	36,519	41,081	40,579	42,056	42,201	41,863	44,156	43,616
National City & South Bay I.D.	21,519	23,222	23,209	23,252	25,593	26,092	26,854	26,115	25,504	26,135	25,872
Oceanside, City of	19,602	22,408	21,769	19,846	22,583	24,114	24,190	25,164	25,889	27,693	28,763
Olivenhain M.W.D.	5,313	6,437	5,856	6,027	7,741	8,233	9,490	9,739	10,755	12,595	13,481
Otay W.D.	11,852	13,612	12,943	11,952	13,551	13,830	15,126	16,337	17,246	20,470	22,810
Padre Dam M.W.D.	13,718	15,572	14,908	14,102	16,992	17,027	17,966	18,319	18,121	20,167	21,068
Pendleton Military Reservation	-	-	-	-	-	-	-	-	-	-	-
Poway, City of	8,240	9,027	7,873	7,547	9,215	9,320	10,061	10,822	11,601	13,039	13,610
Rainbow M.W.D.	26,943	34,111	28,630	25,354	31,374	29,297	29,887	29,822	28,389	32,055	33,629
Ramona M.W.D.	6,583	9,065	8,873	8,679	10,871	9,609	10,307	10,219	9,573	10,955	12,916
Rincon del Diablo M.W.D.	4,789	5,763	5,256	4,374	6,001	6,039	6,383	6,859	7,189	8,419	8,741
San Diego, City of	-	-	-	-	-	-	-	-	-	-	-
Inside City	175,668	191,713	192,626	182,873	203,642	216,289	221,873	228,796	229,334	239,332	236,491
Outside City (Not in CWA)	4,480	6,964	5,657	3,723	6,149	4,492	5,611	5,247	5,264	5,381	6,030
San Diegoito W.D.	7,342	8,056	7,668	7,298	7,670	7,956	7,904	8,300	8,205	8,559	8,559
Santa Fe I.D.	10,252	9,368	8,792	7,728	10,617	11,195	11,074	11,266	11,436	12,324	12,452
Vallecitos W.D.	6,800	8,420	8,233	7,847	9,654	10,090	10,932	11,161	11,385	12,742	13,436
Valley Center M.W.D.	33,568	44,687	38,358	32,583	42,367	39,435	41,419	43,791	40,224	47,243	52,629
Yuima M.W.D.	2,978	3,891	3,498	2,782	3,335	3,392	3,523	3,710	3,553	3,827	4,256
Total	461,540	528,461	499,387	462,357	540,262	545,214	565,601	582,341	580,035	626,394	646,488

Table 7
WATER SALES - FISCAL YEARS 1947 TO 1990

(All Figures Rounded to the Nearest Whole Acre Foot)

Member Agencies	(1)	1947-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	Total
Buena Colorado M.W.D.	185,188	2,753	3,463	5,827	4,473	5,119	11,678	12,016	19,084	249,601	
Carlsbad M.W.D.	206,129	11,879	12,829	13,677	14,671	14,671	15,157	16,388	17,919	321,544	
Del Mar, City of	15,172	1,015	1,235	1,097	1,107	1,456	1,481	1,474	1,450	25,527	
De Luz Heights M.W.D.	7,071	1,792	2,531	2,354	2,586	3,186	2,458	2,945	3,418	28,341	
Escondido, City of	195,009	8,168	14,624	14,082	18,320	20,381	21,811	26,048	33,901	332,903	
Fallbrook P.U.D.	315,210	10,168	12,600	11,600	12,322	13,555	13,622	12,932	13,854	413,963	
Helix W.D.	708,467	22,898	24,779	36,507	37,972	39,732	37,267	40,642	45,793	994,057	
National City & South Bay I.D.	365,675	132	87	4,863	20,817	16,384	20,514	19,519	34,183	482,174	
Oceanside, City of	287,204	19,821	22,583	24,114	24,190	25,164	25,889	27,693	28,763	485,421	
Olivenhain M.W.D.	54,958	5,714	7,860	8,233	9,485	9,739	10,742	12,595	13,481	132,807	
Otay W.D.	201,140	11,952	13,830	15,125	16,337	17,246	20,470	22,952	22,952	332,594	
Padre Dam M.W.D.	189,522	14,102	16,992	17,027	17,966	18,319	18,121	20,167	21,068	333,284	
Pendleton Military Res.	1,625	1,356	1,694	95	111	118	108	157	157	6,806	
Poway, City of	124,804	6,841	9,005	9,821	10,724	11,548	12,817	13,631	13,631	208,504	
Rainbow M.W.D.	431,890	25,426	31,374	29,160	29,211	30,323	28,240	32,181	33,417	671,222	
Ramona M.W.D.	69,719	8,092	10,392	8,688	9,723	9,943	9,526	11,985	14,480	152,548	
Rincon del Diablo M.W.D.	145,302	4,374	6,001	6,039	6,383	6,858	7,188	8,419	8,740	199,304	
San Diego, City of	3,373,693	90,841	114,473	170,344	183,903	197,965	215,440	212,439	270,234	4,849,332	
San Diegoito W.D.	95,845	4,009	4,320	3,291	3,227	3,979	4,381	5,779	7,466	132,455	
Santa Fe I.D.	105,240	4,426	5,895	4,488	4,668	5,268	6,019	8,303	10,692	154,999	
Vallecitos W.D.	91,354	7,847	9,654	10,135	10,941	11,145	11,380	12,743	13,462	178,661	
Valley Center M.W.D.	395,189	32,583	42,247	38,953	41,055	43,511	39,937	47,105	52,535	733,115	
Yuima M.W.D.	36,716	1,403	1,333	1,885	1,924	1,911	1,442	1,484	2,166	50,264	
Total Sales to Agencies	7,602,122	297,806	369,779	436,201	474,955	503,678	527,775	582,015	674,993	11,469,324	
Total Sales to Others	56,509	0	0	0	0	0	0	0	0	56,510	
Total to Authority Storage	348,741	9,100	452	645	13,158	15,849	3,722	3,651	2,450	397,768	
Total from Authority Storage	(300,831)	(7,383)	0	0	0	(116)	(163)	(163)	(1,124)	(309,617)	
Total to Metropolitan Storage	120,929	0	0	0	230	0	28,899	31,244	0	181,302	
Total from Metropolitan Storage	(116,908)	0	0	0	(219)	0	(7,555)	(19,927)	(26,838)	(173,447)	
Total Flow in Authority System	7,710,562	299,523	370,231	436,846	488,124	519,411	552,841	597,117	647,481	11,622,140	
Average Rate of Flow (c.f.a.)	-	-	-	-	-	-	-	-	-	-	
To Agencies and Others	411.3	509.4	602.5	656.0	695.7	727.0	804.3	932.4	932.4	932.4	
To Authority Storage	12.6	0.6	0.9	18.2	21.9	5.1	5.0	3.4	3.4	3.4	
From Authority Storage	(10.2)	0.0	0.0	0.0	(0.2)	0.0	(0.2)	(0.6)	(0.6)	(0.6)	
To Metropolitan Storage	0.0	0.0	0.0	0.3	0.0	39.8	43.2	43.2	43.2	43.2	
From Metropolitan Storage	0.0	0.0	0.0	(0.3)	0.0	(10.4)	(27.5)	(27.5)	(27.5)	(27.5)	
Flow in Authority System	413.7	510.0	603.4	674.2	717.4	761.5	824.8	894.4	894.4	894.4	

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

SAN DIEGO COUNTY WATER AUTHORITY

Table 8
SALES OF IMPORTED WATER—FISCAL YEAR 1989-90
(All Figures in Acre Feet except as noted)

Member Agencies	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	6 Month Total 1989
Buena Colorado M.W.D.	1,202.7	2,099.3	1,722.2	1,626.6	1,890.8	1,789.7	10,331.3
Carlsbad M.W.D.	1,997.2	2,093.6	1,741.3	1,712.5	1,445.2	1,397.0	10,386.8
Del Mar, City of	197.6	214.9	138.7	113.6	80.8	60.9	806.5
De Luz Heights M.W.D.	476.5	399.3	388.6	288.2	291.4	303.4	2,147.4
Escondido, City of	3,001.9	1,993.5	2,179.0	2,398.4	1,503.1	2,486.7	13,562.6
Fallbrook P.U.D.	1,798.6	1,692.9	1,511.7	1,160.8	1,191.4	1,216.4	8,571.8
Helix W.D.	3,708.0	3,359.7	3,839.1	3,827.5	6,435.9	4,284.7	25,454.9
National City & South Bay I.D.	2,623.2	2,638.0	2,305.9	2,027.8	3,946.5	3,668.1	17,209.5
Oceanside, City of	3,320.8	3,229.9	2,769.6	2,550.2	2,373.1	2,266.9	16,510.5
Olivenhain M.W.D.	1,593.0	1,705.7	1,294.3	1,171.2	1,140.5	1,065.0	7,969.7
Otay W.D.	2,499.7	2,633.4	2,191.0	1,904.0	1,787.2	1,670.0	12,685.3
Padre Dam M.W.D.	2,517.7	2,591.9	2,119.1	1,817.9	1,698.7	1,545.4	12,290.7
Pendleton Military Reservation	16.7	20.4	19.0	15.5	13.5	11.7	96.8
Posay, City of	1,641.4	1,592.6	491.1	1,877.2	1,300.1	1,042.4	7,944.8
Rainbow M.W.D.	4,297.1	4,122.2	3,466.2	3,275.6	2,981.2	2,791.6	20,933.9
Ramona M.W.D.	1,614.0	1,611.7	1,401.3	1,285.1	1,249.3	1,251.3	8,412.7
Rincon del Diablo M.W.D.	1,092.6	1,063.7	924.2	811.0	749.6	715.9	5,357.0
San Diego, City of	24,097.7	24,390.5	23,464.1	23,308.1	18,617.3	20,163.4	134,041.1
San Dieguito W.D.	633.3	741.4	594.4	583.3	579.5	572.0	3,703.9
Santa Fe I.D.	1,073.5	1,299.1	1,016.2	882.6	811.3	817.3	5,900.0
Vallecitos	1,492.1	1,454.4	1,476.1	1,155.6	1,156.7	1,075.2	7,810.1
Valley Center M.W.D.	7,076.1	6,686.1	6,255.6	4,890.2	4,777.0	4,419.5	34,104.5
Yuima M.W.D.	276.5	267.5	283.4	191.6	215.0	284.9	1,518.9
Total Sales to Agencies	68,247.9	67,901.7	61,592.1	58,874.5	56,235.1	54,899.4	367,750.7
Total Sales to Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Sales to Agencies and Others	68,247.9	67,901.7	61,592.1	58,874.5	56,235.1	54,899.4	367,750.7
Total to Authority Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total from Authority Storage ..	(1,123.5)	0.0	0.0	0.0	0.0	0.0	(1,123.5)
Total to Metropolitan Storage ..	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total from Metropolitan Storage	(1,022.0)	(2,215.4)	(2,434.6)	(1,215.0)	(5,899.3)	0.0	(12,786.3)
Total Flow in Authority System	66,102.4	65,686.3	59,157.5	57,659.5	50,335.8	54,899.4	353,840.9
Total Evaporation Losses from C.W.A. Storage in San Vicente	342.4	333.3	289.9	205.1	154.8	102.1	1,427.6
Total Evaporation M.W.D./C.W.A. from Pre-Delivered Storage Program in El Capitan, Sweetwater, and San Vicente Reservoirs	481.4	426.1	345.9	212.4	168.5	89.8	1,724.1
Rate of Flow To Agencies and Others	1,109.9	1,104.3	1,035.1	957.5	945.1	892.9	1,007.7
To Authority Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0
From Authority Storage	(18.3)	0.0	0.0	0.0	0.0	0.0	(3.1)
To Metropolitan Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0
From Authority Storage	(16.6)	(36.0)	(40.9)	(19.8)	(99.1)	0.0	(35.0)
In Authority System	1,075.1	1,068.3	994.2	937.7	845.9	892.9	969.5

TABLES

Table 8
(Continued)

Jan.	Feb.	Mar.	Apr.	May	Jun.	Total 6 Month 1990	Fiscal Year Total	Fiscal Year C.F.S.
1,238.3	1,036.2	1,429.6	1,432.3	2,060.9	1,555.2	8,752.5	19,083.8	26.36
896.9	854.0	1,193.3	1,203.2	1,775.1	1,609.5	7,532.0	17,918.8	24.75
55.8	75.0	102.3	118.7	143.1	148.5	643.4	1,449.9	2.00
118.2	75.6	172.4	212.6	338.2	353.3	1,270.3	3,417.7	4.72
1,541.5	1,358.7	2,132.7	2,049.2	2,847.8	2,555.9	12,485.8	26,048.4	35.98
315.6	682.7	1,004.6	760.7	1,292.8	1,225.5	5,281.9	13,853.7	19.14
3,852.5	3,408.5	4,402.0	4,518.6	1,850.6	2,306.1	20,338.3	45,793.2	63.25
3,411.0	3,434.8	3,757.6	3,065.5	1,627.7	1,676.7	16,973.3	34,182.8	47.22
1,655.7	1,415.9	1,944.2	1,930.4	2,646.6	2,659.8	12,252.6	28,763.1	39.73
645.1	597.8	882.4	827.7	1,287.2	1,270.9	5,511.1	13,480.8	18.62
1,186.9	1,118.9	1,818.0	1,759.8	2,177.4	2,205.5	10,266.5	22,951.8	31.70
1,105.2	1,024.5	1,502.1	1,346.7	1,964.8	1,834.2	8,777.5	21,068.2	29.10
11.7	8.4	8.8	9.2	10.3	11.6	60.0	156.8	0.22
667.8	572.4	940.2	999.2	1,285.1	1,221.5	5,686.2	13,631.0	18.83
1,153.9	556.1	2,137.9	2,202.4	3,418.8	3,014.4	12,483.5	33,417.4	46.16
1,070.9	822.7	1,082.7	1,078.7	1,259.9	752.6	6,067.5	14,480.2	20.00
430.8	389.9	560.9	532.4	729.0	740.6	3,383.6	8,740.6	12.07
17,828.0	15,342.4	19,152.4	32,137.8	26,669.5	25,063.0	136,193.1	270,234.2	373.27
459.0	486.9	653.5	645.3	799.8	717.5	3,762.0	7,465.9	10.31
509.4	466.7	738.2	675.1	1,245.1	1,157.2	4,791.7	10,691.7	14.77
706.6	621.2	1,001.8	891.4	1,219.5	1,211.0	5,651.5	13,461.6	18.59
1,513.3	1,022.5	2,823.6	2,914.4	5,126.0	5,030.5	18,430.3	52,534.8	72.57
26.6	0.0	46.2	99.6	204.1	271.1	647.6	2,166.5	2.99
40,400.7	35,371.8	49,487.4	61,410.9	61,979.3	58,592.1	307,242.2	674,992.9	932.35
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40,400.7	35,371.8	49,487.4	61,410.9	61,979.3	58,592.1	307,242.2	674,992.9	932.35
0.0	0.0	0.0	2,450.0	0.0	0.0	2,450.0	2,450.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1,123.5)	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	(16,051.8)	0.0	0.0	(16,051.8)	(28,838.1)	
40,400.7	35,371.8	49,487.4	47,809.1	61,979.3	58,592.1	293,640.4	647,481.3	
77.1	79.7	144.1	138.7	253.7	285.7	979.0	2,406.6	
62.9	59.6	87.1	92.9	0.0	0.0	302.5	2,026.6	
657.1	636.9	804.8	1,032.0	1,008.0	984.7	855.8	932.4	
0.0	0.0	0.0	41.2	0.0	0.0	6.8	3.4	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.6)	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	(269.8)	0.0	0.0	(44.7)	(39.8)	
657.1	636.9	804.8	803.5	1,008.0	984.7	817.9	894.4	

SAN DIEGO COUNTY WATER AUTHORITY

Table 9
ASSESSED VALUATIONS AND TAX RATES
Fiscal Years 1945-46 to 1989-90

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	1,423,375,390	213,352,470	151,686,520	1,788,414,380	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	1,876,936,060	208,018,700	197,139,600	2,282,094,360	0.09	0.10
1969-70	2,063,618,382	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	231,791,301	306,608,099	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	660,454,810	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	3,457,486,860	1,692,548,096	46,889,681,868	0.01	0.0125
1982-83	46,670,563,147	4,136,558,170	1,971,803,569	52,778,924,886	0.00817	0.01
1983-84	50,057,533,413	5,275,693,400	2,190,834,774	57,524,061,587	0.004605	0.00817
1984-85	55,587,979,549	5,666,443,560	2,577,402,391	63,831,825,500	0.007090	0.004605
1985-86	62,444,546,244	6,086,772,100	2,856,824,972	71,388,143,316	0.005310	0.007090
1986-87	70,384,788,216	7,095,945,340	2,952,629,417	80,433,362,973	0.00461	0.005310
1987-88	78,866,134,323	7,466,884,810	3,660,711,360	89,993,730,693	0.004	0.00461
1988-89 (5)	87,712,729,304	91,081,209	4,189,167,191	91,992,977,704	0.00403	0.004
1989-90	98,726,472,817	98,688,505	4,861,091,518	103,686,252,840	0.00432	0.00403

(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.

(5) Public utilities assessed valuation and procedures revised by State Board of Equalization.

TABLES

Table 9
(Continued)
TAX LEVIES AND TAX COLLECTIONS BY FISCAL YEAR
(Includes in Lieu of Taxes)
Fiscal Years 1945-46 to 1989-90

Tax Levy (3)	Collection of Current Years' Taxes During Fiscal Year	Percentage of Levy Collected During Fiscal Year	Adjustments to Prior Years' Levies	Collection of Prior Years' Taxes During Fiscal Year	Total Tax Collections	Accumulated Delinquent Taxes	Ratio 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	12,618	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	2.32
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	97.78	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
6,588,403	6,460,324	98.06	(47,042)	178,479	6,638,803	205,073	3.11
7,239,670	7,039,608	97.24	176,805	283,045	7,322,653	298,895	4.13
7,181,483	7,092,760	98.76	40,938	158,696	7,251,456	269,860	3.76
6,269,310	6,053,170	96.55	53,304	166,944	6,220,114	372,360	5.94
6,309,666	6,057,897	96.01	95,635	462,595	6,525,892	251,769	3.99
6,044,731	6,106,942	90.84	380,264	180,037	6,286,979	389,785	6.44
5,153,457	4,720,332	91.60	(149,925)	239,860	5,350,208	433,125	8.40

SAN DIEGO COUNTY WATER AUTHORITY

Table 10
 SAN JACINTO TUNNEL WEST PORTAL
 CHEMICAL CHARACTERISTICS OF NATURAL COLORADO RIVER WATER
 Year Ending June 30, 1990
 Samples Taken at Entrance to San Diego Aqueduct by M.W.D.
 and Analysis by District Laboratory

Month	Total Hardness as mg/l CaCO ₃	Alkalinity as mg/l CaCO ₃ Total	Magnesium as mg/l	(PH) Hydrogen Ion Concentration	Temperature When Sampled	
					°C	°F
July	288	132	27.5	8.47	26	79
August	291	132	27.5	8.40	26	79
September	290	130	28.0	8.39	25	77
October	285	128	27.5	8.43	23	73
November	290	130	28.0	8.24	20	68
December	295	131	28.0	8.36	14	57
January	293	132	28.0	8.32	12	54
February	293	133	27.5	8.31	12	54
March	298	134	28.0	8.27	14	57
April	296	134	27.5	8.33	17	63
May	295	134	28.0	8.41	19	66
June	298	130	28.0	8.10	24	75

ANALYSIS—YEAR ENDING JUNE 30, 1990
 (mg/l Except PH, Conductivity, and Temperature)

Constituents	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO ₂)	9.1	9.8	7.8
Calcium	(Ca)	71	73	69
Magnesium	(Mg)	27.8	28.0	27.5
Sodium	(Na)	86	88	82
Potassium	(K)	4.2	4.7	4.0
Carbonate	(CO ₃)	0	2	1
Bicarbonate	(HCO ₃)	160	163	151
Sulfate	(SO ₄)	238	243	233
Chloride	(Cl)	73	77	69
Nitrate	(NO ₃)	0.68	0.90	0.30
Fluoride	(F)	0.28	0.30	0.25
Boron	(B)	0.08	0.09	0.06
Total Dissolved Solids		590	599	579
Hardness as CaCO ₃ —Total		293	298	285
Alkalinity—Total		132	134	128
Free Carbon Dioxide	(CO ₂)	1.3	2.1	0.9
Hydrogen Ion Concentration	(PH)	8.35	8.47	8.10
Electrical Conductivity umho/cm		937	965	917
Temperature °C		19	26	12

TABLES

Table 11
 CHEMICAL CHARACTER OF BLENDED TREATED WATER
 AT LAKE SKINNER
 Year Ending June 30, 1990
 Samples Taken by M.W.D. and Analyzed by District Laboratory

Month	Total Hardness as mg/l CaCO ₃	Alkalinity as mg/l CaCO ₃ Total	Magnesium as mg/l	(PH) Hydrogen Ion Concentration	Temperature When Sampled	
					°F	°C
July	211	110	21.5	8.06	79	26
August	213	108	22.0	8.07	79	26
September	227	113	23.0	8.07	77	25
October	227	111	23.0	8.05	73	23
November	206	109	21.5	8.06	64	18
December	239	119	24.0	8.05	59	15
January	264	126	26.0	8.05	55	13
February	283	128	27.5	7.97	54	12
March	273	126	26.5	8.05	57	14
April	219	112	22.5	8.0	64	18
May	194	102	20.5	7.92	70	21
June	238	114	24.5	7.95	75	24

ANALYSIS—YEAR ENDING JUNE 30, 1990
 (mg/l Except PH, Conductivity, and Temperature)

Constituents	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO ₂)	10.2	11.5	8.8
Calcium	(Ca)	54	68	44
Magnesium	(Mg)	23.5	27.5	20.5
Sodium	(Na)	80	85	75
Potassium	(K)	4.0	4.5	3.8
Carbonate	(CO ₃)	0	0	0
Bicarbonate	(HCO ₃)	140	156	123
Sulfate	(SO ₄)	175	223	126
Chloride	(Cl)	83	91	76
Nitrate	(NO ₃)	0.71	1.40	0.25
Fluoride	(F)	0.17	0.23	0.12
Boron	(B)	0.11	0.12	0.10
Total Dissolved Solids		501	570	454
Hardness as CaCO ₃ —Total		233	274	194
Alkalinity—Total		115	128	101
Free Carbon Dioxide	(CO ₂)	2.3	3.6	1.7
Hydrogen Ion Concentration	(PH)	8.02	8.10	7.75
Electrical Conductivity EC x 10 ⁶ @ 25°C		826	892	764
Temperature °C		19	26	11

SAN DIEGO COUNTY WATER AUTHORITY

Table 12
ASSESSED VALUATIONS AND TAX RATES OF THE
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Fiscal Year	Area (acres)	Assessed Valuation Total (\$)	Tax Rate	
			Per \$100 Secured	Per \$100 Unsecured
1929-30	—	\$ 2,439,836,920	0.04	0.00
1930-31	—	2,431,684,250	.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	3,280,294	379,788,761,242	.0237%	.0166%
1984-85	3,280,954	419,859,047,899	.0237%	.0237%
1985-86	3,282,745	458,782,059,816	.0164%	.0156%
1986-87	3,286,400	505,419,663,679	.0148%	.0164%
1987-88	3,287,309	564,692,806,207	.0112%	.0148%
1988-89	3,288,247	596,900,358,958	.0110%	.0112%
1989-90	3,288,754	671,699,558,661	.0121%	.0110%
1990-91	—	750,992,873,309	.0097%	.0121%

(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.

TABLES

Table 13
METROPOLITAN WATER DISTRICT ANNEXATION CHARGES
AND BALANCES ON AUTHORITY AREAS

Member Agencies	Date of Annexation	Remaining Balance at 6/30/90
Annexation Charges Outstanding		
Del Mar, City of	11-23-62	\$ 61,084.18
De Luz M.W.D.	6-28-67	3,378,202.04*
No. 1 Annexation of 1969.....	10-15-69	626,272.20*
Fallbrook P.U.D.		
No. 2 Annexation of 1958.....	11-24-58	0
Fallbrook Community Air Park	12-22-69	95,705.39*
Helix Water District		
Helix-Watson Ranch Annexation.....	2-20-59	0
Helix-Sunny Slope Hts. Annexation.....	9-17-59	0
Olivenhain M.W.D.	7-25-60	2,386.26
No. 1 Annexation of 1965.....	2-11-65	102,070.87
No. 4 Annexation of 1967.....	11-13-67	47,058.90
Otay W.D.		
No. 3 Annexation of 1960.....	10-20-60	3,131.63
Padre Dam M.W.D.		
No. 2 Annexation of 1959.....	11-6-59	0
No. 3 Annexation of 1960.....	10-17-60	9,201.95
No. 4 Annexation of 1970.....	8-3-70	95,388.75
Poway, City of		
No. 1 Annexation of 1959.....	9-21-59	0
Rainbow M.W.D.		
No. 1 Annexation of 1959.....	5-12-59	0
No. 3 Annexation of 1967.....	12-6-67	3,535,245.21*
No. 5 Annexation of 1973.....	11-22-73	9,368.15
Ramona M.W.D.	8-27-57	0
No. 1 Annexation of 1959.....	5-29-59	0
No. 2 Annexation of 1961.....	9-22-61	1,030.39
No. 3 Annexation of 1963.....	9-20-63	1,400.69
No. 4 Annexation of 1967.....	11-27-67	452,436.67
No. 5 Annexation of 1972.....	5-17-72	523,157.63
Rincon del Diablo M.W.D.		
No. 4 Annexation of 1972.....	11-2-72	27,761.41*
San Diegoito W.D.		
No. 1 Annexation of 1959.....	9-15-59	0
No. 2 Annexation of 1972.....	12-8-72	157,151.32*
Valley Center M.W.D.		
No. 1 Annexation of 1960.....	12-12-60	783.70
No. 2 Annexation of 1967.....	11-29-67	24,896.78
No. 3 Annexation of 1967.....	11-30-67	54,383.94
Yuima M.W.D.	12-16-63	99,828.39
No. 1 Annexation of 1967.....	11-21-67	34,965.18
No. 2 Annexation of 1969.....	11-24-69	10,572.54
Pendleton Military Res.-Nuclear Generating Plant	12-16-77	1,822,947.69
Total.....		\$11,676,431.86
Annexation charges received from other annexed areas not listed above having no remaining balance		\$23,087,418.00

*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.).

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

Table 14
WATER SALES BY METROPOLITAN WATER DISTRICT
Fiscal Years 1941-42 to 1989-90

Year	To Member Municipalities						Total
	Natural Water		Treated Water		Total to Agencies	To Others	
	Acre Feet	Percent	Acre Feet	Percent	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	36	71,995.4	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	668,881.8	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	606,120.4	52	1,175,411.1	4.3	1,175,415.4
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
1983-84	364,608.5	26	1,062,123.5	74	1,426,732.0	1,210.0	1,427,942.0
1984-85	455,061.0	29	1,119,443.0	71	1,574,806.0**	934.0	1,575,740.0
1985-86	500,955.0	30	1,145,856.0	70	1,646,811.0**	346.0	1,647,157.0
1986-87	568,812.9	31	1,252,783.6	69	1,821,596.5**	1,508.0	1,823,104.5
1987-88	598,722.0	31	1,322,484.0	69	1,921,206.0**	675.0	1,921,881.0
1988-89	745,767.3**	35	1,362,428.6	65	2,108,195.9**	694.0	2,108,889.9
1989-90	1,035,681.0**		1,464,980.0		2,500,661.0**	783.0	2,501,444.0

*Revised
**Includes deliveries of reclaimed water to Las Virgenes, Coastal MWD, Long Beach, and MWD of Orange Co.

Table 15
WATER PRODUCTION - METROPOLITAN WATER DISTRICT CONSTITUENT AREAS
Figures Furnished by Metropolitan Water District
(Acre Feet)

M.W.D. Member Agencies	Fiscal Year 1988-1989			Fiscal Year 1989-1990			(7) - (4)	(8) - (4)	(9) - (4)	(10) - (3)	(11) - (3)
	Local Water Supply	M.W.D. Water Supply	Total Water Use	Local Water Supply	M.W.D. Water Supply	Total Water Use					
	(2)	(3)	(4)	(5)	(6)	(7)					
Anaheim	47,777	25,802	73,579	43,689	29,475	73,164	(415)	(0.01)	3,673	0.14	
Beverly Hills	0	14,594	14,594	0	14,867	14,867	273	0.02	273	0.02	
Burbank	921	22,775	23,696	371	23,217	23,588	(108)	(0.00)	442	0.02	
Calleguas M.W.D.	27,481	104,153	131,634	31,354	111,086	142,440	10,806	0.08	6,933	0.07	
Central Basin M.W.D.	124,604	141,019	265,623	125,350	149,629	274,979	9,356	0.04	8,610	0.06	
Chino Basin M.W.D.	160,025	46,354	206,379	149,099	70,165	219,264	12,885	0.06	23,811	0.51	
Coastal M.W.D.	9,352	43,803	53,155	12,045	48,243	60,288	6,933	0.13	4,440	0.10	
Compton	7,243	5,153	12,396	6,123	5,536	11,659	(737)	(0.06)	383	0.07	
Eastern M.W.D.	95,594	48,490	144,084	101,285	56,120	157,405	13,321	0.09	7,650	0.16	
Foothill M.W.D.	5,958	10,891	16,849	6,229	10,886	17,115	266	0.02	(5)	(0.00)	
Fullerton	18,529	16,213	34,742	19,422	14,511	33,933	(809)	(0.02)	(1,702)	(0.10)	
Glendale	4,104	27,555	31,659	3,305	28,848	32,153	494	0.02	1,293	0.05	
Las Virgenes	1,021	22,033	23,054	1,414	24,671	26,085	3,031	0.13	2,638	0.12	
Long Beach	30,244	47,298	77,542	29,336	51,063	80,399	2,857	0.04	3,765	0.08	
Los Angeles	465,538	230,148	695,686	300,810	385,065	685,875	(9,811)	(0.01)	154,917	0.67	
M.W.D. of Orange County	178,405	244,095	422,500	163,946	298,074	462,020	39,520	0.09	51,979	0.22	
Pasadena	14,741	23,928	38,669	12,066	26,903	38,969	300	0.01	2,975	0.12	
San Diego C.W.A.	61,785	592,216	654,001	44,173	672,844	717,017	63,016	0.10	80,628	0.14	
San Fernando	2,206	1,645	3,851	2,780	1,007	3,787	(64)	(0.02)	(638)	(0.39)	
San Marino	5,394	333	5,727	5,352	1,427	6,779	1,052	0.18	1,094	3.29	
Santa Ana	34,753	15,816	50,569	31,419	20,228	51,647	1,078	0.02	4,412	0.28	
Santa Monica	7,777	9,883	17,660	5,371	11,690	17,061	(599)	(0.03)	1,807	0.18	
Three Valleys M.W.D.	54,799	68,065	122,864	62,358	75,877	138,235	15,371	0.13	7,812	0.11	
Torrance	7,641	22,804	30,445	7,482	23,804	31,286	841	0.03	1,000	0.04	
Upper San Gabriel Valley M.W.D.	138,337	55,279	193,616	120,691	70,397	191,088	(2,528)	(0.01)	15,118	0.27	
West Basin M.W.D.	6,512	190,685	197,197	17,027	186,023	203,050	5,853	0.03	(4,462)	(0.02)	
Western M.W.D. of Riverside Co.	175,524	77,860	253,384	174,742	89,006	263,748	10,354	0.04	11,146	0.14	
Totals	1,688,465	2,108,890	3,795,355	1,477,239	2,500,662	3,977,901	182,546	1	391,772	6.00	



*Flume at South Fork Feeder—Circa 1914
San Diego Historical Society—Photograph Collection*

**SAN DIEGO COUNTY WATER AUTHORITY
FINANCIAL STATEMENTS
JUNE 30, 1990
with
REPORT OF INDEPENDENT AUDITORS**

Ernst & Young

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Report of Independent Auditors

The Board of Directors
 San Diego County Water Authority

We have audited the accompanying balance sheets of the San Diego County Water Authority as of June 30, 1990 and 1989, and the related statements of revenues, expenses and changes in undesignated retained earnings, and cash flows for the years then ended. These financial statements are the responsibility of the Authority's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the San Diego County Water Authority as of June 30, 1990 and 1989, and the results of its operations and its cash flows for the years then ended in conformity with generally accepted accounting principles.

September 12, 1990

SAN DIEGO COUNTY WATER AUTHORITY

BALANCE SHEETS

June 30, 1990 and 1989

	1990	1989
ASSETS		
Current assets:		
Cash and cash equivalents (Note 2)	\$ 14,345,069	\$ 36,146,149
Short-term investments (Note 2)	20,200,308	-
Accounts and taxes receivable (Notes 1 and 3)	22,123,886	22,512,585
Inventories (Note 1)	6,496,676	6,659,436
Other current assets	74,334	64,532
Total current assets	<u>63,240,273</u>	<u>65,382,702</u>
Restricted cash and guaranteed investment contract (Notes 2 and 3)	141,258,233	127,308,044
Property, plant and equipment, at cost (Notes 1 and 6)	156,950,166	145,448,309
Deferred compensation deposit (Note 5)	1,589,712	1,222,335
Other assets (Note 3)	3,618,182	3,155,570
	<u>\$ 366,656,566</u>	<u>\$ 342,516,960</u>
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 29,819,921	\$ 34,427,717
Current maturities of long-term debt (Note 3)	3,334,567	12,719,575
Total current liabilities	<u>33,154,488</u>	<u>47,147,292</u>
Long-term debt (Note 3)	163,859,011	165,890,483
Deferred compensation (Note 5)	1,589,712	1,222,335
Commitments and contingency (Notes 1 and 6)		
Equity:		
Contributions in aid of construction (Note 1)	5,216,427	5,057,530
Retained earnings (Note 3):		
Designated	31,000,000	-
Undesignated	<u>131,836,928</u>	<u>123,199,320</u>
Total equity	<u>168,063,355</u>	<u>128,256,850</u>
	<u>\$ 366,656,566</u>	<u>\$ 342,516,960</u>

See accompanying notes.

SAN DIEGO COUNTY WATER AUTHORITY
STATEMENTS OF REVENUES, EXPENSES AND CHANGES
IN UNDESIGNATED RETAINED EARNINGS

Years ended June 30, 1990 and 1989

	1990	1989
Water sales	\$ 154,757,249	\$ 127,019,817
Operating expenses:		
Cost of sales	125,308,572	113,803,502
Depreciation and amortization	2,229,086	1,949,410
Operations and maintenance	3,149,737	1,559,786
Planning and reclamation	1,763,282	1,144,156
General and administrative	3,639,249	3,158,810
Total operating expenses	136,089,926	121,615,664
Operating income	18,667,323	5,404,153
Other revenues (expenses):		
Property taxes and in-lieu charges (Note 1)	8,028,207	7,116,183
Water availability charges (Note 1)	10,705,941	-
Interest expense (Note 1)	(10,287,247)	(3,057,191)
Interest income	12,523,384	2,844,402
Other income	-	609,228
Total other revenues	20,970,285	7,512,622
Net income	39,637,608	12,916,775
Undesignated retained earnings at beginning of year	123,199,320	110,282,545
Transfer to designated retained earnings (Note 3)	(31,000,000)	-
Undesignated retained earnings at end of year	\$ 131,836,928	\$ 123,199,320

See accompanying notes.

SAN DIEGO COUNTY WATER AUTHORITY
STATEMENTS OF CASH FLOWS

Years ended June 30, 1990 and 1989

	1990	1989
Net cash flows provided by (used for) operating activities:		
Net income	\$ 39,637,608	\$ 12,916,775
Adjustments to reconcile net income to net cash provided by operating activities:		
Gain on sale of building	-	(609,228)
Depreciation and amortization	2,229,086	1,949,410
Interest, net	(2,236,137)	212,789
Decrease (increase) in accounts and taxes receivable	1,709,720	(7,636,958)
Decrease (increase) in inventories	162,760	(368,590)
(Increase) decrease in other current assets	(9,802)	54,117
Increase in other assets	(573,516)	(1,947,375)
(Decrease) increase in accounts payable and accrued liabilities and rebatable arbitrage	(3,262,626)	7,284,306
Net cash provided by operating activities	37,667,093	11,855,245
Cash flows provided by (used for) capital and related financing activities:		
Proceeds from sale of building	-	688,411
Purchase of property, plant and equipment	(12,596,353)	(10,002,382)
Contributions in aid of construction	158,897	2,916,551
Proceeds from issuance of debt	-	140,000,000
Interest paid on long-term debt	(11,353,008)	(1,575,053)
Principal repayment of debt	(12,719,575)	(6,599,575)
Net cash (used for) provided by capital and related financing activities	(36,510,039)	125,427,952
Cash flows provided by (used for) investing activities:		
Purchase of investment securities	(34,150,497)	(125,976,897)
Interest and dividends on investments	11,202,363	1,964,946
Net cash used for investing activities	(22,948,134)	(124,011,951)
(Decrease) increase in cash and cash equivalents	(21,801,080)	13,271,246
Cash and cash equivalents at beginning of year	36,146,149	22,874,903
Cash and cash equivalents at end of year	\$ 14,345,069	\$ 36,146,149

See accompanying notes.

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

1. Summary of significant accounting policies

Organization - The San Diego County Water Authority (the Authority) was organized on June 9, 1944 under the County Water Authority Act (the Act) for the primary purpose of providing a supplemental supply of imported water to its member agencies for domestic, municipal and agricultural uses. The Authority consists of 23 member agencies which are each represented by at least one person on the Authority's Board of Directors. The Authority is a member of the Metropolitan Water District of Southern California (MWD) and historically, the Authority has purchased from MWD all the water it requires to meet the demands of the member agencies, even when the total water acquired exceeds its preferential right.

The Metropolitan Water District Act provides a preferential right for the purchase of water by each of the MWD constituent agencies. This preferential right is calculated using a formula and based upon such formula, the Authority has a statutory preferential right to approximately 12% of MWD's total supply. However, MWD has never applied such criteria to limit the Authority's purchases and has a written policy to meet all the supplemental needs of each of its member agencies, including the Authority. If a shortage should arise, legal issues exist whether different California Water Code provisions should be invoked to require reasonable regulations for the allocation of water in the time of shortage.

Basis of accounting - The Authority is accounted for as an enterprise fund (proprietary fund type). A fund is an accounting entity with a self-balancing set of accounts established to record the financial position and results of operations of a specific governmental activity. The activities of enterprise funds closely resemble those of ongoing businesses in which the purpose is to conserve and add to basic resources while meeting operating expenses from current revenues.

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

1. Summary of significant accounting policies (Cont'd.)

Enterprise funds account for operations that provide services on a continuous basis and are substantially financed by revenues derived from user charges. As an enterprise fund, the Authority uses the accrual basis of accounting, revenues are recognized when earned and expenses are recognized as they are incurred.

Property taxes and in-lieu charges - The Authority is authorized under the Act to levy taxes on all taxable property within its boundaries for the purpose of carrying on its operations and paying its obligations, subject to certain limitations in the Act, the Revenue and Taxation Code and the California Constitution. The Authority levies taxes to meet its debt service requirements on its general obligation bonds and its obligation under the contract with the U. S. Government (Note 3).

Member agencies of the Authority may elect to pay in-lieu charges instead of the tax levy. Included in the accompanying statements of revenues, expenses and changes in undesignated retained earnings for the years ended June 30, 1990 and 1989, are in-lieu charges of approximately \$2,960,000 and \$2,711,000, respectively.

Inventories - Inventories consist primarily of water in storage and are stated at the lower of cost (first-in, first-out) or market.

Property, plant and equipment - Property, plant and equipment is stated at cost. Depreciation is computed utilizing the straight-line method over the following estimated useful lives:

Water system	100 years
Buildings	40 years
Automobiles	5 years
Other equipment	1 to 4 years

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

1. Summary of significant accounting policies (Cont'd.)

Property, plant and equipment consists of the following:

	June 30,	
	1990	1989
Water systems	\$ 154,531,857	\$ 154,531,857
Buildings	4,462,920	4,456,598
Automobiles and equipment	2,845,682	2,208,357
Construction in progress	26,548,803	13,609,613
	<u>188,389,262</u>	<u>174,806,425</u>
Less accumulated depreciation	31,439,096	29,358,116
	<u>\$ 156,950,166</u>	<u>\$ 145,448,309</u>

Included in construction in progress at June 30, 1990 and 1989 is \$4,155,000 related to the construction of the Pamo Reservoir Project. The Authority has suspended further work on this project pending completion of a county-wide water storage plan. In the opinion of management, the ultimate completion of this plan may impact the completion of the Pamo Project or the realization of the costs incurred; however, the effect on the financial position or results of operations of the Authority is not expected to be material.

Contributions in aid of construction - Amounts received from member agencies for construction of service connections or other facilities are included in the accompanying balance sheets as contributions in aid of construction.

Capitalized interest - The Authority capitalizes interest on self-constructed assets based on a weighted average interest rate on obligations outstanding during the period of construction. Interest earned on interest-bearing investments acquired with proceeds of the related tax-exempt borrowings is offset against the interest cost in determining the maximum interest capitalizable. Interest capitalized during the years ended June 30, 1990 and 1989 was \$1,024,000 and \$174,000, respectively.

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

1. Summary of significant accounting policies (Cont'd.)

Revenue policies - The principal portion of the Authority's revenues is provided by sales of water. Water is delivered to member agencies on demand and revenue is recognized at the time of delivery. The Authority has implemented two new revenue sources as part of its Capital Finance Plan to fund the Capital Improvement Program (Note 6). A Water Availability standby charge was put into effect in fiscal 1990 and generated revenue of approximately \$10,706,000. Also, the Authority has approved and implemented a capacity charge on all new water meters purchased within the boundaries of the Authority, commencing October 1, 1990.

Budgets and budgetary accounting - Annual budgets adopted by the Board of Directors provide for operations, debt service and capital expenditures of the Authority. Budgetary controls are set by the Board of Directors. The budgetary basis of accounting is consistent with generally accepted accounting principles applicable to the Authority's financial statements.

The Board of Directors adopts an operating budget at the beginning of the Authority's fiscal year. The legally adopted budget requires only that expenditures not exceed appropriations in total for the Authority. The Board of Directors may make appropriation adjustments to the budget during the year as deemed necessary. The Authority adhered to the prescribed budget as discussed above for the years ended June 30, 1990 and 1989.

Reclassification - Certain reclassifications have been made to the June 30, 1989 balances to conform with the 1990 presentation.

2. Cash and investments

Cash and cash equivalents consist of short-term highly liquid investments with maturities of 90 days or less at the date of purchase. All cash and investments, which are recorded at cost and which approximates market, are

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

2. Cash and investments (Cont'd.)

fully insured or collateralized. The California Government code requires California banks and savings and loan associations to secure public fund deposits by pledging government securities or mortgages as collateral. The market value of pledged securities or mortgages must equal at least 110% or 150%, respectively, of public fund deposits. The Authority currently requires government securities as collateral on all their public fund deposits.

The Authority may waive collateral requirements for deposits which are fully insured up to \$100,000 by the Federal Deposit Insurance Corporation (FDIC) or Federal Savings and Loan Insurance Corporation (FSLIC).

The surplus funds of the Authority may be invested in any of the following approved investments: treasury bills and/or treasury notes; commercial bank certificates collateralized by public fund deposits; savings and loan certificates collateralized by public fund deposits; guaranteed investment contract deposits collateralized by government securities; and money market funds collateralized by government securities.

Cash and investments consist of the following:

	June 30,	
	1990	1989
Insured demand deposits	\$ 847,911	\$ 59,840
Certificates of deposit	33,366,755	28,311,031
U.S. government securities	32,633,806	9,106,425
Guaranteed investment contract deposits	108,955,138	125,976,897
	<u>\$175,803,610</u>	<u>\$163,454,193</u>

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

3. Long-term debt

Long-term debt consists of the following:

	June 30,	
	1990	1989
Certificates of participation and general obligation bonds, including an arbitrage rebate liability of \$1,303,095	\$ 165,438,095	\$ 166,985,000
U. S. Government contract	1,755,483	2,125,058
Adjustable convertible extendable securities (ACES)	-	7,500,000
Other	-	2,000,000
Total long-term debt	167,193,578	178,610,058
Less amounts due within one year	(3,334,567)	(12,719,575)
	<u>\$ 163,859,011</u>	<u>\$ 165,890,483</u>

Water revenue certificates of participation - To provide funds for the acquisition and construction of water system improvements and the advance refunding of the ACES securities, the Authority issued certificates of participation in May 1989 in the aggregate principal amount of \$140,000,000 with interest, at rates ranging from 6.65% to 7.30% payable semi-annually on May 1 and November 1. The certificates mature serially between May 1, 1993 and May 1, 2009, and may be redeemed at premiums decreasing from 2% in 1997 to 1% in 1999 (thereafter at par).

The certificates require that a reserve be maintained in an amount equal to the lesser of \$14,000,000, 100% of the maximum annual payments or 125% of the

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

3. Long-term debt (Cont'd.)

average annual payments. Included in restricted cash and guaranteed investment contract deposits at June 30, 1990 and 1989 is \$14,000,000 and \$14,000,000, respectively, which represents the required reserve and \$94,955,138 and \$111,976,897, respectively, which represents unexpended proceeds of the certificates.

1957 waterworks general obligation bonds - To provide funds for the construction of a second aqueduct and related works, the Authority issued general obligation bonds in the aggregate principal amount of \$35,000,000 with interest rates ranging from 1% to 6% payable semi-annually on February 1 and August 1. The bonds mature serially between February 1, 1959 and February 1, 1994. Included in certificates of participation and general obligation bonds at June 30, 1990 and 1989 is \$6,565,000 and \$8,525,000, respectively.

1966 waterworks general obligation bonds - During 1968 the Authority issued general obligation bonds in the aggregate principal amount of \$30,000,000 with interest rates ranging from 4.5% to 5.5% payable semi-annually on April 1, and October 1, for the construction of a second pipeline to the second aqueduct. The bonds mature serially between October 1, 1969 and October 1, 2003 and may be redeemed on or after October 1, 1980 at premiums decreasing from 3.5% in 1980 to .5% in 2002. Included in certificates of participation and general obligation bonds at June 30, 1990 and 1989 is \$17,570,000 and \$18,460,000, respectively.

U.S. Government contract - The U.S. Government constructed an aqueduct for which the title was conveyed to the Authority upon its completion. The Authority is reimbursing the U.S. Government for the cost of the aqueduct in quarterly principal installments of \$92,394, plus interest at 2.6% annually.

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

3. Long-term debt (Cont'd.)

The Authority has entered into an agreement with MWD whereby a portion of the U.S. Government contract will be paid by MWD. Included in accounts and taxes receivable and other assets are the current and long-term portions of this receivable of \$197,000 and \$740,000 respectively, at June 30, 1990 and \$197,000 and \$937,000, respectively, at June 30, 1989.

In fiscal 1990, the Authority established a water rate stabilization fund for the purpose of identifying amounts available to mitigate future water rate increases. The Authority will transfer portions of its net water revenues, which exceed its debt service ratio requirement, into the rate stabilization fund and from time to time transfer amounts from its rate stabilization fund into net water revenues to meet its debt service ratio requirements. As of June 30, 1990, the balance in this fund, which is included in restricted cash and guaranteed investment contract deposits, totaled \$31,000,000 and is also reflected as designated retained earnings in the accompanying balance sheet.

Certain outstanding debt agreements require the Authority to maintain a minimum level of operational earnings. Exclusive of the tax revenue and debt servicing costs associated with voter-approved general obligation bonds and other voter-approved debt, net revenue, as defined by the agreements, must equal or exceed 120% of all other debt servicing costs (principal and interest). The Authority was in compliance with all of its covenants, including establishing the rate stabilization fund and meeting its debt service ratio requirement.

SAN DIEGO COUNTY WATER AUTHORITY

NOTES TO FINANCIAL STATEMENTS

3. Long-term debt (Cont'd.)

At June 30, 1990, the Authority's debt service ratio is as follows:

Water revenues (as defined)	\$ 48,148,650
Transfer to rate stabilization fund	<u>(31,000,000)</u>
Net water revenues	\$ <u>17,148,650</u>
Debt service requirements (principal and interest)	\$ <u>12,327,970</u>
Debt service ratio	<u>139%</u>

Included in other assets are deferred financing costs of approximately \$2,107,000 and \$2,218,000, net of accumulated amortization, at June 30, 1990 and 1989, respectively. The deferred financing costs are being amortized using the straight-line method over the life of the related obligation.

The aggregate principal payments on long-term debt beginning in fiscal year 1990 are summarized as follows:

1991	\$ 3,334,567
1992	3,439,575
1993	8,119,575
1994	7,607,671
1995 and thereafter	<u>144,692,190</u>
	<u>\$167,193,578</u>

SAN DIEGO COUNTY WATER AUTHORITY

NOTES TO FINANCIAL STATEMENTS

4. Retirement plan

Public Employees Retirement System plan description - The Authority is a member of the California Public Employees' Retirement System (PERS), an agent multiple-employer pension system that acts as a common investment and administrative agent for participating public entities within the State. The Authority's total covered payroll for employees participating in PERS for the fiscal year ended June 30, 1990 is \$3,500,962. The Authority's total payroll is \$3,605,850 for year ended June 30, 1990.

All permanent employees of the Authority are eligible to participate in PERS upon entry into employment. Retirement benefits vest after five years of service and PERS also provides death and disability benefits. Retirement benefits are based on the highest annual salary and years of credited service.

Employee and employer contributions - Both the Authority and the employees are required to contribute to PERS. The Authority pays its share and the entire portion of the employees' share. The employee rate of 7% is set by statute and therefore, generally remains unchanged from year to year. The Authority is required to contribute the remaining amounts necessary to fund the benefits for its members, using the actuarial basis recommended by PERS actuaries and actuarial consultants and adopted by the PERS Board of Administration.

Funding status and progress - The amount shown below as the "pension benefit obligation" is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases and step-rate benefits, estimated to be payable in the future as a result of employee service to date. The measure is intended to help users assess the funding status of PERS on a going concern basis, assess the progress made in accumulating sufficient assets to pay benefits when due, and make comparisons among employers. The measure is the actuarial present value of credited projected benefits and is independent of the funding method used to determine contributions to PERS.

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

4. Retirement plan

The pension benefit obligation was computed as part of an actuarial valuation performed as of June 30, 1989. Significant actuarial assumptions used in the valuation include the following: (a) a rate of return on the investment of present and future assets of 8.5% a year, compounded annually; (b) projected salary increases attributable to inflation of 5% per year compounded annually; (c) additional projected salary increases of 2% per year, attributable to seniority/merit; and (d) no post retirement benefit increases.

The total unfunded pension benefit obligation applicable to the Authority's employees was \$934,097 at June 30, 1989 and is computed as follows:

Pension benefit obligation:	
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$2,307,982
Current employees:	
Accumulated employee contributions including allocated investment earnings	1,745,832
Employer-financed vested	3,285,856
Employer-financed nonvested	159,276
Total pension benefit obligation	7,498,946
Net assets available for benefits at cost (market value is \$7,694,004)	6,564,850
Unfunded pension obligation	\$ 934,096

There were no changes in actuarial assumptions or benefit provisions in the current year.

Actuarially determined contribution requirements and contributions made - PERS uses the entry-age normal actuarial cost method. As a projected benefit cost method, it takes into account those benefits that are expected to be earned in the future as well as those already accrued. The normal cost for an

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

4. Retirement plan (Cont'd.)

employee is the level amount which would fund the projected benefit if it were modification of the entry-age method in which the Authority's total normal cost is expressed as a level percentage of payroll. PERS uses this same method to amortize any unfunded actuarial liabilities. The amortization period of the unfunded liability ends in the year 2000.

The significant actuarial assumptions used to compute the actuarially determined contribution requirement are the same as those used to compute the pension benefit obligation, as previously described.

The contribution to PERS for 1990 of \$608,257 was made in accordance with actuarially determined requirements computed through an actuarial valuation performed as of June 30, 1989. The contribution consisted of \$494,686 normal costs (14.13% of current covered payroll) and \$113,571 amortization of the unfunded actuarial accrued liability (3.24% of current covered payroll).

Trend information - Trend information gives an indication of the progress made in accumulating assets to pay benefits when due. Systemwide, ten year trend information is not yet available.

	June 30,		
	1990	1989	1988
Net assets available for benefits, expressed as a percentage of the pension benefit obligation	87.5%	85.3%	80.3%
Unfunded pension obligation, expressed as a percentage of annual covered payroll	26.7%	36.1%	66.0%
Employer contributions, expressed as a percentage of annual covered payroll	17.4%	19.4%	19.0%

SAN DIEGO COUNTY WATER AUTHORITY
NOTES TO FINANCIAL STATEMENTS

5. Deferred compensation plan

The Authority has adopted and administers a deferred compensation plan in accordance with Section 457 of the Internal Revenue Code. Generally, all eligible employees may defer receipt of a portion of their salary until future years. Once deferred, the compensation is not available to the employees until termination, retirement, death or unforeseeable emergency. The employees are not liable for income taxes on amounts deferred until the funds are withdrawn. At June 30, 1990 and 1989, assets of the plan totaled \$1,589,712 and \$1,222,335, respectively.

All compensation deferred under the plan, all assets purchased with the deferred amounts and all income attributable to these amounts or assets (until paid or made available to the employee or other beneficiary) are the sole property of the Authority, subject to the claims of the Authority's general creditors. Participants' rights to deferred amounts under the plan are equal to those of the general creditors of the Authority.

6. Commitments

The Authority is committed to a long-range effort to increase the present aqueduct capacity, obtain additional water from MWD, provide additional storage within the county and maximize the use of existing storage reservoirs. The Authority estimates that the cost of the capital improvement program will be approximately \$611 million and will be expended over the next ten years. The Authority expects to fund approximately 60 percent of these requirements through the sale of bonds or other debt obligations. The remaining portion will be funded from future earnings.