

SAN DIEGO COUNTY
WATER AUTHORITY



NINTH ANNUAL REPORT
1955

SAN DIEGO COUNTY WATER AUTHORITY

NINTH
ANNUAL REPORT
of Authority Operations

For

Fiscal Year Ending June 30, 1955

Richard S. Holmgren
General Manager and Chief Engineer

SAN DIEGO, CALIFORNIA

1955

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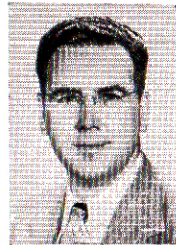
Members of
the
BOARD OF DIRECTORS
1954-55



Vice-Chairman
D. Maitland Bakewell
Sante Fe
Irrigation District
12-48 to 6-55



Chairman
Fred A. Heilbron
San Diego
7-44 to 6-55



Secretary
Marcel J. Shelton
La Mesa, Lemon Grove
and Spring Valley
Irrigation District
2-48 to 6-55



Paul Beermann
San Diego
2-53 to 6-55



Baylor Brooks
San Diego
5-54 to 6-55



Donald Burnham
San Diego
5-54 to 6-55



Maurice Carrigan
National City
7-53 to 6-55



W. Ray Coyle
South Bay
Irrigation District
6-53 to 6-55



Charles A. Crytser
Rincon del Diablo
Municipal Water District
6-54 to 6-55



William B. Dennis
Rainbow Municipal
Water District
5-55 to 6-55



Hans H. Doe
Bueno Colorado
Municipal Water District
6-54 to 6-55



E. S. Dulin
Rainbow Municipal
Water District
4-54 to 11-54



J. William Fisher
San Diego
3-50 to 6-55



Tom Harrington
San Dieguito
Irrigation District
1-54 to 6-54



Otis P. Heald
Fallbrook Public
Utility District
12-50 to 6-55

Members of
the
BOARD OF DIRECTORS
1954-55
(Continued)



Clarence P. Kane
Valley Center
Municipal Water
District
5-55 to 6-55



George Kerrigan
San Diego
9-53 to 6-55



R. M. Levy
La Mesa, Lemon Grove
and Spring Valley
Irrigation District
5-53 to 6-55



Arthur H. Marston
San Diego
7-44 to 6-55



Jack E. McLean
Lakeside Irrigation
District
4-52 to 6-55



Carl M. Reed
Escondido
10-50 to 6-55



William W. Rogers
Carlsbad Municipal
Water District
6-54 to 6-55



David R. Shepardson
Poway Municipal Water
District
4-54 to 6-55



T. Franklin Schneider
San Diego
11-54 to 6-55



Fred W. Simpson
San Diego
7-44 to 6-55



Robert A. Weese
Oceanside
3-53 to 6-55



Arthur C. Wells
San Diego
2-53 to 6-55

SAN DIEGO COUNTY WATER AUTHORITY

MEMBER AGENCIES AS OF JUNE 30, 1955

<i>Member Agencies</i>	<i>Date of Entry</i>
Cities	
Escondido	Oct. 9, 1950
National City	June 9, 1944
Oceanside	June 9, 1944
San Diego	June 9, 1944
Irrigation Districts	
Lakeside	June 9, 1944
La Mesa, Lemon Grove and Spring Valley.....	June 9, 1944
San Dieguito	Dec. 13, 1948
Santa Fe	Dec. 13, 1948
South Bay	Nov. 3, 1952
(Includes City of Chula Vista, an independent member agency, from June 9, 1944 to Nov. 3, 1952)	
Municipal Water Districts	
Bueno Colorado	June 11, 1954
Carlsbad	June 16, 1954
Poway	April 21, 1954
Rainbow	April 10, 1954
Rincon del Diablo	June 14, 1954
Valley Center	May 9, 1955
Public Utilities Districts	
Fallbrook	June 9, 1944

COMMITTEES OF THE BOARD

June 30, 1955

ENGINEERING AND OPERATIONS

M. J. Shelton, Chairman
 Paul Beermann, Vice Chairman
 Baylor Brooks
 Charles A. Crytser
 Hans H. Doe
 J. W. Fisher
 Tom Harrington
 Clarence P. Kane
 Arthur H. Marston
 Carl M. Reed
 Robert A. Weese

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 Otis P. Heald, Vice Chairman
 Donald C. Burnham
 Maurice Carrigan
 W. B. Dennis
 George Kerrigan
 R. M. Levy
 William W. Rogers
 T. Franklin Schneider
 David R. Shepardson
 Arthur C. Wells

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 W. Ray Coyle
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 Otis P. Heald
 Fred A. Heilbron
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 R. M. Levy
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 Carl M. Reed
 T. Franklin Schneider

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PUBLIC RELATIONS

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 Vice Chairman
 Baylor Brooks
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 W. Ray Coyle
 W. B. Dennis
 Tom Harrington
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 Robert A. Weese

BUILDING

J. W. Fisher, Chairman
 M. J. Shelton, Secretary
 Donald Burnham
 W. Ray Coyle
 Jack E. McLean
 Fred W. Simpson

EXECUTIVE OFFICERS AND OPERATING STAFF

General Manager and Chief Engineer.....Richard S. Holmgren
 General Counsel.....W. H. Jennings
 Assistant Chief Engineer.....Allen H. Jones
 Controller.....Charles L. Royer
 Executive Secretary.....Dorothy D. Miller
 Treasurer.....Harry L. Hall
 Superintendent, Maintenance and Operation.....Rolf H. Prom



Dedication ceremony at Oat Hills Tunnel—releasing water into Second Barrel of S. D. Aqueduct: left to right, Chairman Fred A. Heilbron, Water Authority; D. E. Howell, S.D. County; E. G. Nielsen, Bureau of Reclamation; Chairman Joseph Jensen, Metropolitan Water District; Capt. C. W. Porter, U. S. Navy. Extreme left: General Manager and Chief Engineer Richard S. Holmgren observing removal of bulkhead.

LETTER OF TRANSMITTAL

235 Broadway
San Diego 1, California
September 1, 1955

Board of Directors
San Diego County Water Authority
Gentlemen:

There is respectfully submitted herewith the Ninth Annual Report covering operation of the Authority for the fiscal year ending June 30, 1955. This report has been prepared as directed in Ordinance No. 2, adopted by the Board of Directors on December 1, 1944.

As indicated in the report, the area and the activities of the Authority continue to expand with the Authority becoming more and more a major factor in the economic life of the county.

The expansion of the Authority and its activities has resulted in an increase of work throughout the organization. However, the additional work has been carried without an increase in personnel by the united, efficient, and willing efforts of all.

Very truly yours,

Richard S. Holmgren

General Manager and Chief Engineer

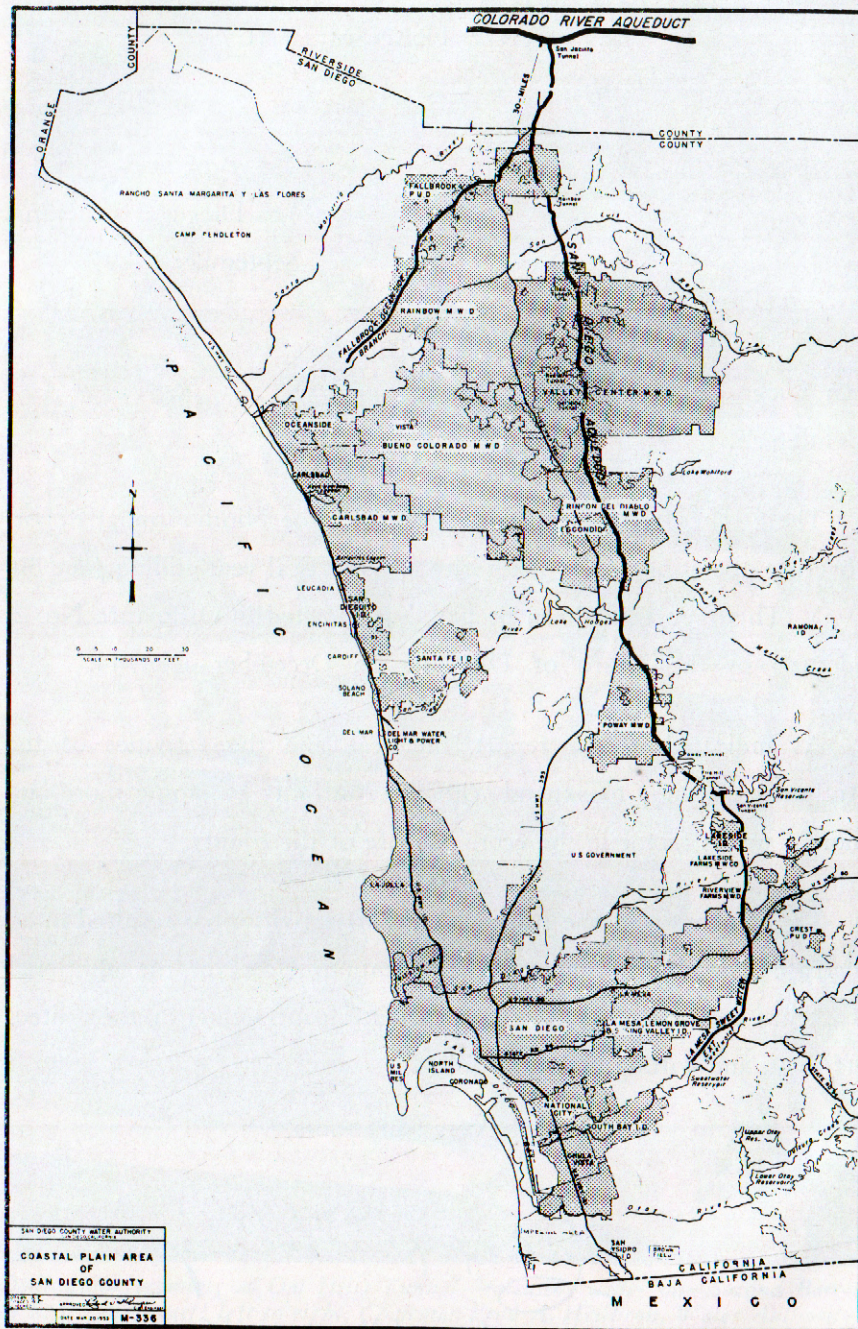


Figure A. Authority area within San Diego County.

REPORT OF THE AUTHORITY AND ITS OPERATIONS

For Fiscal Year 1954-55

The outstanding event of the fiscal year was the completion of the San Diego Aqueduct in October 1954. This made it possible for the Authority to bring into San Diego County about 142,000 acre feet of Colorado River water annually to supplement the local supplies of member agencies.

During the winter season the limited runoff from local streams, in many areas the lowest on record, resulted in very little replenishment of water in local reservoirs. Continuation of the prolonged drought conditions resulted in virtual depletion of all locally stored water. The Authority system was, therefore, called upon to supply practically all water requirements of its member agencies for the fiscal year. With full capacity of the aqueduct available, this demand was met without curtailing the needs of the consumers.

The population within the county during the fiscal year increased 39,600, bringing the total to 769,200, of which more than 700,000 people are now supplied with water from Authority member agencies. Income from manufacturing and agriculture also reached new peaks in the 1954-55 fiscal year, equaling \$622,000,000 and \$85,269,160 respectively, indicating continued growth and prosperity of the area.

Water requirements for the expanding county-wide industrial and agricultural economy are being met today only because several years ago the Authority's Board of Directors foresaw the tremendous growth of the county and took the necessary steps to inaugurate construction of the second barrel, completing the San Diego Aqueduct years in advance of the date it was thought added capacity would be needed.

Shortly after completion of the aqueduct in October 1954, it was apparent to the Board of Directors that the aqueduct capacity would meet the demand of the Authority area for only a short time if the Authority continued to grow at the present rate. On October 14, 1954, the board directed the General Manager and Chief Engineer to proceed with a study to determine the probable future water requirements of the Authority, the source from which such supply might be obtained, and the system required to serve Authority member agencies. Three well-known consulting engineers, Messrs. Raymond A. Hill, John S.

Longwell, and Carl R. Rankin, were retained as a Board of Engineers to assist the staff in its study and to review the report upon its completion. The staff report was submitted to the Authority's Board of Directors in June 1955, indicating a possible need for additional supply of water by 1960, much sooner than was believed possible in previous studies. The Board of Engineers' study was in progress at the end of the fiscal year with an analytical report promised in September.

GROWTH OF AUTHORITY

Area

The Authority's area was increased by 67,676 acres in the fiscal year, mainly by the annexation of Valley Center Municipal Water District as an independent member agency, with an area of 53,160 acres, and by annexations to existing member agencies. The largest annexation to an existing member agency was a group of parcels, totaling 12,108 acres, annexed by the La Mesa, Lemon Grove and Spring Valley Irrigation District. Consequently, the District's boundaries were expanded to include areas lying inside or adjacent to the boundaries but previously not a part of the District. This annexation included the area which formerly comprised the El Cajon Valley Irrigation District.

The total area of the Authority at the end of the year was 349,493 acres, representing 13% of the area within San Diego County. A breakdown, showing the area within each of the sixteen member agencies of the Authority, is shown on Table 1.

Progress was made during the year toward eliminating areas lying within member agencies' boundaries but not a part of the Authority, and, therefore, not eligible for Colorado River water. The 12,108 acres annexed to the Authority by the La Mesa District includes 5,545 acres of land previously within that District but not a part of the Authority. At present, only two member agencies have land within their boundaries which is not a part of the Authority—the Lakeside Irrigation District with 163 acres, and the San Dieguito Irrigation District with 30 acres.

The 163 acres, lying within the Lakeside Irrigation District but not a part of the Authority, will be included within the proposed Rio San Diego Municipal Water District, which is now in the process of formation for annexation to the Authority. The 30 acres, lying within the San Dieguito Irrigation District but not within the Authority, is the result of annexation by the District of several small parcels of land

for local purposes only since it became a member agency. The District has also excluded 57 acres of land which still remain a part of the Authority area. This land was excluded from the District prior to the revision of the Authority Act, when withdrawal of land from the Authority was impossible except by the withdrawal of the entire area as a member agency. Under the revised provisions of the act, exclusion of the land by a member agency now automatically results in exclusion of such land from the Authority. The 57 acres excluded from the San Dieguito Irrigation District can now be excluded from the Authority only by a resolution of the District board. To date the board has taken no such action.

Population

The number of people residing within the Authority area increased an estimated 22,500 during the year, making a total estimated population of 702,300 as of June 30, 1955. This represents a 3.3% increase in population. The increase in Authority population since the U. S. Census in 1950 is estimated at 250,400, an average increase for the 5-year period of 50,080 people per year. The 702,300 people now residing within the Authority area includes 91% of all people residing in San Diego County. A tabulation giving the population within the county and within the Authority, as determined by the last U. S. Census from 1910 to date, and from the estimates for the last year, is shown on Table 2.

The population residing within each of the member agencies of the Authority, as obtained from the 1940 and 1950 U. S. Census reports and the estimated 1955 population, are shown on Table 3. The density of population within each agency is also shown on this table, indicating a maximum population density of 3,783 people per square mile in the City of San Diego, and a minimum of only 18 per square mile in the Valley Center District.

Assessed Valuation

Taxable property lying within the Authority area was reported by the County Auditor as having an assessed valuation of \$739,152,234 for the 1954-55 fiscal year, an increase of \$79,582,424, or 12% over the assessed valuation of the Authority for the previous year. A breakdown of this total, showing the assessed valuation of each of the member agencies, is presented on Table 4, together with the equivalent valuation for the previous year. The highest unit assessed valuation in 1954-55 of member agencies occurred in the City of San Diego, with

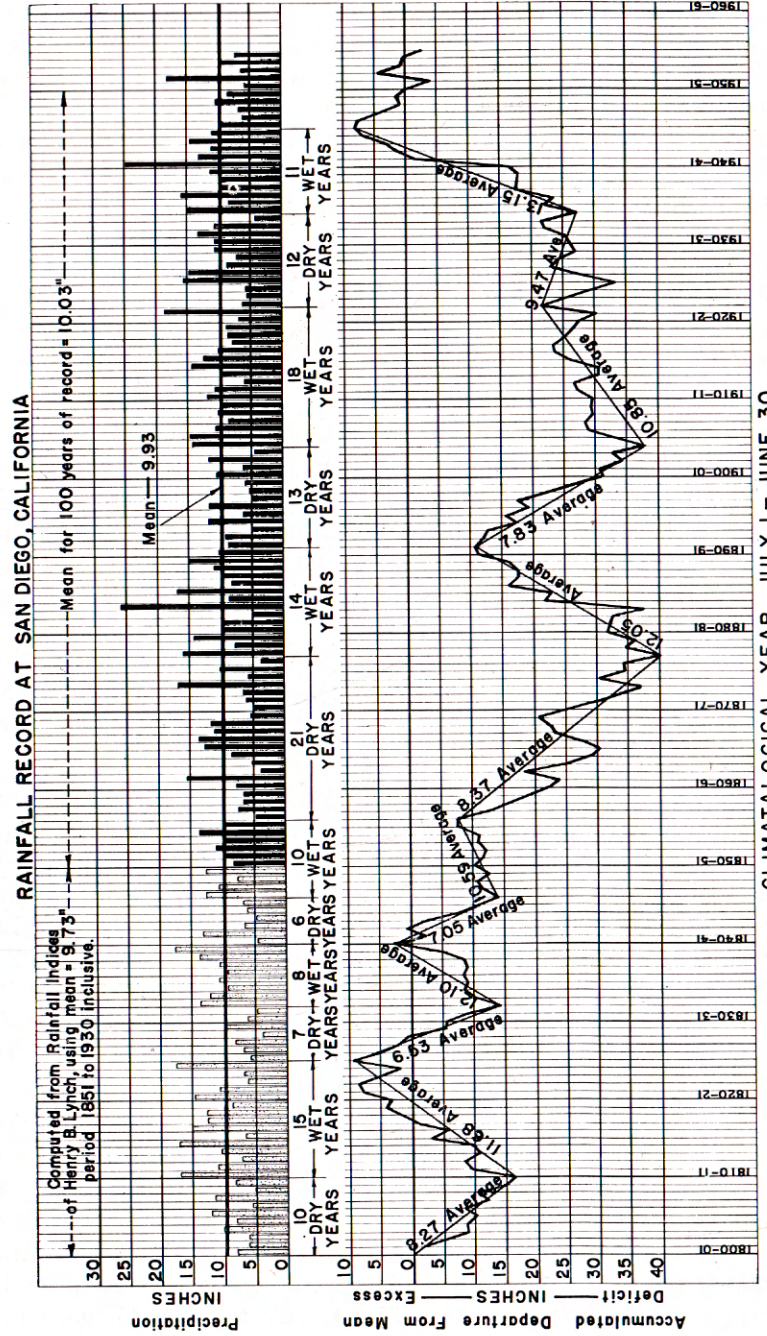


Figure B. Rainfall Record at San Diego, California.

a value of \$6,438 per acre. The lowest occurred in Valley Center, with a value of \$47, and the average for the entire Authority area was \$2,115.

The assessed valuations of the Authority and its member agencies for the fiscal year 1955-56 were reported by the County Auditor prior to publication of this report, and are included on Table 4 for easy reference. These figures show an increase of \$57,948,466 over the 1954-55 valuations, which is a new maximum assessed valuation to date of \$797,100,700 for the Authority. This equals 89% of the assessed valuation of all taxable property lying within San Diego County.

WATER SUPPLY AND CONSUMPTION

Aqueduct Flow

At the beginning of the fiscal year, construction of the second barrel of the aqueduct had been completed and was in operation, except for a part of that portion between Lilac and Poway Tunnels. The second barrel was bulkheaded off at these tunnels to confine the flow to the first barrel, while pipelaying in this portion was being completed.

That section of the aqueduct north of Lilac Tunnel which was in operation on July 1, 1954, made possible a delivery of 132 c.f.s. (85.3 m.g.d.) to the Authority by the Metropolitan Water District. The 32 c.f.s. flow, above the capacity of the first barrel, was used to supply the demands of the Rainbow, Fallbrook, and the Carlsbad Districts, and the City of Oceanside, since these agencies receive their water from the aqueduct north of Lilac Tunnel. Later, as additional sections of the second barrel were completed, the bulkhead was moved south to Oat Hills Tunnel. For a short time, prior to completion of the aqueduct, water was spilled over the bulkhead at Oat Hills Tunnel and delivered to the Bueno Colorado District at a connection to the Vista Irrigation Districts' supply line where it crosses the aqueduct. All construction work was completed in October 1954, and the full capacity (195 c.f.s.) of the San Diego Aqueduct was made available to the Authority.

The flows were being gradually stepped up to full capacity when a break occurred in the second barrel on December 11, 1954, at a point where the aqueduct crosses the San Luis Rey River Valley. Flows were immediately reduced to permit installation of bulkheads at the open bifurcation structures at Rainbow and Lilac Tunnels, isolating the broken section of pipe line. Flows passing this point were reduced

to the capacity of the first barrel. On January 6, 1955, the break was repaired and a flow of 195 c.f.s. was restored.

The maximum flow was maintained until May 24, 1955, when the Metropolitan Water District reduced deliveries of Colorado River water to the Authority to 160 c.f.s. in order to fill Lake Mathews to meet the anticipated heavy summer demand. However, the flow received was sufficient to meet current requirements of Authority member agencies until April 1955, and to permit placing some water in Authority storage. In April it was obvious that the flow would not be sufficient to continue meeting the current needs of member agencies, and that sufficient water had not been placed in storage to meet the demands of member agencies during summer months. The Bueno, Fallbrook, La Mesa, Poway, Rainbow, and Rincon Districts negotiated individual agreements with the City of San Diego to obtain stored water from the city, provided the Authority would deliver such stored water to the agencies by delivering 'in lieu water' from the current flow of the aqueduct at the agencies' service connections. The Authority agreed to deliver the water, and, as of June 30, 1955, the requirements of all member agencies had been met from the current flow of the aqueduct, augmented by water from storage and from water released by the City of San Diego under these agreements.

Early in 1955 representatives of the Bureau of Reclamation, the Metropolitan Water District, and the Authority made tests to determine the maximum capacity of the aqueduct. Flows of about 198 c.f.s. were obtained, but water levels were unstable at the open structures and continually in danger of overflowing. It was agreed that 195 c.f.s. was the present safe capacity of the aqueduct.

The average flow in the aqueduct for the 1954-55 fiscal year was 141.2 c.f.s. (91.3 m.g.d.). The total amount of water delivered from the aqueduct during the year was 102,214 acre feet.

Water Deliveries

A total of 98,969 acre feet of water was sold to member agencies by the Authority during the fiscal year, representing an increase of 29,334 acre feet above the quantity sold in the 1953-54 fiscal year. About 10,000 acre feet of this increase represented water delivered to the five municipal water districts, annexed to the Authority during the 1953-54 fiscal year, which had not previously been supplied with water by the Authority. The remaining 19,334 acre feet represented demands from the remaining member agencies, made necessary because of overdraft or depletion of local reservoirs.

Monthly water sales to member agencies and water deliveries from the aqueduct are shown on Table 6.

The maximum average monthly water delivery for the year occurred in April 1955, when 11,504 acre feet (equal to a continuous flow of 193.3 c.f.s., or 124.9 m.g.d.) was delivered to the agencies. The maximum daily water delivery to member agencies by the Authority was 387 acre feet, equal to a continuous flow of 195 c.f.s., or 126.0 m.g.d.

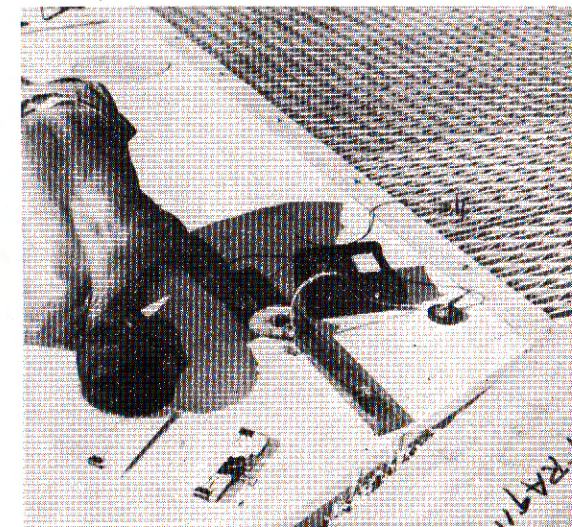
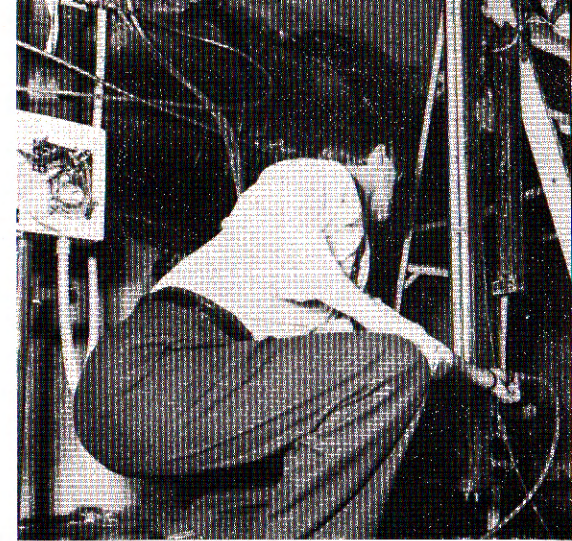
The total quantity of water delivered by the Authority each year since 1947, when operation of the aqueduct began, is shown on Table 5.

Water Production of the Authority Agencies

An agency's water production is the total quantity of water diverted into that agency's transmission and distribution system from all its sources of water supply, including Colorado River water received from the Authority and water from local impounding reservoirs and wells. It represents the quantity of water obtained by the agency from all its sources of



Engineers at work on testing and calibration of meters at Slaughterhouse Control Station.



SAN DIEGO COUNTY WATER AUTHORITY

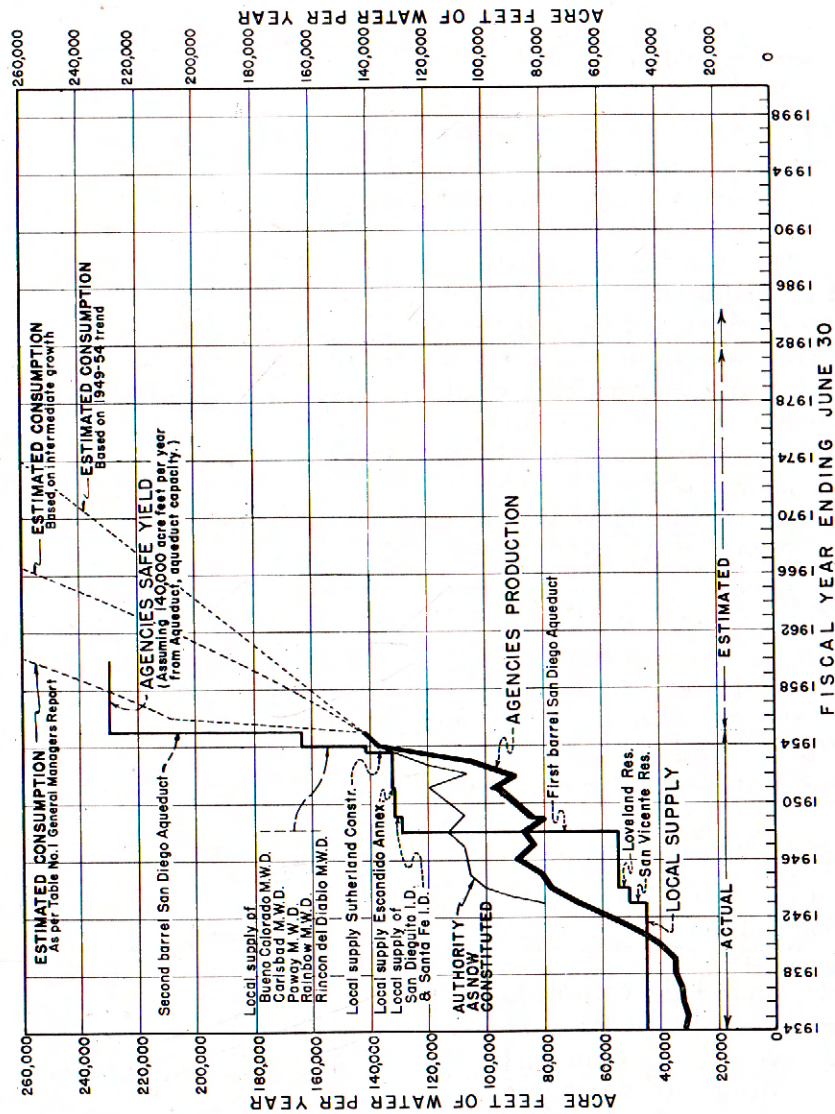


Figure C. Water production and supply in Authority Area.

supply to meet the consumptive needs of its consumers, plus losses in the distribution system and in the pipe lines carrying water to the area served. Stream runoff, stored in impounding reservoirs during the rainy season for later use, is not considered water production until it is diverted into the agency's system for delivery to the ultimate consumer.

Robert A. Weese, C. E. Trygg, and Richard S. Holmgren at valve opening ceremony of first delivery of Colorado River water to Carlsbad Municipal Water District.



Total water production, as reported by member agencies in the fiscal year ending June 30, 1955, was 146,423 acre feet, an increase of 8,522 acre feet, or 6.2% over the previous year. Of the total water produced within the Authority, 89,140 acre feet, or 61% was Colorado River water.

The water production of each agency for the fiscal year 1954-55 and the proportion of such production between Colorado River water and local waters are shown on Table 7. A tabulation showing the annual water production of each Authority member agency for the 12-year period, July 1942 to June 1955 inclusive, is shown on Table 8.

The 143,812 acre feet of water produced by member agencies met the demands of an area comprising 148,423 acres, the estimated area within the service area of the agencies' present distribution systems. This is equivalent to an average water production within this gross area of 0.97 acre feet per acre per year. Assuming that all the population living within the Authority area was served water from one of the agency systems, the average use of water within the Authority area would be 0.20 acre feet per capita per year, or about 180 gallons per day per capita.

The unit production per acre and per capita for each agency are shown on Table 9.

Storage

A 5-year agreement entered into with the City of San Diego in February 1950, for storage of water in San Vicente Reservoir by the Authority for its member agencies was due to expire in February 1955. Prior to that date, a new 5-year agreement was negotiated with the city, continuing to make available to the Authority storage capacity in San Vicente Reservoir from November 1, 1955, to October 31, 1960. A change in the beginning date of the new agreement, from February to November, was made to have the provisions thereof conform with the Authority's storage year—November 1 to October 31. Since it is impossible to actually deliver stored water in San Vicente Reservoir to

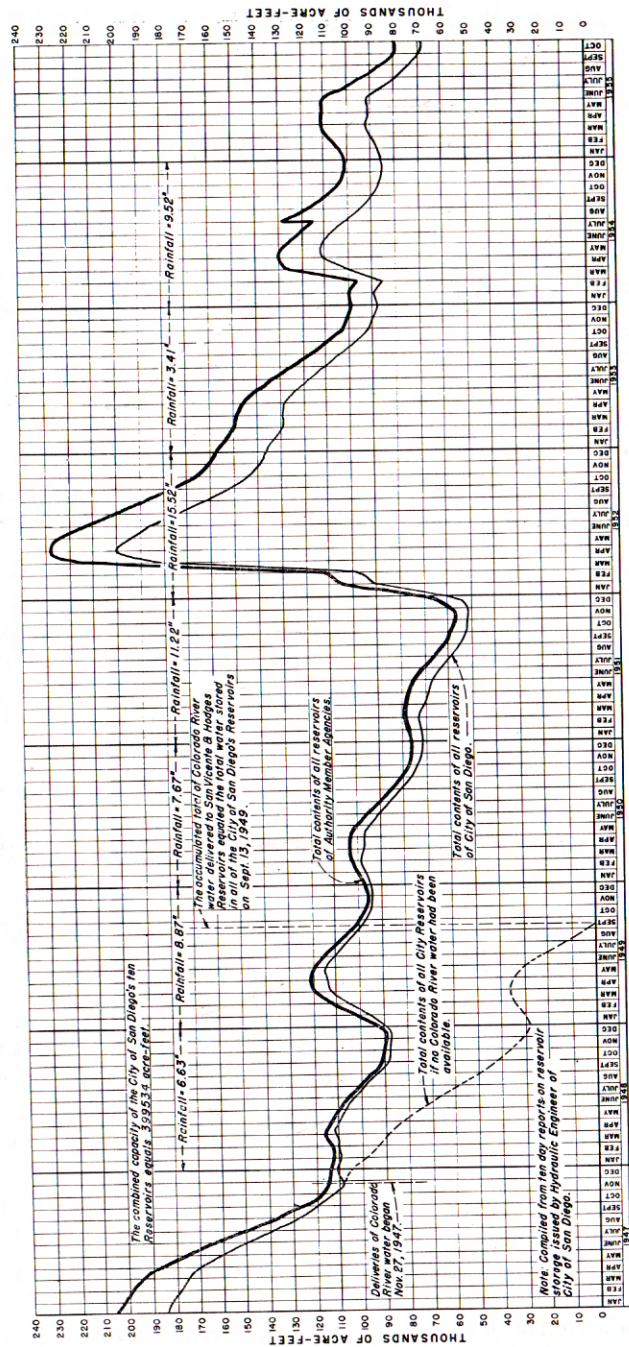


Figure D. Amount of water in storage in reservoirs of Authority member agencies.

an agency other than the City of San Diego, delivery is effected by delivering water from the current flow of the aqueduct in lieu of stored water, and the agency's stored water in San Vicente Reservoir is transferred to the City of San Diego to replace water diverted to the agency.

In general, terms of the new agreement follow the previous one, except that payment to the city has been increased from a flat \$1.00 per acre foot to \$2.20 for the maximum amount of water in storage during the storage year, plus "additional power cost of pumping actually incurred by the city by reason of such delivery from the reservoir," when stored water is transferred from storage to the city.

The agreement permits the Authority to store water up to 20,000 acre feet in the reservoir above the needs of the City of San Diego provided storage space is available. Storage of water, except for a small quantity needed by the Authority for evaporation purposes, is limited to water ordered stored by member agencies to their accounts. The agencies assume responsibility for stored water, and agree to ultimately take delivery of the water on terms fixed by the Authority.

The Authority pays the Metropolitan Water District for the water placed in storage when it is delivered into the Authority's system. In turn, the Authority bills the agency upon delivery of stored water at the price paid the Metropolitan Water District, plus \$2.00 per acre foot for Authority operation and maintenance, plus \$2.90 per acre foot for each year or fraction thereof during which water remained in storage, plus any pumping charges made by the City of San Diego, the latter charge being limited by Authority Ordinance to \$2.00 per acre foot. The differences of \$0.70, between the charge of \$2.90 made by the Authority and the \$2.20 for storage charge by the city, is used primarily to pay for additional water required to make up evaporation losses and to reimburse the Authority for interest on money used to carry the cost of the stored water until needed by the agencies.

During the year the Metropolitan Water District attempted to encourage storage of water in the off-peak season by adoption of a variable water-rate schedule. The schedule set a rate of \$8.00 per acre foot, a reduction of \$2.00 per acre foot, for all untreated water delivered to members of the Metropolitan Water District in the period from December 1, 1954 to April 30, 1955. This saving was passed on to Authority member agencies. All water used and stored by the agencies during this period was billed at \$10.00 instead of the regular price of \$12.00 per acre foot. The District rate for untreated water returned to \$10.00 per acre foot on May 1, 1955, and continued at that rate for the remainder of the year.

At the end of the year there was a total of 4,577.4 acre feet of water in Authority storage in San Vicente Reservoir, an increase of 3,113.3 acre feet from that in storage at the beginning of the fiscal year. Requests from member agencies for storage of water totaled 22,750 acre feet, of which only 6,217 acre feet could be stored, the only surplus available above the current demands of the agencies.

On June 30, 1955 total stored water in all reservoirs of member agencies was 102,381 acre feet, representing only 15% of the combined capacity of the reservoirs. This represented a drop of 34,827 acre feet during the year, including the reservoirs of the recently annexed member agencies.

A chart showing variations in amounts of water stored in member agencies' reservoirs since the Authority began operation in 1947 is shown on Figure D.

Water Quality

The Metropolitan Water District continues to take monthly test samples of water, delivered to the Authority at the intake of the San Diego Aqueduct. Mineral analyses of these samples are made at the District's testing laboratory, located at La Verne, California. Reports of the analyses are forwarded to the Authority. Water delivered to the Authority showed an average total hardness of 331 p.p.m., ranging from a low of 317 p.p.m. in July 1954, to a high of 359 in June 1955.

Results of water analyses taken by the District are shown on Table 11.

Water temperatures of the aqueduct, taken periodically by Authority patrolmen, showed a high of 85° in July 1954, to a low of 52° in January 1955.

Preferential Water Rights of Member Agencies

All requests for Colorado River Water from member agencies are filled without question of rights, provided there is capacity within the Authority system sufficient to supply such requests. If the combined flow of water requested exceeds the capacity of the pipe lines, through which such water must pass before delivery, requests must be reduced to the capacity of the line. In the past, this has been accomplished by agencies having other available supplies voluntarily reducing their requests until the total of such requests equal available capacity. If the required reduction cannot be obtained by voluntary means, the available

capacity is allocated among those agencies requesting water in accordance with their preferential rights to purchase water, as specifically set forth in Section 5 (11) of the County Water Authority Act.

Summarized briefly, the preferential right of an agency to purchase water is a right to purchase at all times that portion of the Authority's total available water supply which bears the same proportion to such total water supply as accumulated taxes and related sums paid by the agency (excluding payments for water) bear to the total of similar amounts paid by all agencies. Each agency also has a similar right in any water which becomes available whenever another agency does not take the full quantity of water to which it has a right.

The basic preferential right of each agency to purchase water on the basis of 195 c.f.s., as of June 30, 1955, is shown on Table 12. Whenever the aqueduct flow available to the Authority is reduced by the Metropolitan Water District below 195 c.f.s., the flow then available to each agency as its right is proportionally reduced.

In determining the proportionate right of each agency to purchase water, any unpaid balance of the annexation charges which the agency has contracted to pay the Authority has been included with the amounts actually paid in taxes and related sums.

OPERATION AND MAINTENANCE

Operation

Operation and maintenance of the Authority system is now under the direction of Mr. Rolf H. Prom, Maintenance Superintendent at the Escondido headquarters, who replaced Mr. A. B. Gale, former Maintenance Superintendent, upon his retirement from the organization on reaching his seventieth birthday in December 1954.

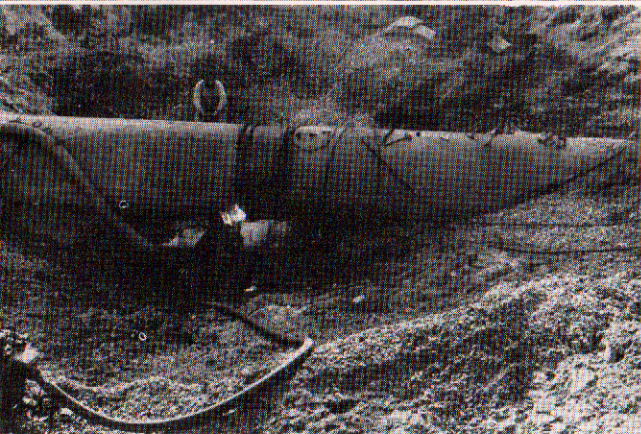
Flows in the aqueduct were continually maintained to utilize the maximum capacity available as sections of the second barrel were completed and placed in operation. Full capacity of the aqueduct became available in October 1954, when construction of the second barrel was completed.

During the construction of the second barrel of the aqueduct a daily patrol of the aqueduct works was maintained to assure maximum utilization of available aqueduct capacity without the danger from overflow of open structures.

On December 11, 1954 a break occurred in the newly constructed



Colorado River water gushing from break in Second Barrel on San Luis Rey River crossing.



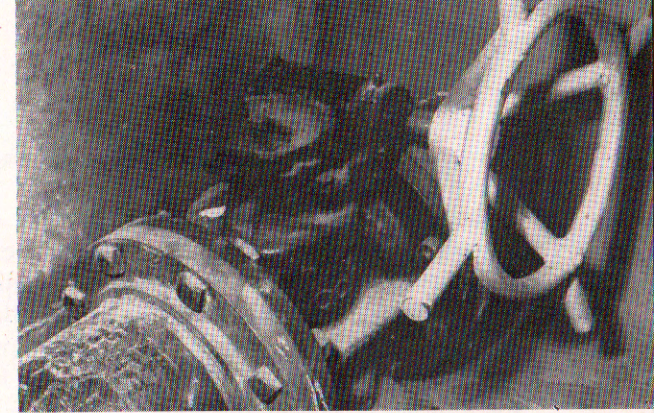
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second barrel at the San Luis Rey River crossing, necessitating a complete shutdown of the aqueduct for a period of two days. A reduced delivery of water, limited to the capacity of the one remaining barrel, was received for about one month. Following repair of the break, deliveries equal to the full

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Welders working around the clock, repairing break.

capacity of the aqueduct, at the county line, were requested and received from the Metropolitan Water District.

During the period of partial shutdown, patrolling and inspection of the line was reduced to alternate days. However, daily patrolling and inspection was restored upon repair of the break. Later in the spring, as heavy demands for water developed in the Rainbow-Fallbrook areas, with a resulting decrease in flow in the aqueduct below Rainbow, patrolling was again reduced to alternate days. In addition to a general inspection of the main aqueduct and branch lines, patrolmen inspect structures, particularly open structures, valves and meters, and submit their reports to the superintendent, informing him of matters needing immediate attention. Changes in water deliveries to agencies are generally made by the patrolmen in the course of their inspection trips. Meter charts are changed weekly, and these, together with monthly readings of the meters taken on the last day of the month are forwarded to the San Diego office, where they are checked. Quantities of water delivered to member agencies are then computed and used in billing member agencies for water delivered.

Operating procedures are outlined in Ordinance No. 33, as



Typical Valve installation



amended, and, among other things, require that an 18-hour notice be given of a desired change in rate of water delivery. In general, except for emergencies, the agencies have complied with this requirement. In case of an emergency, special trips have been made, but these have always been kept to a minimum, since men from the maintenance crew must be sent out, disrupting the work of the crew.

A new four-wheel-drive jeep pickup was purchased during the year, for use of the patrolmen, to replace the small jeep previously used.

Maintenance

On completion of the construction work on the aqueduct, maintenance of access and patrol roads again became the major work of the crew. Fortunately, the winter of 1954-55 was very dry—with only about six inches of rainfall with no heavy sustained storms. This provided ideal conditions for the growth of grass and weeds on the rights of way, where construction had laid the ground bare, and will help substantially in reducing future road and rights-of-way maintenance.

A continuous check of all exposed pipe and metal work was maintained throughout the year, and wherever corrosion was discovered the parts were cleaned and repainted. Routine maintenance work, such as flushing blowoffs, cleaning air valves, greasing plug valves, and checking meters, was maintained on a periodic schedule. This routine assured proper and accurate operation of the equipment at all times.

In addition to the routine work outlined above, the regular maintenance crew constructed several service outlets, described under the construction of this report.

Chlorination

As a part of the construction of the second barrel, a chlorination station was provided at the north portal of Lilac Tunnel, in which the Authority installed a visible Wallace & Tierman air-operated vacuum

chlorinator and appurtenant equipment, capable of injecting up to 3,000 pounds of chlorine per day into the flow of the aqueduct. The auxiliary equipment includes an air compressor, water pump, scales, and hoisting equipment, capable of handling one-ton containers. Additional scales to permit use of a larger number of containers will be necessary sometime in the future to care for continued large flows in the aqueduct. Automatic control equipment is also provided to permit intermittent release of chlorine during specified periods at given intervals of time.

Chlorination is not continuous, and, as carried on by the Authority, is solely for the purpose of injecting heavy doses of chlorine at given intervals during the summer months and at high-water temperatures to prevent the growth of bacteria on the walls of the pipe line, thus maintaining the carrying capacity of the pipe line.

The station was placed in operation on July 15, 1954, and during the year a total of eight tons of chlorine was injected into the aqueduct flow.

Public Relations

Close cooperation was maintained with local newspapers, mainly through the efforts of Mr. T. G. Armstrong, Assistant to the General Manager, who was retained on a part-time basis primarily for this work.

Upon completion of the San Diego Aqueduct construction, October 2, 1954, a dedication ceremony and celebration was held jointly by



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Capt. C. W. Porter, U. S. Navy, transferring Second Barrel of Aqueduct to Chairman Heilbron and General Manager Holmgren at dedication ceremony.

the Authority and the S. A. Healy Company, contractor of the last section of the aqueduct to be completed. The ceremony was conducted by Mr. Fred A. Heilbron, Chairman of the Board of Directors of the Authority.

The outstanding event of the ceremony occurred when Captain C. W. Porter, representing the Commandant of the Eleventh Naval District of the U. S. Navy, presented a letter to Chairman Heilbron and General Manager Holmgren, turning over control of the second barrel of the aqueduct to the Authority for use, pending official completion of the aqueduct. The climax occurred with the withdrawal of the last bulkhead in the aqueduct at the south portal of Oat Hills Tunnel, permitting water to flow uninterrupted through the entire length of the aqueduct. Prominent people who attended the activities included Messrs. E. G. Nielsen, Regional Director of the Bureau of Reclamation, Boulder City, Nevada, who has since been appointed Assistant Commissioner, Department of the Interior, Washington, D. C.; Joseph Jensen, Chairman of the Board of Directors of the Metropolitan Water District; and Robert B. Diemer, General Manager and Chief Engineer of the Metropolitan Water District.

In anticipation of the completion of the aqueduct and the Tenth Anniversary of the founding of the Authority, a small pamphlet, outlining the growth of the Authority during its 10-year period of existence, was prepared and distributed.

Pictures and maps showing activities of the Authority, mainly covering construction of the second barrel of the aqueduct, were prepared and assembled for exhibit at the Del Mar County Fair at the booth of the Metropolitan Water District.

CONSTRUCTION PROGRAM

San Diego Aqueduct

At the beginning of the fiscal year only 9,464 lineal feet of 48-inch pipe remained to

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Field inspection trip by Directors Arthur C. Wells, J. W. Fisher, Fred W. Simpson, and Chairman Fred A. Heilbron and General Manager and Chief Engineer Richard S. Holmgren.



be placed to complete the construction of the second barrel of the San Diego Aqueduct. This unfinished section was in the vicinity of the City of Escondido.

Although construction of the second barrel was performed under the supervision of the U. S. Navy and the Bureau of Reclamation, the Authority staff worked closely with these governmental agencies to ascertain that every possible provision for future service connections was made at the time of construction, so as to reduce to a minimum the length of shutdown required when future outlets are installed. The staff also cooperated in the layout of access and patrol roads to provide for easy future maintenance.

The S. A. Healy Company constructed all work on the second barrel extending from the south end of the San Luis Rey River crossing to the San Vicente Tunnel. Most of the work was completed the previous year and described in the Eighth Annual Report. The work was completed on November 1, 1954, at a total cost of \$4,784,581. This stretch was completed 47 days prior to the completion date required by contract, marking the end of the aqueduct construction.

On February 28, 1955, the U. S. Navy formally turned over the second barrel of the aqueduct to the Authority for operation and maintenance, as provided under Contract NOy 13300, Supplemental Agreement No. 5. The Metropolitan Water District assumed responsibility of the northerly portion of the second barrel on March 12, 1954, for operation and maintenance.

Recapitulation

Construction of the second barrel, consisting of a series of pipe lines between tunnels, designed to double the capacity of the aqueduct as originally constructed, was begun in October 1952, and completed in October 1954—two years later. The total cost of the work, divided into the several contracts under which the work was performed, is as follows:

- (1) R. V. Lloyd, 48,036 feet of 75-inch concrete pipe..... \$2,566,738
- (2) Engineering Constructors, Inc., 20,672 feet of 48-inch pipe, 31,626 feet of 60-inch pipe..... \$2,027,400
- (3) Johnson Western Constructors, 16,672 feet of 48-inch pipe, 45,634 feet of 60-inch pipe..... \$3,169,881
- (4) P. & J. Artukovich and Miller Co., 6,874 feet of 48-inch steel pipe \$ 705,418

- (5) S. A. Healy Company, 123,045 feet of 48-inch pipe, 29,230 feet of 54-inch pipe..... \$4,784,581

Rainbow Station

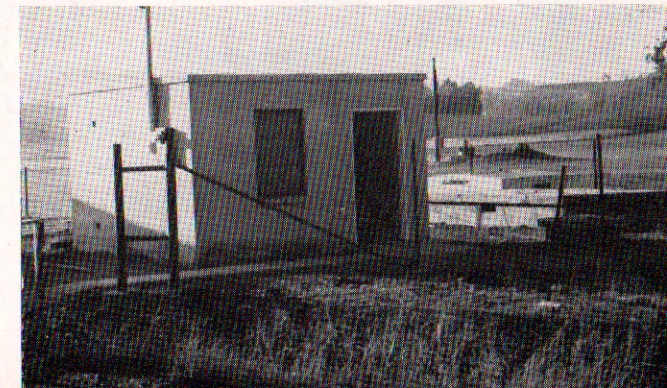
Most of the construction on this station was completed in the previous year; that which was carried over to the 1954-55 fiscal year was completed in July 1954. The station includes two service connections—the Fallbrook No. 3 service connection and the Rainbow No. 1 service connection. The Fallbrook No. 3 connection includes a 24" x 12" B.I.F. venturi meter with a capacity of 30 c.f.s. and Nordstrom plug valves for control of deliveries to the District. The Rainbow No. 1 connection includes a 10" x 5.3" B.I.F. venturi meter with a capacity of 6 c.f.s. and Nordstrom plug valves for control of flow to the District. All work on the station was performed by the maintenance crew, augmented by extra help as needed. The total cost of the Rainbow Station was \$24,220, of which \$16,275 was allocated to the Fallbrook Public Utility District for its No. 3 service connection, and \$7,945 to the Rainbow District for its No. 1 service connection. The Authority paid the full cost of the Rainbow service connection, since this was the District's No. 1 service connection and of the size to which the District was entitled.

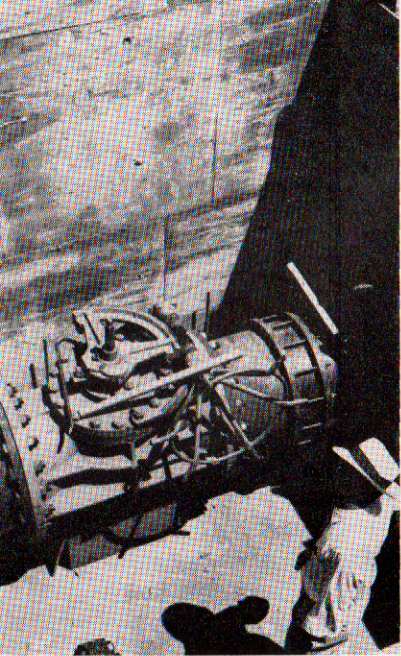
Bueno Station

This station houses the metering and control equipment for the Bueno No. 1 service connection, through which water is supplied to the Bueno Colorado Municipal Water District. Water from this connection is discharged into the main transmission line of Vista Irrigation District's system, which area lies within Bueno District. The Bueno connection consists of a 24" x 12" B.I.F. venturi meter with a capacity of 30 c.f.s. and a Nordstrom plug valve for control of deliveries. Sufficient space has been provided in the structures for a second service connection from the aqueduct. The installation of a 24-inch pipe crossconnection between the first and second barrels for operational purposes, partic-

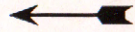


Bueno Control Station on Rincon Avenue — exterior view.





Bueno Control Station Forms for concrete structure, housing 24-inch plug valve.



ularly in case of a break in either barrel of the aqueduct, was included as part of the work under this project. The superstructure housing the meter instrument is of fireproof construction with concrete block walls and concrete slab roof and floors.

Plans for the station were prepared by the engineering staff, and all construction work on the project was performed by the maintenance crew, augmented as needed with temporary employees.

Diablo Station (formerly called Rincon)

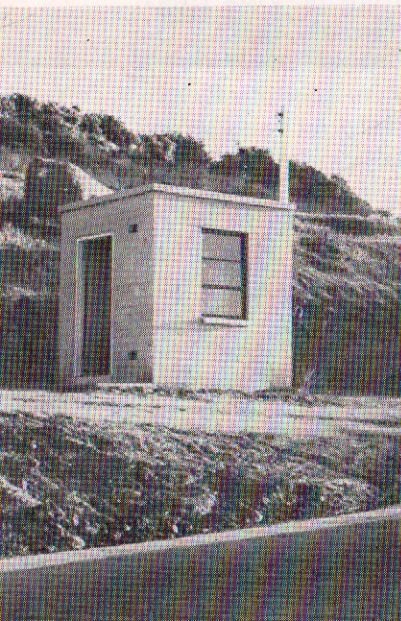
The Diablo Station, located on Vista Way north of Escondido, was completed in January 1955. This station houses the Rincon del Diablo No. 1 service connection. Connection was made to a blank nozzle provided in the second barrel of the aqueduct at the time of its construction. In order to remove the blank flange and install a valve, the flow in the second barrel of the aqueduct at this point was retained by inserting a bulkhead at the open structure at Oat Hills Tunnel and by unwatering this section of pipe line.

This service connection includes an 18" x 10" B.I.F. venturi meter with a capacity of 21 c.f.s. and a Nordstrom plug valve for control of flows to the District. The superstructure, in which a Type MDUAX meter instrument is located, is of fireproof construction with concrete block walls and concrete slab floor and roof.

The total cost of the service connection, equipment, and structure was \$10,723, paid entirely by the Authority, since this is the first connection for the Rincon District.



Completed Rincon del Diablo Control Station



Poway Control Station, near Espola Road.



Poway Station

This station houses the metering and control equipment for the Poway No. 1 service connection, and is located about one-fourth mile east of Espola Road in the northerly part of the Poway District. A nozzle and valve were installed on the second barrel during construction, to which the Poway connection was attached without a shutdown of the aqueduct. The station contains a single 12" x 7" B.I.F. venturi meter with a capacity of 10 c.f.s. and a Nordstrom plug valve for control of deliveries to the District. The superstructure housing the Type MDUAX meter instrument is completely fireproof with concrete block walls and concrete slab floor and roof.

The total cost of the installation was \$8,195, of which the Authority paid \$6,705, and the Poway District paid \$1,490. The \$6,705 is the amount the Authority would have been required to pay for a 3 c.f.s. meter connection, to which the District was entitled.

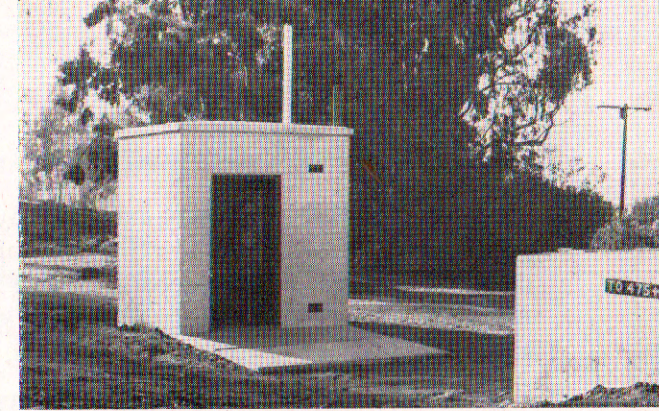
The engineering and construction work was performed by Authority personnel, plus one temporary carpenter. The work was completed in February 1955, and the station was placed in operation on April 12, 1955. The temporary meter at Station 523+43 was discontinued upon installation of the permanent meter. A second temporary meter at Station 276+26 will continue in operation to provide service to an area which cannot be properly served at this time through the permanent connection.

PLANNING FOR THE FUTURE

The Authority Board at its meeting on October 14, 1954, instructed the General Manager and Chief Engineer to proceed with an engineering study to



Construction of Rincon del Diablo Control Station, Vista Avenue, near City of Escondido.



develop the probable ultimate extent of Authority area and a general plan of a system which could efficiently supply supplemental water to the area, as well as the probable source of water from which the Authority might in the future obtain additional supplies to meet the increasing demands of its member agencies.

To carry out these instructions, the engineering staff was temporarily increased by three employees: Messrs. W. G. Sloan, engineer recently retired from the U. S. Bureau of Reclamation, Russell D. Bish, and William E. Blakesley. Mr. Sloan was assigned to direct the detailed studies and to analyze the mass of data collected in the course of the study.

The results of the study were contained in a report entitled "The Probable Extent of Authority Area, the Amount and Source of Additional Water Supply Required, and the System Required to Efficiently Deliver Authority Water to the Agencies Comprising that Area," dated June 1955. The final report was presented to the Authority Board on June 16, 1955.

In brief, the report envisions the Authority with an area of 821,000 acres by the year 1970 requiring 682,000 acre feet of supplemental water by the year 2000, and expansion of the Authority system by the construction of a second aqueduct, wholly or in part, not later than 1960 with an ultimate capacity of 500 c.f.s., making possible the ultimate importation of about 500,000 acre feet of water annually. An estimated cost of a second aqueduct, if built to full capacity, is estimated to cost about \$30,000,000. The results of the study for the necessary branch lines and reservoir sites, needed to efficiently distribute the water within the Authority area, were also included in the report with estimates of cost.

On March 10, 1954, the Board of Directors approved the retaining of a Board of Consulting Engineers to review the staff report and to make any other comments pertaining to future planning of the Authority that appeared necessary to them in the course of study. Engineers chosen to comprise the Board were Messrs. Raymond A. Hill, member of the firm of Leeds, Hill and Jewett, Los Angeles; John S. Longwell, Consulting Engineer of Oakland and formerly General Manager and Chief Engineer of East Bay Utilities; and Carl R. Rankin, Consulting Engineer of Pasadena. Following their appointments, the Board met with the Authority staff on numerous occasions to review carefully the work being done by the staff in its study.

Additional Water Supply

The staff continues to maintain interest in the source of additional water. A revised report on the Feather River Project was submitted by State Engineer A. D. Edmonston in February 1955. This report was carefully reviewed by the staff. Under the so-called high-line route, recommended in this report, there would be available to San Diego County a total of 362,000 acre feet of water per year from this project.

Legislation pertaining to the Feather River Project and to other water projects throughout the State was considered by the Assembly of the State Legislature, which met on April 28, 29, and 30, 1955, as a committee of the whole. A delegation consisting of Chairman Heilbron, General Counsel Jennings, and General Manager and Chief Engineer Holmgren, attended the meetings.

All available information on studies being conducted by various organizations throughout the State dealing with the possibility of obtaining water by demineralization of salt water, recovery of waste waters, and the seeding of clouds has been carefully followed and studied.

Authority Building

The building committee, with Director J. W. Fisher as Chairman, completed studies to determine the needs of the Authority for a permanent headquarters building in San Diego. Many floor-plan layouts were prepared by the staff to meet the requirements of several locations as they were considered by the committee.

On May 19, 1955, the building committee recommended the purchase of a parcel of land located at 2750 Fourth Avenue, San Diego, 75 feet wide and 200 feet deep, extending from Fourth to Third Avenues. The land was placed in escrow on May 10, 1955.

LEGAL AND LEGISLATIVE

Annexations

Routine advisory duties to Board, Committees and Staff, preparation of resolutions, ordinances and contracts, and correspondence in matters having legal significance, continue to absorb an increasing amount of the General Counsel's time as the affairs of the Authority increase in complexity with the expansion of its area and the number of its member units. This was offset to some degree during the year

by the reduction in the time necessarily applied to reviewing procedures for formation of new agencies and their annexation to the Authority. New districts were formed to include the Valley Center Area and the Ramona Valley. Of these, only Valley Center Municipal Water District completed its annexation to the Authority and the Metropolitan Water District.

The proposed Rio San Diego and Otay Municipal Water Districts continued in the process of formation, and, in addition to the supervision of these activities, the annexation of the El Cajon Valley Irrigation District and several hundred acres of island areas by the La Mesa, Lemon Grove and Spring Valley Irrigation District to the Authority and the Metropolitan Water District required careful attention.

Legislation

While the Authority had no legislation before the 1955 General Session of the California Legislature which it had directly sponsored, there were in excess of 500 bills introduced during the session which directly or indirectly affected water distributors to some degree. Many of these bills had very direct and serious effects upon the activities of the Authority's member units, and our assistance in support of or in opposition to these bills was in constant demand. In addition, the San Diego members of the State Legislature looked to the Authority for guidance and interpretation of these measures and recommendations upon the advantages or disadvantages of their adoption. In appreciation of this attitude on the part of Senator Fred H. Kraft and Assemblyman Frank Luckel, Jack Schrade, Sheridan Hegland and Wanda Sankary, this office made every effort to supply them with a careful analysis and recommendation where water matters were involved.

During the session the Assembly adjourned for three days into a committee of the whole. In that time members of the Legislature invited the public to appear and a great deal of important information on water problems



←
William H. Jennings,
General Counsel
Dorothy D. Miller,
Executive Secretary

throughout the State was presented. These sessions were attended by the Authority's Chairman, General Manager and Chief Engineer, and General Counsel, and it is believed that the session was highly instructive and of much permanent value as a source of information upon which the solution of the State's problem of distribution must ultimately be based.

Feather River Project

While little apparent progress was made towards the start upon the construction of this project to which the Authority looks as possibly its next source of imported water, a great deal of thought, study and discussion was given to the many problems involved in so important an undertaking. The Authority encouraged the formation of a state-wide association by which it is hoped settlement of differences, both ideological and sectional, may be accomplished; and assisted in the formation of a San Diego County section of the state organization.

State Department of Water Resources

For the second consecutive legislative session the proponents of the adoption of legislation to create an over-all State Water Department failed in their efforts. Differences of opinion as to the make-up and functioning of such a department could not be resolved before the adjournment of the Legislature. The necessity for such a reorganization appeared to receive general acceptance, however, particularly if the State is to successfully construct and operate huge water projects. The Authority's General Counsel is a member of a state-wide committee attempting to reconcile the conflicts, and will continue to give close attention to this important legislative activity.

Colorado River Water Suit

While the Authority is not technically a party to this suit pending

Mr. Northcutt Ely, Special Counsel for the Colorado River Board, discussing the Arizona - California Water Suit with Authority Chairman Fred A. Helbron and Fred W. Simpson, Chairman of the Colorado River Board and Director of the Water Authority.



before the United States Supreme Court, the results of the action are of very serious importance to all users of Colorado River water. During the year, the California defendants, supported by Nevada, moved the Court to order that the Upper Basin States be made parties to the action. While there were many reasons for the motion, the basic ground relied upon was that the suit involved the interpretation of many provisions of the Colorado River Compact, to which all the states were parties, and, therefore, by which they would be affected. The motion was opposed by the affected states and was referred to the Special Master for a report. Near the close of the year the Master's report was filed, concluding that the Upper Basin States were not necessary parties except to the limited extent of the three having small portions of their area within the Lower Basin. The report and conclusion was a serious disappointment to the California litigants.

THE MUNICIPAL FINANCE OFFICERS ASSOCIATION
OF THE UNITED STATES AND CANADA

Certifies that

THE ANNUAL FINANCIAL REPORT OF

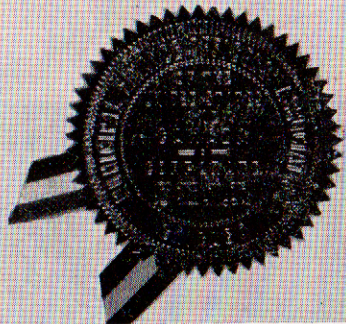
The San Diego County Water Authority
For the Fiscal Year Ended June 30, 1954

CONFORMS TO THE PRINCIPLES AND STANDARDS OF
PUBLIC FINANCIAL REPORTING AS PROMULGATED BY THE

Municipal Finance Officers Association

AND THE

National Committee on Governmental Accounting



Presented November 30, 1954.

Joseph M. Louvery
Chairman, Committee on Accounting

W. E. Cochran
Executive Director

FINANCIAL

As described in previous reports, the Authority's financial operations continue to reflect the policy of the Board of Directors to provide operating costs primarily from revenues from the sale of water. Requirements for payments to the Federal Government and for a sinking fund for retirement of bonded debt have been met by tax levies.

Water sales during the fiscal year 1954-55, amounted to \$1,116,300.68, which was approximately \$261,000.00 over the preceding year. Heavy expenditures for construction and in connection with the second barrel of the San Diego Aqueduct, however, required a tax levy of 1¾¢ for operation and maintenance, and the 1954-55 requirements for the general fund were, therefore, financed partly from tax revenues.

Payment of \$1,156,407.56 being made to U. S. Government by Authority as partial payment on Second Barrel. Seated: Capt. K. A. Godwin, U. S. Navy; Charles L. Royer, Controller; Fred A. Heilbron, Chairman of the Board. Standing: William H. Jennings, General Counsel; Harry L. Hall, Treasurer; and Richard S. Holmgren, General Manager and Chief Engineer.



SAN DIEGO COUNTY WATER AUTHORITY

During the year the Authority was notified by the United States Government that the San Diego Aqueduct had been determined complete and would be turned over to the Authority, effective February 28, 1955, at a cost of \$16,116,063.00, subject to final adjustment. Payments are being made quarterly over a 40-year period, beginning May 31, 1955, with interest at 2.599% on the unpaid balance. In order to minimize subsequent tax requirements and for maximum effective utilization of funds accumulated for that purpose, the Board of Directors authorized an initial Authority payment of \$1,000,000.00 plus accrued interest to May 31, 1955, in accordance with contract provisions, and directed that such payment be in addition to the amount received by the Authority under terms of an agreement dated September 12, 1952, between the Authority and the Metropolitan Water District. Accordingly, an Authority warrant in the amount of \$1,156,407.56 was delivered to the United States Government with the result that remaining Authority installments were reduced approximately \$24,000.00 per year, and a reduction in interest to Authority taxpayers was effected, amounting to \$493,500.00 over the life of the contract.

Cash and marketable securities at June 30, 1955, amounted to \$1,378,299.74, as compared with \$2,104,220.94 at June 30, 1954. The total included \$1,139,635.41 in securities of the United States Government, earning an average interest rate of 1.946%. During the year current assets increased \$115,464.75, while current liabilities were decreased \$21,794.38. Fixed assets were increased \$9,970,981.60, while long-term obligations were increased \$14,544,993.88, leaving a net decrease in the investment in fixed assets. This is offset by an increase in the reserves for redemption of debt, amounting to \$7,175,205.07, principally from the additional amount due from the Metropolitan Water District for its portion of the cost of the second barrel of the San Diego Aqueduct. Appropriated surplus increased \$72,078.07, and unappropriated surplus increased \$133,390.31. The total result for the year was an increase of \$2,806,661.17 in the Authority's net equities.

The Authority's accounting system follows the basic principles of fund accounting normally used in municipalities, modified to the extent necessary to reflect conditions peculiar to the Authority. The accounts are maintained on the accrual basis, and have been regularly audited by the firm of Everts and Esenoff, Certified Public Accountants, whose certificate follows.

FINANCIAL

EVERTS and ESENOFF
Certified Public Accountants
Suite 727, First National Building
San Diego 1, California

September 12, 1955

Board of Directors
San Diego County Water Authority
314-321 Land Title Building
San Diego 1, California

Gentlemen:

We have examined the balance sheet of the San Diego County Water Authority as of June 30, 1955, and the related statements of income and surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards and accordingly included such tests of accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion the accompanying balance sheet and statements of income and surplus present fairly the financial position of the San Diego County Water Authority at June 30, 1955, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the previous years.

Yours very truly,

(Signed) HERBERT L. BECKETT
For Everts and Esenoff
Certified Public Accountants

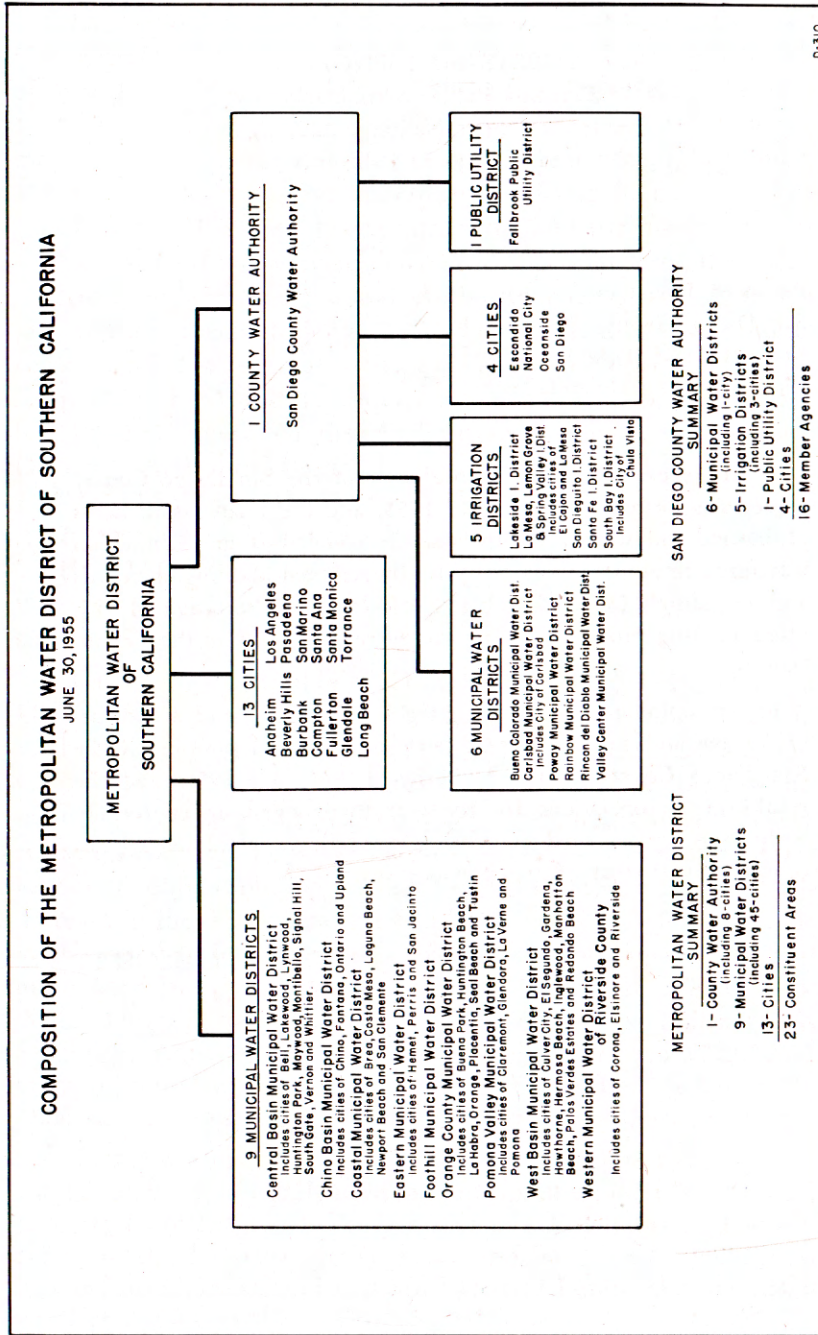


Figure E. Composition of the Metropolitan Water District of Southern California.

MEMBERSHIP IN METROPOLITAN WATER DISTRICT

Authority Membership

The fiscal year 1954-55 marked the eighth year of the Authority as a constituent member of The Metropolitan Water District of Southern California, having been annexed to that District on December 17, 1946, by a vote of electors of the area with an 8 to 1 majority. Since then, all annexations to the Authority have been concurrently annexed to the District on terms and conditions determined by the District's Board of Directors.

A schematic diagram giving the constituent areas of the Metropolitan Water District is shown on Figure E.

As of June 30, 1955, the Authority is represented on the District's Board of Directors, governing body of the District, by three directors: Chairman Fred A. Heilbron, a member since January 10, 1947, and now Secretary of the Board; Director J. W. Fisher, appointed on April 12, 1955; and General Manager and Chief Engineer Richard S. Holmgren, appointed August 11, 1953.

Area

At the close of the 1954-55 fiscal year there had been annexed to the District a total of 425,613 acres, of which 67,676 acres represented areas concurrently annexed to the Authority. On June 30, 1955, the District included within its boundaries a total area of 1,793,651 acres, of which 349,493 acres, or 20% lay within the boundaries of the San Diego County Water Authority.

The areas included each year within the District since 1940-41 are shown on Table 25.

Assessed Valuation

The assessed valuation of the District has increased each year since 1934-35, when the assessed valuation of all taxable property totaled \$1,587,147,565. In 1954-55, the assessed valuation totaled \$6,548,392,114, an increase of 313% above the low of 1934-35. The assessed valuation of the Authority in 1954-55 equaled \$739,152,234, or 11.3% of the District's total assessment.

The average assessed valuation of taxable property within the

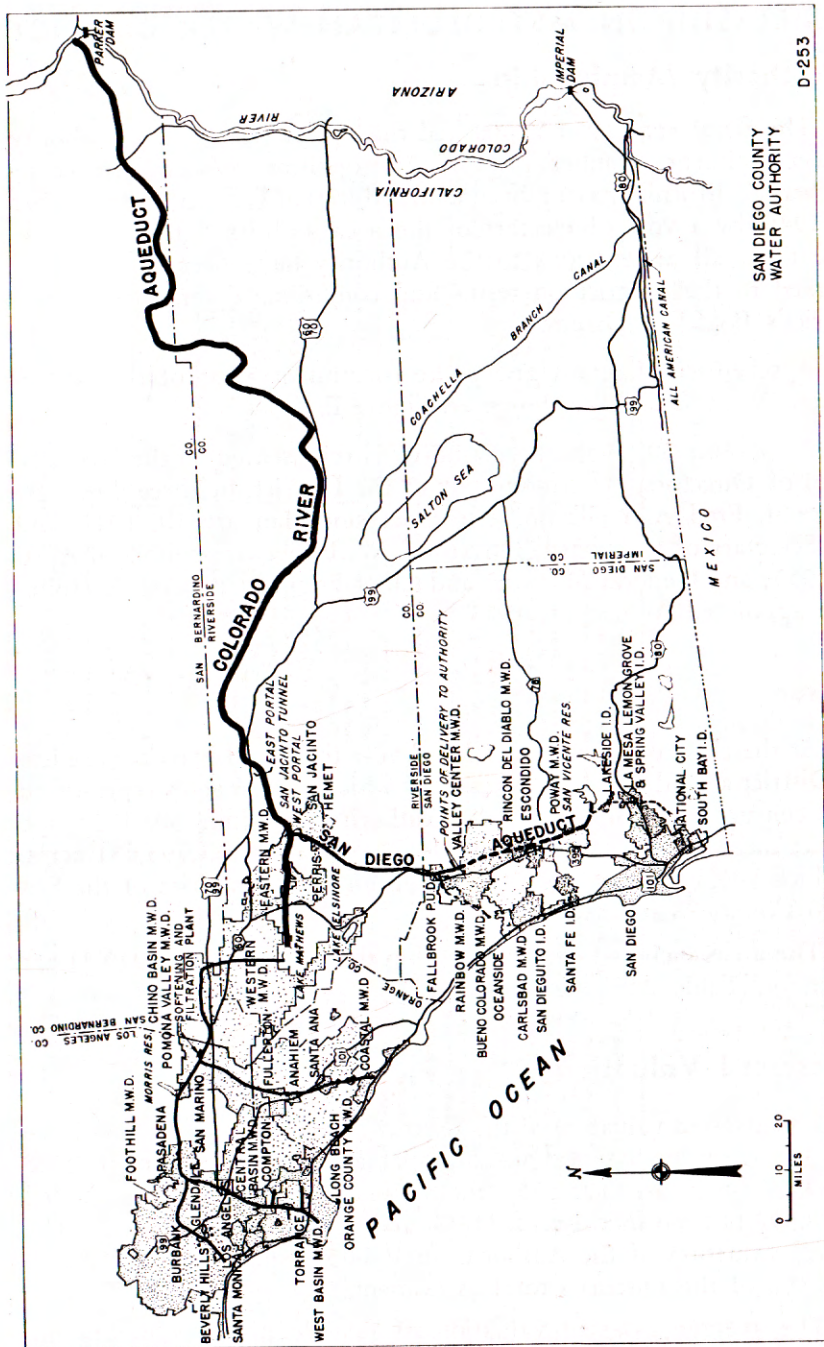


Figure F. Water Systems of Metropolitan Water District and San Diego County Water Authority.

District equaled \$3,650 per acre, compared with a value of \$2,115 per acre in the Authority.

A tabulation of assessed valuation of taxable property within the Metropolitan Water District, by years since its organization in 1929, is included in Table 25.

Water Supply and Sales

Water supplied by the District to its member agencies is obtained from the Colorado River, from which the District has a right to 1,212,000 acre feet annually. The water is carried from the Colorado River to the coastal plains area through the Colorado River Aqueduct extending 240 miles from the river to Lake Mathews, the terminal reservoir from which metropolitan Los Angeles is served.

During the year the available capacity of the Colorado River Aqueduct, limited by the capacity of three pumps in each of the five pumping stations to 600 c.f.s., was insufficient to meet the demands of the District and permit storage of necessary reserves in Lake Mathews to meet the peak summer demands. Because of this, delivery of water was reduced to the Central Basin and Orange County areas where the water had been used to replenish underground storage basins. Also, on May 24, 1955, delivery to the Authority was reduced to a flow of 160 c.f.s. from a capacity flow of the San Diego Feeder of 195 c.f.s., which flow had been maintained whenever possible since completion of the feeder in October 1954.

The District delivered a total of 385,653 acre feet during the fiscal year, including raw and treated water, of which 103,151 acre feet of raw or untreated water was delivered to the Authority. This figure represents 27% of the total water delivered by the District. The Authority paid the District a total of \$942,865 for this water.

The District's total water sales, since the first delivery was made in 1941-42, are shown by years on Table 23.

District Tax Rate

For the fiscal year 1954-55 a regular tax rate of 23¢/\$100 of assessed valuation was adopted, a decrease of 2¢/\$100 under the rate of the previous year. The resulting tax levied on the Authority area for 1954-55 totaled \$1,614,677.

A tabulation showing the regular tax rate levied each year since the first levy in 1929-30 is included as part of Table 25.

The District also levies a special tax on those areas annexed after the original organization and which still owe a portion of annexation charges agreed upon under the terms of annexation. The total of all annexation charges assumed by the areas within the Authority is \$17,459,957, of which \$3,685,939 was levied by the District in the form of special tax levies to June 30, 1955.

A tabulation showing the original annexation charges to Metropolitan for each area within the Authority, the assessments made to date, and the special tax rate for the 1954-55 tax levy are shown on Table 22.

Water Rates

In order to reduce the growing demand for water on the District system during the peak period, a reduced water rate was adopted by the District in November 1954, for the purpose of encouraging use and storage of water during the off-peak season. From November 1954, to April 1955, inclusive, the rate was reduced from \$10.00 to \$8.00 per acre foot for untreated water and from \$20.00 to \$18.00 for treated water. During the remaining 6-month period, the rate for raw water was restored to \$10.00 and \$20.00 per acre foot. Since the Authority uses only raw or untreated water, it was affected by the change in that class. The \$2.00 saving was passed on to member agencies in accordance with an ordinance which fixes Authority rate for water at the District rate plus a \$2.00 operating charge.

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SAN DIEGO COUNTY WATER AUTHORITY

TABLE 1
CONSTITUENT AREAS OF THE AUTHORITY
As of June 30

Constituent Areas	Area Within Authority (Acres)			Per cent of total Authority area 6/30/55
	As of 6/30/54	Changes during year (10)	As of 6/30/55	
	Acres	Acres	Acres	
Bueno Colorado M.W.D.	47,400	0	47,400	13.56
Carlsbad M.W.D. (1)	20,900	(4) -17	(3) 29,883	5.98
Escondido	1,932	+8	1,940	0.55
Fallbrook Public Utility District ..	8,192	0	8,192	2.34
Lakeside Irrigation District (2)	1,860	0	1,860	0.53
La Mesa, Lemon Grove & Spring Valley Irrigation District:				
In City of El Cajon	(1,200)	(+1,410)	(2,610)	(0.75)
In City of La Mesa	(3,343)	(+ 157)	3,500	(1.00)
In Crest Public Utility Dist.	(386)	(0)	(386)	(0.11)
In Unincorporated Areas	(13,400)	(+10,541)	(23,941)	(6.85)
Total	(1) (2) 18,329	+12,108	(6) 30,437	8.71
National City	4,097	+ 579	4,676	1.34
Oceanside	8,019	+ 74	8,093	2.32
Poway Municipal Water Dist.	10,800	0	10,800	3.09
Rainbow M.W.D. (1)	33,900	0	33,900	9.70
Rincon del Diablo M.W.D. (1)	22,400	(4) - 8	(7) 22,392	6.41
San Diego	76,946	+1887	78,833	22.56
San Dieguito Irri. Dist. (2) (3)	4,009	0	4,009	1.15
Santa Fe Irrigation District	10,106	0	10,106	2.89
South Bay Irrigation District:				
In Chula Vista	12,927	(4) -115	(8) 12,812	3.66
In Unincorporated Areas	(3,689)	(+201)	(3,890)	(1.11)
Valley Center M.W.D. (9)	(9,238)	-(316)	(8,922)	(2.55)
Total	0	53,160	53,160	15.21
Total Authority Area (1)	281,817	+67,676	349,493	100.00
San Diego County			2,725,100	

- (1) Area revised from Eighth Annual Report to conform with revised data received from agency.
- (2) Does not include areas annexed to agencies without making the same a part of the Authority.
- (3) Includes areas excluded from agency but still a part of the Authority.
- (4) Areas annexed by a City Member agency, but not deannexed from the District.
- (5) Does not include 17 acres of overlapping area in City of Oceanside.
- (6) Does not include 122 acres of overlapping area in City of San Diego.
- (7) Does not include 8 acres of overlapping area in City of Escondido.
- (8) Does not include 115 acres of overlapping area in City of San Diego.
- (9) Valley Center M.W.D. became a part of Authority on May 9, 1955.
- (10) For the purpose of these tables when an area of a District, which is part of the Authority, annexes to a City member agency, it is considered in the City and becomes an overlapping area, if not excluded from the District.

TABLES

TABLE 2
POPULATION—COUNTY AND AUTHORITY AREAS—1910 to 1955
(Includes Resident Military Personnel)

Year (as of April 1)	COUNTY		AUTHORITY		Per cent of County Population in Authority
	Total Population (1)	Average Annual Growth	Total Population (2)	Average Annual Growth	
1910	61,665		46,000		74
1920	112,248	5,058	87,000	4,100	78
1930	209,659	9,741	173,000	8,600	82
1940	289,348	7,969	248,274	7,600	86
1946 (3)	502,804	26,746	(3) 440,659	20,361	88
1950	556,808	51,064	451,886	59,940	81
1953	710,000	19,600	631,706	48,094	89
1954	729,600	39,600	679,800	22,500	93
1955	769,200		702,300		91

- (1) County population from U.S. Census Bureau Reports.
- (2) Authority population based on U.S. Census Bureau Reports. Population in years prior to Authority organization in 1944 is for Authority area as of 1944. Population in later years is for Authority as then constituted.
- (3) Based on Special Census, U.S. Census Bureau, exclusive of emergency military personnel due to World War II.

TABLE 3

POPULATION—AUTHORITY CONSTITUENT AREAS AND COUNTY
(Includes Resident Military Personnel)

Constituent Areas	Population—U. S. Census				Annual Increase 1950-55 Per cent	Density of Population 1955 Per Acre	Per Sq. Mile
	Area 6/30/55	1940 (1)	1950 (2)	1955 Estimate (4)			
	Acres	Per cent					
Bueno Colorado M.W.D.	47,400	—	—	21,000	—	0.44	284
Carlsbad M.W.D.	20,883	—	—	8,000	—	0.38	245
Escondido	1,940	4,560	6,608	8,850	7	4.56	2,919
Fallbrook Public Utility District	8,192	2,300	5,500	8,500	11	1.04	664
Lakeside Irrigation District	1,860	1,000	2,000	2,150	1	1.16	740
La Mesa, Lemon Grove & Spring Valley Irrigation District:	30,437	17,100	44,162	63,800	9	2.10	1,342
In City of El Cajon	(2,610)	(1,471)	(5,600)	(14,500)	32	5.55	3,555
In City of La Mesa	(3,500)	(3,925)	(10,946)	(19,000)	15	5.43	3,474
In Crest Public Utility District	(386)	—	(928)	(1,450)	11	3.76	2,404
In Unincorporated Areas	(23,941)	(11,704)	(26,688)	(28,850)	2	1.21	771
National City	4,676	10,344	21,199	26,000	5	5.56	3,559
Oceanside	8,093	4,651	12,880	21,000	13	2.59	1,661
Poway M.W.D.	10,800	—	—	1,000	—	0.09	59
Rainbow M.W.D.	33,900	—	—	2,300	—	0.07	43
Rincon del Diablo M.W.D.	22,392	—	—	11,500	—	0.51	329
San Diego	78,833	203,341	334,387	466,000	8	5.91	3,783
San Diego Irrigation District	4,009	2,400	6,223	9,720	11	2.43	1,552
Santa Fe Irrigation District	10,106	2,000	3,000	4,580	11	0.45	290
South Bay Irrigation District:	12,812	10,938	28,927	46,400	12	3.62	2,318
In Chula Vista	(3,890)	(5,138)	(15,927)	(29,000)	16	7.46	4,771
In Unincorporated Areas	(8,922)	(3,800)	(13,000)	(17,400)	7	1.95	1,248
Valley Center Municipal Water District	53,160	—	—	1,500	—	0.03	18
Total Authority Area	349,493	258,634	464,886	702,300	10	2.01	1,286
San Diego County	2,725,100	289,348	556,808	769,200	8	0.28	181

(1) Population in agencies other than cities was estimated from population of judicial townships.

(2) Population in agencies other than cities was furnished by agencies.

(3) Estimated.

(4) Estimated by Agencies.

TABLE 4

ASSESSED VALUATIONS—AUTHORITY CONSTITUENT AREAS AND COUNTY

Constituent area	Area 6/30/55	Assessed Valuation Secured and Unsecured				Annual Increase	Per cent	Assessed Valuation 1955-56
		1953-54		1954-55				
		Total	Per acre	Total	Per acre			
Bueno Colorado M.W.D.	47,400	*\$ 15,561,400	\$ 362	*\$ 17,169,875	\$ 362	10.3	\$ 18,483,200	
Carlsbad M.W.D.	20,883	* 7,490,890	*	9,051,290	433	20.8	16,106,960	
Escondido	1,940	8,492,910	10,157,470	5,236	5,236	19.6	10,904,780	
Fallbrook Public Utility District	8,192	5,080,060	5,595,260	683	683	10.1	6,777,260	
Lakeside Irrigation District	1,860	1,353,840	1,505,720	810	810	11.2	1,577,820	
La Mesa, Lemon Grove and Spring Valley Irrigation District	30,437	67,338,950	76,103,190	2,500	2,500	13.0	85,837,120	
National City	4,676	17,786,340	19,898,740	4,256	4,256	11.9	21,936,560	
Oceanside	8,093	16,928,320	19,542,060	2,415	2,415	15.4	20,778,890	
Poway M.W.D.	10,800	* 1,260,780	* 1,351,476	125	125	7.2	1,700,710	
Rainbow M.W.D.	33,900	* 2,569,750	* 2,974,563	88	88	15.8	2,866,640	
Rincon del Diablo M.W.D.	22,392	* 9,759,750	* 10,979,800	490	490	12.5	10,680,280	
San Diego	78,833	457,906,330	507,527,340	6,438	6,438	10.8	535,879,880	
San Diego Irrigation Dist. (2)	4,009	7,421,680	8,374,500	2,089	2,089	12.8	8,907,810	
Santa Fe Irrigation District	10,106	6,033,680	7,004,670	693	693	16.1	7,656,400	
South Bay Irrigation District	12,812	34,584,930	39,400,540	3,075	3,075	13.9	44,316,650	
Valley Center M.W.D.	53,160	* 2,341,755	* 2,515,740	47	47	7.4	2,689,740	
Total Authority Area	349,493	\$661,911,565	\$739,152,254	\$2,115	\$2,115	11.7	\$797,100,700	
San Diego County	1,250,049(1)	\$747,351,600	\$832,232,380	\$ 666	\$ 666	11.4	\$893,257,210	

(1) Excluding 1,475,052 acres of tax-exempt lands in San Diego County as of October 30, 1949.

(2) Includes area excluded from Agency but not from Authority.

*Estimated

TABLES

TABLE 5
DELIVERIES OF COLORADO RIVER WATER—1947 to 1955
(All figures in acre-feet)

Constituent Areas	(1) 1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55
Bueno Colorado Municipal Water District	—	—	—	—	—	—	0	3,627.3
Carlsbad Municipal Water District	—	—	—	117.1	540.0	—	54.0	1,599.7
Escondido	690.6	2,125.4	3,004.0	3,979.2	2,209.7	382.8	738.9	928.9
Fallbrook Public Utility District	0	3.5	30.4	27.2	20.8	3,566.1	5,720.4	7,030.7
Lakeside Irrigation District	—	—	—	—	—	80.2	99.2	226.5
La Mesa, Lemon Grove & Spring Valley Irrigation District	4,256.3	8,080.1	4,792.6	8,282.5	5,514.8	5,100.5	5,311.4	11,659.5
National City & South Bay I.D.	3,636.6	10,510.7	10,973.2	12,964.7	6,649.0	0	4,895.5	5,716.2
Oceanside	0	1.5	127.8	558.5	513.4	604.1	1,469.5	2,064.0
Poway Municipal Water District	—	—	—	—	—	—	0	523.7
Rainbow Municipal Water District	—	—	—	—	—	—	137.1	1,416.2
Rincon del Diablo Municipal Water District	32,461.0	50,126.8	35,371.2	51,453.9	43,745.3	20,684.9	51,176.3	60,059.1
San Diego	—	451.3	1,655.0	1,043.8	691.0	0	32.8	913.3
San Dieguito Irrigation District	—	270.8	2,657.9	832.1	146.8	0	0	358.4
Santa Fe Irrigation District	—	—	—	—	—	—	—	0
Valley Center Municipal Water District	—	—	—	—	—	—	—	0
Total Sales to Agencies	41,044.5	71,570.1	58,612.1	79,259.0	60,030.8	30,418.6	69,635.1	98,968.8
Total Sales to Others	0	0	0	0	0	49.4	13.7	3.4
Total to Authority Storage	0	0	+10,652.0	+821.4	+5,765.2	+1,612.8	+1,722.2	+6,217.5
Total from Authority Storage	0	0	0	-6,265.5	-3,176.0	-3,514.5	-4,113.6	-2,975.7
Total Deliveries from Aqueduct	41,044.5	71,570.1	69,264.1	73,814.9	62,618.0	28,566.3	67,257.4	102,213.8
Rate of Flow:								
c.f.s. to Agencies & Others	98.3	98.9	81.0	109.5	82.7	42.1	96.2	136.7
c.f.s. to Authority Storage	0	0	+14.7	+1.1	+7.9	+2.2	+2.4	+8.6
c.f.s. from Authority Storage	0	0	0	-8.6	-4.4	-4.8	-5.7	-4.1
c.f.s. total from Aqueduct	98.3	98.9	95.7	102.0	86.2	39.5	92.9	141.2

(1) The operation of the Aqueduct was formally initiated on November 27, 1947.

Constituent Areas	May	June	Total 6 Months	Yearly Total	Yearly Average c.f.s.
Bueno Colorado M.W.D.	477.2	655.8	2,260.1	3,627.3	5.01
Carlsbad M.W.D.	150.7	99.3	798.3	1,599.7	2.21
Escondido, City of	114.6	129.9	466.1	928.9	1.28
Fallbrook Public Utility District	510.2	732.2	2,685.0	7,030.7	9.71
Lakeside Irrigation District	31.6	48.5	158.0	226.5	0.31
La Mesa, Lemon Grove & Spring Valley Irrigation District	953.5	1,230.5	5,567.5	11,609.5	16.04
National City & South Bay I.D.	1,127.9	888.0	4,634.5	5,706.2	7.88
Oceanside, City of	220.2	255.4	1,047.8	2,064.0	2.85
Poway Municipal Water District	43.3	130.3	324.7	523.7	0.72
Rainbow M.W.D.	109.9	197.7	570.9	1,416.2	1.96
Rincon del Diablo M.W.D.	386.4	786.7	2,905.3	2,905.3	4.01
San Diego, City of	5,847.5	4,215.1	31,828.7	60,059.1	82.96
San Dieguito Irrigation District	0	0	483.3	913.3	1.26
Santa Fe Irrigation District	123.0	116.4	358.4	358.4	0.50
Valley Center M.W.D.	—	0	—	0	0
Total Sales to Agencies	10,096.0	9,485.8	54,088.6	98,968.8	136.70
Total Sales to Others	0.2	0.5	1.8	3.4	0.01
Total Sales to Agencies & Others	10,096.2	9,486.3	54,090.4	98,972.2	136.71
Total to Authority Storage	+1,717.0	+139.3	+5,599.2	+6,217.3	+8.59
Total from Authority Storage (1)	-312.7	-412.9	-933.7	-2,975.7	-4.11
Total Deliveries from Aqueduct	11,500.5	9,212.7	58,755.9	102,213.8	141.19
Rate of Flow:					
c.f.s. to Agencies and Others	164.2	159.4	150.7	136.71	
c.f.s. to Authority Storage	+27.9	+2.3	+15.6	+8.59	
c.f.s. from Authority Storage (1)	-5.1	-6.9	-2.6	-4.11	
Total Deliveries from Aqueduct	187.0	154.8	163.7	141.19	

103,220.5 acre feet was delivered in 1955; 975.1 acre feet from the Aqueduct. 31.6 acre feet was delivered by the Metropolitan Water District.

(1) Not including losses by evaporation.

TABLE 6
DELIVERIES AND SALES OF COLORADO RIVER WATER—FISCAL YEAR 1954-55
(All Figures in Acre-Feet)

Constituent Areas	July	August	Sept.	Oct.	Nov.	Dec.	Total 6 Months	Jan.	Feb.	Mar.	Apr.	May	June	Total 6 Months	Yearly Total	Yearly Average c.f.s.
Bueno Colorado M.W.D.	129.0	148.8	728.9	314.1	46.4	0	1,367.2	11.0	45.3	496.0	574.8	477.2	655.8	2,260.1	3,627.3	5.01
Carlsbad M.W.D.	191.8	113.5	130.4	156.8	92.5	116.4	801.4	130.6	107.4	167.9	142.4	150.7	99.3	798.3	1,599.7	2.21
Escondido, City of	135.3	103.0	97.0	79.8	47.7	0	462.8	0	0	62.2	159.4	114.6	129.9	466.1	928.9	1.28
Fallbrook Public Utility District	947.1	950.4	966.6	738.9	413.2	329.5	4,345.7	189.2	207.2	295.6	750.6	510.2	732.2	2,685.0	7,030.7	9.71
Lakeside Irrigation District	16.0	14.4	13.5	17.0	1.6	6.0	68.5	3.4	13.4	22.6	38.5	31.6	48.5	158.0	226.5	0.31
La Mesa, Lemon Grove & Spring Valley Irrigation District	604.4	573.9	1,465.8	1,293.8	932.5	1,171.6	6,042.0	611.3	778.7	896.0	1,097.5	953.5	1,230.5	5,567.5	11,609.5	16.04
National City & South Bay I.D.	464.5	412.6	194.6	0	0	0	1,071.7	0	616.3	809.1	1,193.2	1,127.9	888.0	4,634.5	5,706.2	7.88
Oceanside, City of	154.4	230.4	205.1	152.7	142.4	131.2	1,016.2	99.5	104.1	159.3	209.3	220.2	255.4	1,047.8	2,064.0	2.85
Poway Municipal Water District	8.9	36.7	57.1	45.1	26.8	24.4	199.0	6.0	9.3	32.6	103.2	43.3	130.3	324.7	523.7	0.72
Rainbow M.W.D.	125.0	255.8	228.7	137.8	68.1	29.9	845.3	2.9	31.8	106.0	122.6	109.9	197.7	570.9	1,416.2	1.96
Rincon del Diablo M.W.D.	0	0	0	0	0	0	0	79.5	156.2	402.0	1,094.5	386.4	786.7	2,905.3	2,905.3	4.01
San Diego, City of	5,000.0	4,495.2	5,000.0	4,953.0	4,989.1	3,793.1	28,230.4	5,097.6	5,783.6	6,112.1	4,772.8	5,847.5	4,215.1	31,828.7	60,059.1	82.96
San Dieguito Irrigation District	430.0	0	0	0	0	0	430.0	0	0	209.5	273.8	0	0	483.3	913.3	1.26
Santa Fe Irrigation District	0	0	0	0	0	0	0	0	0	0	119.0	123.0	116.4	358.4	358.4	0.50
Valley Center M.W.D.	—	—	—	—	—	—	—	—	—	—	—	—	0	—	0	0
Total Sales to Agencies	8,206.4	7,334.7	9,087.7	7,889.0	6,760.3	5,602.1	44,880.2	6,231.0	7,853.3	9,770.9	10,651.6	10,096.0	9,485.8	54,088.6	98,968.8	136.70
Total Sales to Others	0	0.1	0.1	0.5	0.5	0.4	1.6	0.2	0.2	0.2	0.5	0.2	0.5	1.8	3.4	0.01
Total Sales to Agencies & Others ..	8,206.4	7,334.8	9,087.8	7,889.5	6,760.8	5,602.5	44,881.8	6,231.2	7,853.5	9,771.1	10,652.1	10,096.2	9,486.3	54,090.4	98,972.2	136.71
Total to Authority Storage	+148.6	+ 31.2	+438.3	+ 0	+ 0	+ 0	+618.1	+604.9	+495.2	+1,597.9	+1,044.9	+1,717.0	+139.3	+5,599.2	+6,217.3	+8.59
Total from Authority Storage ..(1)	-518.5	-162.2	-834.8	-526.5	- 0	- 0	-2,042.0	- 0	- 0	- 15.2	- 192.9	- 312.7	-412.9	-933.7	-2,975.7	-4.11
Total Deliveries from Aqueduct	7,836.5	7,203.8	8,691.3	7,363.0	6,760.8	5,602.5	43,457.9	6,836.1	8,348.7	11,353.8	11,504.1	11,500.5	9,212.7	58,755.9	102,213.8	141.19
Rate of Flow:																
c.f.s. to Agencies and Others	133.5	119.3	152.7	128.3	113.6	91.1	123.0	101.4	141.4	158.9	179.0	164.2	159.4	150.7	136.71	
c.f.s. to Authority Storage	+2.4	+0.5	+7.4	+0	+0	+0	+1.7	+9.8	+8.9	+26.0	+17.5	+27.9	+2.3	+15.6	+8.59	
c.f.s. from Authority Storage (1)	-8.4	-2.6	-14.0	-8.6	-0	-0	-5.6	-0	-0	-0.2	-3.2	-5.1	-6.9	-2.6	-4.11	
Total Deliveries from Aqueduct	127.5	117.2	146.1	119.7	113.6	91.1	119.1	111.2	150.3	184.7	193.3	187.0	154.8	163.7	141.19	

103,220.5 acre feet was delivered into San Diego Aqueduct by the Metropolitan Water District at San Jacinto Reservoir. There was an estimated loss of 975.1 acre feet from the Aqueduct. 31.6 acre feet was delivered by the Metropolitan Water District to contractors for construction of the Second Barrel of the Aqueduct.

(1) Not including losses by evaporation.

TABLE 7

WATER PRODUCTION OF AUTHORITY AGENCIES—FISCAL YEAR 1954-55

Constituent Areas	TOTAL WATER PRODUCTION				LOCAL			COLORADO RIVER		
	as ac. ft.	as m.g.d.	as c.f.s.	Amount ac. ft.	Per cent	Amount ac. ft.	Per cent	Amount ac. ft.	Per cent	
Bueno Colorado M.W.D.	12,707.0	11.34	17.55	9,079.7	71.5	3,627.3	28.5			
Carlsbad Municipal Water District	2,444.8	2.18	3.38	1,258.1	51.5	1,186.7	48.5			
Escondido	1,712.2	1.53	2.37	783.3	45.7	928.9	54.3			
Fallbrook Public Utility District	8,000.9	7.14	11.05	860.0	10.7	7,140.9	89.3			
Lakeside Irrigation District	354.7	0.32	0.49	128.4	36.2	226.3	63.8			
La Mesa, Lemon Grove and Spring Valley Irrigation District	15,556.8	13.89	21.49	3,959.6	25.5	11,597.2	74.5			
National City & South Bay I.D.	12,840.0	11.46	17.74	7,133.0	55.6	5,707.0	44.4			
Oceanside	4,098.7	3.66	5.66	2,034.7	49.6	2,064.0	51.4			
Poway Municipal Water District	533.7	0.49	0.76	30.0	5.4	523.7	94.6			
Rainbow Municipal Water District	2,829.7	2.53	3.91	1,413.5	50.0	1,416.2	50.0			
Rincon del Diablo M.W.D.	10,023.0	8.95	13.84	7,117.0	71.0	2,906.0	29.0			
City of San Diego:										
Inside City	66,000.6	58.92	91.16	15,678.3	23.8	50,322.3	76.2			
Outside City (not in Authority)	2,610.5	2.33	3.61	2,610.5	100.0	0	0			
San Diego Irrigation District	3,329.0	2.97	4.60	2,194.4	65.9	1,134.6	34.1			
Santa Fe Irrigation District	3,361.1	3.00	4.64	3,002.7	89.3	358.4	10.7			
Valley Center M.W.D.	0	0	0	0	0	0	0			
Total	146,422.7	130.71	202.25	57,283.2	39.1	89,139.5	60.9			

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TABLES

NOTE: This table is a compilation of data furnished by member agencies. Figures include losses in transmission and distribution systems but not in conservation reservoirs.

TABLE 8
WATER PRODUCTION BY AUTHORITY AGENCIES—FISCAL YEARS 1941-42 to 1954-55
 (All Figures in Acre-Feet)

Constituent Areas	From Local Sources						From Local and Authority Supplies						
	1942-43	1943-44	1944-45	1945-46	1946-47	1947-48	1948-49	1949-50	1950-51	1951-52	1952-53	1953-54	1954-55
Bueno Colorado M.W.D.	(a)	11,333	10,590	13,200	12,335	13,407	11,344	11,977	13,484	7,572	11,171	11,671	*12,707
Carlsbad Municipal Water District	1,900	2,177	2,274	2,444	2,582	2,856	2,613	2,499	2,033	2,074	2,565	*2,961	2,445
Escondido	663	668	711	707	835	954	801	858	*1,034	1,033	1,238	1,398	1,712
Fallbrook Public Utility District	1,232	1,464	1,439	2,120	2,596	*3,470	3,613	5,379	5,777	5,803	6,635	7,636	8,001
Lakeside Irrigation District	60	61	65	69	90	*103	110	161	183	197	292	292	355
La Mesa, Lemon Grove and Spring Valley Irrigation District	6,455	7,316	7,423	8,920	9,790	*10,290	9,325	10,204	11,412	9,858	13,524	15,519	15,557
National City & South Bay I.D.	9,048	9,963	9,288	10,799	10,519	*10,265	+11,293	+12,709	11,750	10,491	11,308	12,076	12,840
Oceanside	1,508	1,713	1,881	2,304	2,519	*2,787	2,641	2,977	3,035	2,955	3,533	3,954	4,099
Poway Municipal Water District	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	*554
Rainbow Municipal Water District	(a)	(a)	(a)	107	179	385	699	892	1,336	1,120	1,657	*1,697	2,830
Rincon del Diablo M.W.D.	8,504	8,339	7,852	8,710	8,799	9,239	7,372	7,668	6,905	5,577	7,710	8,401	*10,023
City of San Diego:													
Inside City	43,966	49,742	53,473	56,266	49,431	*51,078	49,693	51,410	54,935	53,784	60,552	63,258	66,000
Outside City (not in Authority) ..	504	815	1,223	1,147	1,038	1,329	1,946	1,049	2,051	1,406	2,396	2,373	2,610
San Diegoito Irrigation District	2,280	2,521	2,611	2,966	3,369	3,034	*2,303	2,899	3,039	2,326	3,139	3,440	3,329
Santa Fe Irrigation District	3,073	3,300	2,760	3,539	3,512	3,491	*2,878	3,372	3,515	2,539	3,358	3,255	3,361
Valley Center M.W.D.	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Total	79,193	99,412	105,590	113,298	105,594	112,708	106,651	114,054	120,489	106,755	129,078	137,901	146,423

*Delivery of Colorado River Water began in this year.

+Includes evaporation losses of Colorado River Water in Sweetwater Reservoir.

(a) Not available.

TABLE 9
UNIT WATER PRODUCTION—PER ACRE AND PER CAPITA—1954-55

Constituent Areas	Gross Area (2) acres	Total Production of water ac. ft.	Estimated area served by water system acres	Water production per acre ac.ft./acre/yr.	Estimated population	Water production per capita ac.ft./cap./yr.
Bueno Colorado Municipal Water Dist.	47,400	12,707.0	12,783	0.99	21,000	0.61
Carlsbad Municipal Water District	20,883	2,448.8	5,185	0.47	8,000	0.31
Escondido	1,940	1,712.2	1,940	0.88	8,850	0.19
Fallbrook Public Utility District	8,192	8,000.9	8,192	0.98	8,500	0.94
Lakeside Irrigation District	1,860	354.7	1,420	0.25	2,150	0.16
La Mesa, Lemon Grove & Spring Valley Irrigation District	30,437	15,556.8	14,312	1.09	63,800	0.24
National City	4,676	3,045.0	3,136	0.97	26,000	0.12
Oceanside	8,093	4,098.7	7,710	0.53	21,000	0.20
Poway Municipal Water District	10,800	533.7	5,000	0.11	1,000	0.55
Rainbow Municipal Water District	33,900	2,829.7	7,100	0.40	2,300	1.23
Rincon del Diablo M.W.D.	22,392	10,023.0	9,065	1.11	11,500	0.87
San Diego	78,833	66,000.6	51,200	1.29	466,000	0.14
San Diegoito Irrigation District	4,009	3,329.0	4,009	0.83	9,720	0.34
Santa Fe Irrigation District	10,106	3,361.1	10,106	0.33	4,580	0.73
South Bay Irrigation District	12,812	9,795.0	7,265	1.35	46,400	0.21
Valley Center M.W.D.	53,160	0	0	0	1,500	—
Total and Average	(1) 349,493	143,812.2	148,423	0.97	702,300	0.20

(1) Does not include production by City of San Diego for areas outside City (not in Authority).

(2) Does not include overlapping area as shown in Table 2.

SAN DIEGO COUNTY WATER AUTHORITY

TABLE 10
 AUTHORITY STORAGE IN SAN VICENTE RESERVOIR
 (Fiscal Year 1954-55)

Constituent Areas	Total Quantity in Storage 7/1/54 (acre-feet)	Placed into Storage During Fiscal Year (acre-feet)	Withdrawn During Fiscal Year (acre-feet)	Total Quantity in Storage 6/30/55 (acre-feet)
Bueno Colorado M.W.D.	0	762.0	264.6	497.4
Carlsbad Municipal Water Dist.	0	225.0	0	225.0
Escondido	166.1	300.0	166.1	300.0
Fallbrook Public Utility District	0	143.0	143.0	0
Lakeside Irrigation District	24.1	40.3	58.1	6.3
La Mesa, Lemon Grove & Spring Valley Irrigation District	746.9	3,828.7	1,508.3	3,067.3
National City & South Bay I.D.	0	0	0	0
Oceanside	0	200.0	0	200.0
Poway Municipal Water District	44.7	37.0	81.7	0
Rainbow Municipal Water Dist.	0	42.2	42.2	0
Rincon del Diablo M.W.D.	0	236.1	236.1	0
San Diego	0	0	0	0
San Dieguito Irrigation Dist.	430.0	215.5	430.0	215.5
Santa Fe Irrigation District	0	0	0	0
Valley Center M.W.D.	—	23.3	0	23.3
Authority (for evaporation)	52.3	164.2	*173.9	42.6
Total	1,464.1	6,217.3	3,104.0	4,577.4

*Including 44.6 acre feet (unused evaporation) transferred to City of San Diego.

TABLES

TABLE 11
 CHEMICAL CHARACTER OF NATURAL COLORADO RIVER
 WATER AT WEST PORTAL OF SAN JACINTO TUNNEL
 Year Ending June 30, 1955
 Samples taken at entrance to San Diego Aqueduct by M.W.D.
 and analyzed at District Laboratory

Month	Total Hardness as P.P.M. CaCO ₃	Non Carbonate Hardness as P.P.M. CaCO ₃	Alkalinity as P.P.M. CaCO ₃		Magnesium as P.P.M. of Mg.	Hydrogen Ion Concentration	Temperature when sampled °F
			Total	Phenolphthalein			
July	317	197	120	0	29	8.4	80
August	317	193	124	1	29	8.3	—
September	320	196	124	1	29	8.3	79
October	322	201	121	1	29	8.3	74
November	324	199	125	1	28.5	8.4	67
December	329	203	126	1	29	8.3	61
January	334	209	125	2	30	8.0	52
February	332	206	126	1	29.5	8.3	51
March	337	209	128	1	29	8.3	50
April	341	213	128	1	29.5	8.3	60
May	346	220	126	0	30	8.5	66
June	359	235	124	0	32	8.4	74
Average	331	207	125	1	29.5	8.3	—
Maximum	359	235	128	2	32	8.5	80
Minimum	317	193	120	0	28.5	8.0	50

SAN DIEGO COUNTY WATER AUTHORITY

TABLE 12
ESTIMATED PREFERENTIAL RIGHT TO PURCHASE COLORADO RIVER WATER
as of June 30, 1955

Constituent Areas	Total Amount Paid by Each Member Agency to 6/30/55	Amount Remaining under Terms of Annexation	Total Contributions Paid and Contracted for	Preferential right to purchase	
				Percentage of Aqueduct Flow	Equivalent Flow Completed Aqueduct C.f.s.
Bueno Colorado Municipal Water Dist. ...	\$ 0	\$122,400.00	\$122,400.00	2.54	4.95
Carlsbad Municipal Water District	0	57,700.00	57,700.00	1.20	2.34
Escondido	46,040.58	14,976.12	61,016.70	1.26	2.46
Fallbrook Public Utility District	35,412.98	0	35,412.98	0.73	1.42
Lakeside Irrigation District	7,911.98	0	7,911.98	0.16	0.31
La Mesa, Lemon Grove & Spring Valley Irrigation District	393,024.51	40,800.00	433,824.51	8.99	17.53
National City	122,015.26	0	122,015.26	2.53	4.93
Oceanside	109,086.24	0	109,086.24	2.26	4.41
Poway Municipal Water District	0	10,400.00	10,400.00	0.22	0.43
Rainbow Municipal Water District	0	18,000.00	18,000.00	0.37	0.72
Rincon del Diablo Municipal Water Dist.	0	82,700.00	82,700.00	1.71	3.34
San Diego	3,420,491.21	0	3,420,491.21	70.86	138.18
San Dieguito Irrigation District	48,113.70	4,323.45	52,637.15	1.09	2.13
Santa Fe Irrigation District	40,637.27	3,345.06	44,182.33	0.92	1.79
South Bay Irrigation District	199,093.86	29,333.80	228,447.66	4.73	9.22
Valley Center M.W.D.	0	23,600.00	23,600.00	0.43	0.84
Total Authority	\$4,421,827.59	\$407,998.43	\$4,829,826.08 (\$4,827,076.02)*	100.00	195.00

*Back taxes for period to June 30, 1955

TABLES

TABLE 13
STATEMENT OF ASSESSED VALUATIONS AND TAX RATES TO JUNE 30, 1955

Fiscal Year	Secured Real Personal	Public Utilities	Unsecured Personal	Total	Tax Rate per \$100	
					Secured	Unsecured
1945-46	\$212,082,975	\$28,253,700	\$29,960,130	\$270,296,805	\$0.04	\$ 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	48,432,940	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

Debt limit 15 per cent of last equalized assessed valuation of Authority.

Basis of assessment approximately 50 per cent.

(1) City of Coronado and Ramona Irrigation District secured assessed valuations not included in this or subsequent tax levies by the Authority, they having withdrawn from the Authority prior to 1946-47.

(2) City of Coronado and Ramona Irrigation District not included in this or subsequent total valuation.

TABLE 14
STATEMENT OF FINANCIAL POSITION
June 30, 1955

ASSETS		
CURRENT ASSETS—GENERAL FUND:		
Cash with treasurer	\$ 39,792.30	
Petty cash	100.00	
Accounts receivable	126,623.93	
Inventory of Water in Storage	39,784.60	
Investments	199,836.01	
Delinquent taxes receivable	\$ 4,208.82	
Less allowance for estimated losses	4,208.82	—
Total current assets		\$ 406,136.84
SPECIAL FUND ASSETS:		
General Reserve Fund:		
Cash with treasurer	161,880.35	
Investments	200,000.00	361,880.35
Bonds Interest and Sinking Fund:		
Cash with treasurer	16,211.07	
Cash with fiscal agent for payment of bond interest	18,870.00	
Investments	585,006.19	
Delinquent taxes receivable	\$ 3,431.41	
Less allowance for est. losses	3,431.41	—
		620,087.26
U.S. Government Contract Fund:		
Cash with treasurer	6,583.11	
Due from M.W.D.:		
On 1st Barrel, S.D. Aqued. ..	5,687,500.00	
On 2nd barrel, S.D. Aqued. ..	8,219,339.04	13,906,839.04
Investments	134,793.21	
Delinquent taxes receivable	12,101.75	
Less allowance for est. losses	12,101.75	—
		14,048,215.36
Special Tax Fund:		
Cash with treasurer	14,197.50	
Investments	20,000.00	
Annexation charges receivable— not due	407,988.43	
Delinquent taxes receivable	584.22	
Less allowance for est. losses	584.22	—
		442,185.93
Total special fund assets		15,472,368.90
FIXED ASSETS:		
Cost of participation rights in Metropolitan Water District to June 30, 1955		
Plant	17,620,916.46	28,041,193.08
Less allowance for depreciation	718,572.05	
	16,902,344.41	
Work in progress	78,162.97	16,980,507.38
Total fixed assets		45,021,700.46
		<u>\$60,900,206.20</u>

TABLES

TABLE 14 (Continued)
STATEMENT OF FINANCIAL POSITION
June 30, 1955

LIABILITIES		
CURRENT LIABILITIES—GENERAL FUND:		
Accounts payable	\$ 9,818.18	
Advances by agencies for construction	5,868.21	
Total current liabilities		\$ 15,686.39
LONG-TERM OBLIGATIONS:		
General obligation bonds payable— not due		
		1,850,000.00
Estimated balance due on U. S. Government contract:		
For cost of 1st Barrel, S.D. Aqueduct	\$11,375,000.00	
For cost of 2nd Barrel, S.D. Aqueduct	15,064,369.04	26,439,369.04
Balance due Metropolitan Water District on annexation charges		13,773,976.85
Total long-term obligations		42,063,345.89
SURPLUS:		
Invested in fixed assets— Reserves for debt redemption:		
For retirement of general obligation bonds	620,087.26	
For retirement of U.S. Government contract	14,048,215.36	
Total reserves for debt redemption		14,668,302.62
Appropriated:		
For petty cash fund balance	100.00	
For general reserve fund balance ..	361,880.35	
For special tax fund balance	442,185.93	
For incomplete projects (continuing appropriations)	63,625.86	
Total appropriated	867,792.14	
Unappropriated surplus	326,724.59	
Total surplus		18,821,173.92
		<u>\$60,900,206.20</u>

SAN DIEGO COUNTY WATER AUTHORITY

TABLE 15
STATEMENT OF INCOME AND EXPENSE
July 1, 1954 to June 30, 1955

INCOME DIVISION			
OPERATING INCOME:			
Water sales			\$ 1,116,300.68
DEDUCT OPERATING COSTS:			
Cost of water sold:			
Inventory of water in storage			
July 1, 1954	\$ 14,641.00		
Water purchased	942,865.20		
Storage charges	1,149.00		
	<u>958,655.20</u>		
Less inventory of water in storage,			
June 30, 1955	39,784.60	\$918,870.60	
Direct operating expense		40,789.36	
General and administrative expense		80,143.79	
		<u>1,039,803.75</u>	
Total operating costs			1,039,803.75
Net operating income before			
depreciation and debt service			
expense			76,496.93
DEDUCT DEPRECIATION AND			
DEBT SERVICE EXPENSE:			
Depreciation		124,079.96	
Debt service expense		142,592.06	266,672.02
		<u>(190,175.09)</u>	
Net operating income (deficit)			(190,175.09)
ADD NON-OPERATING INCOME:			
Revenue from taxes	107,796.68		
Less collection expense	263.03	107,533.65	
	<u>107,533.65</u>		
Miscellaneous revenues		4,482.36	
Net gain on disposal of fixed asset		245.00	
Operating expense provided by			
General Reserve Fund		7,881.50	
Debt service expense provided by:			
Bonds Interest and Sinking Fund	37,625.00		
U. S. Government Contract Fund	50,972.83		
Refund from Metropolitan			
Water District	53,740.77	142,338.60	262,481.11
	<u>142,338.60</u>		
Net income for the year to surplus ..			\$ 72,306.02

TABLES

TABLE 15 (Continued)
STATEMENT OF INCOME AND EXPENSE
July 1, 1954 to June 30, 1955

SURPLUS DIVISION			
SURPLUS, JULY 1, 1955:			
Appropriated surplus:			
For incomplete projects	\$ 59,757.04		
For petty cash fund	100.00	\$ 59,857.04	
	<u>59,857.04</u>		
Unappropriated surplus:			
Water in storage	14,641.00		
Available for reduction of tax levy	178,693.28	193,334.28	\$253,191.32
	<u>193,334.28</u>		
ADDITIONS TO SURPLUS:			
Depreciation charged to surplus entailing			
no expenditure of current funds	124,079.96		
Refunds of prior year's expenditures	471.64		
Net income for the year from income division	72,306.02	196,857.62	
	<u>196,857.62</u>		
Construction funds provided by:			
U. S. Government Contract Fund	30,122.44		
Agencies' advances for special construction	10,405.89	40,528.33	237,385.95
	<u>40,528.33</u>		
			490,577.27
DEDUCTIONS FROM SURPLUS:			
Expenditures for construction work:			
From General Fund	56,047.98		
From U. S. Government Contract Fund	30,122.44		
From agencies' advances for special			
construction	10,405.89	96,576.31	
	<u>96,576.31</u>		
Expenditures for furniture, fixtures and			
equipment		3,550.51	100,126.82
		<u>3,550.51</u>	
Surplus, June 30, 1955			\$390,450.45
			<u>\$390,450.45</u>
CONSISTING OF:			
Appropriated surplus:			
For incomplete projects	\$ 63,625.86		
For petty cash fund	100.00	\$ 63,725.86	
	<u>63,725.86</u>		
Unappropriated surplus:			
Water in storage	39,784.60		
Available	286,939.99	326,724.59	
	<u>326,724.59</u>		
			\$390,450.45

SAN DIEGO COUNTY WATER AUTHORITY

TABLE 16
STATEMENT OF REVENUE—ESTIMATED AND ACTUAL
Fiscal Year Ended June 30, 1955

Source	Estimated Revenue	Actual Revenue	Actual Over or (Under) Estimate
Taxes, secured, current levy	\$ 603,930.00	\$ 614,467.60	\$10,537.60
Taxes, unsecured, current levy ..	80,300.00	80,683.86	383.86
Taxes, secured, prior years' levies	9,650.00	12,491.47	2,841.47
Taxes, unsecured, prior years' levies	350.00	103.85	(246.15)
Penalties and interest on delinquent taxes	800.00	1,603.71	803.71
Miscellaneous tax on options		4.48	4.48
Receipts in lieu of taxes	15,000.00	14,982.77	(17.23)
Miscellaneous tax sales		261.63	261.63
Sale of water	1,040,000.00	1,116,300.68	76,300.68
Earnings on investments	35,000.00	32,693.85	(2,306.15)
Rentals	2,300.00	2,137.00	(163.00)
Use of Authority facilities		180.00	180.00
Total	\$1,787,330.00	\$1,875,910.90	\$88,580.90
DISTRIBUTION BY FUNDS:			
General Fund	\$1,150,380.00	\$1,228,579.72	\$78,199.72
Bonds Interest and Sinking Fund	100,750.00	101,714.23	964.23
U. S. Government Contract Fund	516,300.00	525,107.97	8,807.97
General Reserve Fund	6,000.00	6,200.00	200.00
Special Tax Fund	13,900.00	14,308.98	408.98
Total	\$1,787,330.00	\$1,875,910.90	\$88,580.90

TABLES

TABLE 17
STATEMENT OF APPROPRIATIONS AND EXPENDITURES
July 1, 1954 to June 30, 1955

E&A No.	Purpose	Prior Years' Appropriation Carried Over	Appropriations 1954-55	Expenditures 1954-55	Cancelled Appropriations	Unexpended Appropriations 6/30/55
C-110	Construction of access roads	\$ 2,842.71		1,900.78	\$ 941.93	\$10,368.63
136	Co-operative construction of Second Barrel ..	16,318.50	\$ 30,122.44	36,072.31		
149	Service connection—Rainbow M.W.D.	2,579.07		523.49	2,055.58	
152	Service connection—Poway M.W.D.	9,962.64		6,667.68	3,294.96	
154	Purchase of water for resale		976,000.00	944,014.20	31,985.80	
155	Payment of bonds and interest coupons		87,625.00	87,625.00		
156	Payments lease—purchase of S. D. Aqueduct ..		250,000.00	250,000.00		
157	Operation and maintenance		128,500.00	112,855.62	15,644.38	
158	Service connection— Bueno Colorado M.W.D.	13,054.12		6,539.92	6,514.20	
159	Service connection— Rincon del Diablo M.W.D.	15,000.00		10,723.47	4,276.53	
161	Engineering survey			13,742.77		3,257.23
164	Repair work on Aqueduct		17,000.00	7,881.50	12,118.50	
165	Construction of Headquarters Building		20,000.00	10,000.00		50,000.00
166	Construction of By-Pass Line, San Vicente Reservoir		60,000.00			
167	Payments to U. S.—Lease-purchase of Second Barrel, S. D. Aqueduct		4,000.00	4,000.00		
			1,050,972.83	1,050,972.83		
		\$59,757.04	\$2,624,220.27	\$2,543,519.57	\$76,831.88	\$63,625.86

TABLE 18
SUMMARY STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
July 1, 1954 to June 30, 1955

	Cash Balance July 1, 1954	Cash		Disbursements	Inter-Fund Transfers		Cash Balance June 30, 1955
		Receipts	Disbursements		In	Out	
General Fund	\$ 90,980.39	\$1,370,394.32	\$1,347,097.72	\$	511.27	\$ 74,995.96	\$ 39,792.30
Bonds Interest and Sinking Fund	28,686.74	871,699.66	660,559.80	66,665.00	290,280.53	16,211.07	16,211.07
U. S. Contract Fund	120,105.81	2,144,271.34	2,756,268.26	498,546.18	71.96	6,383.11	6,383.11
General Reserve Fund	107,161.85	262,600.00	7,404.71	34.48	200,511.27	161,880.35	161,880.35
Special Tax Fund	19,926.15	14,361.45	20,192.89	102.79		14,197.50	14,197.50
Total all funds	\$366,860.94	\$4,663,326.77	\$4,791,523.38	\$565,859.72	\$565,859.72	\$238,664.33	\$238,664.33

TREASURY CASH ON DEPOSIT JUNE 30, 1955

First National Trust and Savings Bank.....	\$388,852.05
Bank of America National Trust and Savings Association.....	43,870.00
San Diego Trust and Savings Bank.....	50,000.00
Total Bank Balances	\$482,722.05
Deduct:	
Outstanding warrants	\$225,187.72
Special deposit for payment of bond interest coupons.....	18,870.00
Treasury cash June 30, 1955.....	244,057.72
	\$238,664.33

TABLE 19
STATEMENT OF BONDS PAYABLE
as of June 30, 1955

Description	Rate of Interest	Date of Issue	Maturity	Bonds		Outstanding	Sinking Fund		
				Authorized	Issued		Required	Actual	
Waterworks Bonds	2%-2 1/2%	1947	1971	\$2,000,000.00	\$2,000,000.00	\$1,850,000.00	\$545,652.16	\$601,217.26	\$55,565.10

STATEMENT OF BONDED DEBT MATURITIES

Fiscal Year	Bond Nos.	Rate	Interest Payable (1)		Bond Principal Payable (2)	Total Cash Required
			Amount	Amount		
1955-56	151-200	2%	\$ 36,500.00	\$	50,000.00	\$ 86,500.00
1956-57	201-300	2	35,000.00		100,000.00	135,000.00
1957-58	301-400	2	33,000.00		100,000.00	133,000.00
1958-59	401-500	2	31,000.00		100,000.00	131,000.00
1959-60	501-600	2	29,000.00		100,000.00	129,000.00
1960-61	601-700	2	27,000.00		100,000.00	127,000.00
1961-62	701-850	2	24,500.00		150,000.00	174,500.00
1962-63	851-1000	2	21,500.00		150,000.00	171,500.00
1963-64	1001-1150	2	18,500.00		150,000.00	168,500.00
1964-65	1151-1300	2	15,500.00		150,000.00	165,500.00
1965-66	1301-1450	2	12,500.00		150,000.00	162,500.00
1966-67	1451-1600	2	9,500.00		150,000.00	159,500.00
1967-68	1601-1700	2	7,000.00		100,000.00	107,000.00
1968-69	1701-1800	2	5,000.00		100,000.00	105,000.00
1969-70	1801-1900	2	3,000.00		100,000.00	103,000.00
1970-71	1901-2000	2	1,000.00		100,000.00	101,000.00
			\$309,500.00		\$1,850,000.00	\$2,159,500.00

(1) Interest payable January 1 and July 1.
(2) Maturity day January 1.

TABLE 20
STATEMENT OF TAX ASSESSMENTS AND COLLECTIONS
as of June 30, 1955

Member Agency	Tax Assessments to Date	Adjustments to Tax Assessments	Tax Collections	Interest and Penalties	Tax on Options	Receipts in Lieu of Taxes	Misc. Tax Sales	Less Refunds	Net Total Collections	Uncollected June 30, 1955
Fallbrook P.U.D.	\$ 32,202.55	\$ 4.17	\$ 31,863.17	\$ 142.79	\$.27	\$ 3,408.44	\$ 3.22	\$ 4.91	\$ 35,412.98	\$ 343.55
Lakeside Irr. Dist. ...	7,954.21	10.96	7,807.72	43.68	.05	45.00	19.38	3.85	7,911.98	157.45
La Mesa, Lemon Grove and Spring Valley I.D.	393,252.93	195.16	390,523.30	1,086.56	87.76	1,060.00	400.87	133.98	393,024.51	2,924.79
City of National City	116,917.94	(155.24)	115,830.82	409.31	5.38	6,189.33	36.92	456.70	122,015.26	931.88
City of Oceanside	106,936.76	145.89	106,286.10	265.83	5.11	2,560.68	42.70	74.18	109,086.24	796.55
City of San Diego	3,278,831.42	11,370.34	3,277,640.97	6,186.36	34.78	139,284.62	1,588.58	4,244.10	3,420,491.21	12,560.79
Santa Fe Irr. Dist.	40,052.84	147.17	39,894.35	123.94	10.69		616.61	8.32	40,637.27	305.66
San Diego I.D.	48,547.90	104.86	48,045.15	164.56	3.88		94.38	194.27	48,113.70	607.61
City of Escondido	45,904.97	396.39	45,984.08	43.99			17.88	5.37	46,040.58	317.28
South Bay Irr. Dist.	193,054.85	126.92	191,805.24	348.24	.39	7,279.06	26.01	365.08	199,093.86	1,376.33
Total member agencies	4,263,656.37	12,346.62	4,255,680.90	8,815.26	148.51	159,827.13	2,846.55	5,490.76	4,421,827.59	20,322.09
Withdrawn agencies ..	4,183.71	21.29	4,200.89	8.71	.15	186.64	.52		4,396.91	4.11
Total	\$4,267,840.08	\$12,367.91	\$4,259,881.79	\$8,823.97	\$148.66	\$160,013.77	\$2,847.07	\$5,490.76	\$4,426,224.50	\$20,326.20

ANALYSIS OF UNCOLLECTED TAXES BY FUNDS

General Fund	\$ 4,208.82
Bonds Interest and Sinking Fund	3,431.41
U. S. Contract Fund	12,101.75
Special Tax Fund	584.22
Total as above	\$20,326.20

TABLE 21
TAX LEVIES AND TAX COLLECTIONS
Fiscal Years 1945-46 to 1954-55

Fiscal Year	Tax Levy (1)	Collection of Current Year's 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	Ratio of Total Collections to Adjusted Tax Levy (2)	Accumulated Delinquent Taxes	Ratio of Accumulated Delinquent Taxes to Adjusted Tax Levy (2)
1945-46	\$ 96,131.33	\$ 94,656.51	98.47	\$	\$	\$ 94,656.51	98.47	\$ 1,474.82	1.53
1946-47	107,808.89	105,753.78	98.09		1,090.25	106,844.03	99.11	2,439.68	2.26
1947-48	389,591.57	381,563.14	97.94		1,882.72	383,445.86	98.42	8,585.39	2.20
1948-49	474,520.78	459,504.39	96.84		5,916.41	465,420.80	98.08	17,685.37	3.73
1949-50	401,112.07	392,732.15	97.91	329.58	13,342.55	406,074.70	101.15	13,032.32	3.25
1950-51	397,970.61	390,274.43	98.07	373.44	8,217.82	398,492.25	100.03	12,904.12	3.24
1951-52	450,405.19	441,242.12	97.97	978.87	7,699.55	448,941.67	99.46	15,346.51	3.40
1952-53	594,603.48	585,417.35	98.46	(1,140.34)	12,567.93	597,985.28	100.76	10,824.37	1.82
1953-54	652,335.08	640,239.42	98.15	4,213.42	9,942.33	650,181.75	99.03	17,191.12	2.62
1954-55	709,678.89	695,200.64	97.96	1,295.13	12,638.30	707,838.94	99.56	20,326.20	2.86

(1) Including adjustments to current year's levy.
(2) Including adjustments to current and prior years' levies.

TABLE 22

METROPOLITAN WATER DISTRICT SPECIAL TAX RATES ON AUTHORITY AREAS FOR ANNEXATION CHARGES

Constituent Areas	Date of Annexation	Amount of Annexation Charge	Period of Special Tax Levies		Special Tax Levies to 6/30/54	Fiscal Year 1954-55		Remaining Balance of Annexation Fee 6/30/55
			First Year	Last Year		Special Tax Levy	Tax Rate per \$100	
Chula Vista								
Fallbrook Public Utility District (area as of 12-17-1946)	12-17-46	\$13,045,000	1947-48	1976-77	\$3,047,938.67	\$460,548.88	7¢	\$ 9,536,512.45
Lakeside Irrigation District (area as of 12-17-1946)								
La Mesa, Lemon Grove and Spring Valley Irrigation District (area as of 12-17-1946)								
National City								
Oceanside								
San Diego								
Bueno Colorado Municipal Water District	6-11-54	1,072,230	1955-56	1984-85	0	0	0	1,072,230.00
Carlsbad Municipal Water District	6-16-54	548,100	1955-56	1984-85	0	0	0	548,100.00
Escondido	10-9-50	386,000	1951-52	1980-81	38,851.34	13,384.07	13¢	333,764.59
Fallbrook Public Utility District—1950 Annexation	8-1-50	34,600	1951-52	1980-81	9,888.57	908.56	10¢	23,802.87
Lakeside Irrigation District—1951 Annexation	7-18-52	352	1951-52	1951-52	352.00	0	0	0
La Mesa, Lemon Grove and Spring Valley Irrigation District: Crest Public Utility District Annexation during 1951	12-13-48	10,500	1949-50	1978-79	1,771.50	361.03	7¢	8,367.47
El Cajon Dry Island Annexation	5-14-52	9,875	1951-52	1951-52	9,875.00	0	0	0
Poway Municipal Water District	12-20-54	327,450	1955-56	1984-85	0	0	0	327,450.00
Rainbow Municipal Water District	4-21-54	91,800	1955-56	1984-85	0	0	0	91,800.00
Rincon del Diablo Municipal Water Dist.	4-10-54	167,700	1955-56	1984-85	0	0	0	167,700.00
San Diego Irrigation District	6-14-54	757,200	1955-56	1984-85	0	0	0	757,200.00
Santa Fe Irrigation District	12-13-48	187,100	1949-50	1978-79	31,444.61	6,699.60	8¢	148,955.79
South Bay Irrigation District (not including City of Chula Vista)	12-13-48	167,000	1949-50	1978-79	28,160.13	5,621.06	8¢	133,218.81
Valley Center Municipal Water District	11-3-52	449,370	1953-54	1982-83	15,178.25	14,956.15	15¢	419,235.60
	5-9-55	205,680	1956-57	1985-86	0	0	0	205,680.00
Total		\$17,459,957			\$3,183,460.07	\$502,479.35		\$13,774,017.58

TABLES

TABLE 23
WATER SALES BY METROPOLITAN WATER DISTRICT
Fiscal Years 1941-42 to 1954-55

Year	To Member Municipalities						
	Natural Water		Softened Water		Total to Agencies	To Others	Total
	Acre feet	Per cent	Acre feet	Per cent	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

TABLE 24
WATER PRODUCTION—METROPOLITAN WATER DISTRICT CONSTITUENT AREAS

Constituent Areas	Total Water Production			Source of Water Produced—1955			
	1953-54		Per cent increase or decrease	M.W.D.		Other	
	amount ac. ft.	1954-55 amount ac. ft.		Amount ac. ft.	Per cent of total		
Anaheim	4,501	6,153	+36.7	4,552	74.0	1,601	26.0
Beverly Hills	9,266	9,632	+3.9	1,517	15.8	8,115	84.2
Burbank	22,424	22,201	-1.0	2,174	9.8	20,027	90.2
Central Basin M.W.D.	—	200,465	—	465	0.2	200,000	99.8
Chino Basin M.W.D.	71,688	75,089	+4.7	4,821	6.4	70,268	93.6
Coastal M.W.D.	9,180	9,432	+2.7	6,237	66.1	3,195	33.9
Compton	6,011	5,918	-1.5	22	0.4	5,896	99.6
Eastern M.W.D.	102,117	163,450	+60.1	11,938	7.3	151,512	92.7
Foothill M.W.D.	12,852	12,785	-0.5	1,838	14.4	10,947	85.6
Fullerton	6,382	7,968	+24.9	3,542	44.5	4,426	55.5
Glendale	21,603	22,641	+4.8	1,488	6.6	21,153	93.4
Long Beach	38,475	39,396	+2.4	15,311	38.9	24,085	61.1
Los Angeles	445,472	431,050	-3.2	22,679	5.3	408,371	94.7
Orange County M.W.D.	283,528	223,669	-21.1	2,389	1.1	221,280	98.9
Pasadena	28,790	28,105	-2.4	19,426	69.1	8,679	30.9
Pomona Valley M.W.D.	48,027	46,105	-4.0	5,693	12.3	40,412	87.7
San Diego C.W.A.	137,901	146,423	+6.2	*89,140	60.9	57,283	39.1
San Marino	4,618	4,159	-9.9	0	0	4,159	100.0
Santa Ana	9,044	9,624	+6.4	6,931	72.1	2,693	27.9
Santa Monica	13,774	11,986	-13.0	11,325	94.5	661	5.5
Torrance	11,708	10,149	-13.3	7,584	74.7	2,565	25.3
West Basin M.W.D.	71,265	85,692	+20.2	23,609	27.6	62,083	72.4
Western M.W.D.	—	128,500	—	0	0	128,500	100.0
Totals	1,358,626	1,700,592	+25.2	242,681	14.3	1,457,911	85.7

NOTE: Quantities include total water diverted into agencies' transmission and distribution systems from sources of supply.
* The Metropolitan Water District delivered 102,214 acre feet to San Diego County Water Authority in 1954-55, whereas the Authority reported 89,140 acre feet of Colorado River water used. The difference of 13,074 acre feet was added to water in storage.

TABLES

TABLE 25
ASSESSED VALUATIONS AND TAX RATES OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Fiscal Year	Area (acres)	Assessed Valuations Total (1)	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 (3)	—	8,514,868,335	.21	.23

- (1) Includes secured, unsecured, and public utility valuations.
- (2) First year in which Authority assessed valuation was included in District's assessed valuation.
- (3) Data for 1955-56 were available before completion of report and are included for convenience of reader.

THE UNIVERSITY OF CALIFORNIA

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 THE UNIVERSITY OF CALIFORNIA

Year	Month	Day	Temperature	Humidity	Wind	Clouds	Remarks
1901	Jan	1	50	75	SW	100	
1901	Jan	2	55	70	SW	100	
1901	Jan	3	60	70	SW	100	
1901	Jan	4	65	70	SW	100	
1901	Jan	5	70	70	SW	100	
1901	Jan	6	75	70	SW	100	
1901	Jan	7	80	70	SW	100	
1901	Jan	8	85	70	SW	100	
1901	Jan	9	90	70	SW	100	
1901	Jan	10	95	70	SW	100	
1901	Jan	11	100	70	SW	100	
1901	Jan	12	105	70	SW	100	
1901	Jan	13	110	70	SW	100	
1901	Jan	14	115	70	SW	100	
1901	Jan	15	120	70	SW	100	
1901	Jan	16	125	70	SW	100	
1901	Jan	17	130	70	SW	100	
1901	Jan	18	135	70	SW	100	
1901	Jan	19	140	70	SW	100	
1901	Jan	20	145	70	SW	100	
1901	Jan	21	150	70	SW	100	
1901	Jan	22	155	70	SW	100	
1901	Jan	23	160	70	SW	100	
1901	Jan	24	165	70	SW	100	
1901	Jan	25	170	70	SW	100	
1901	Jan	26	175	70	SW	100	
1901	Jan	27	180	70	SW	100	
1901	Jan	28	185	70	SW	100	
1901	Jan	29	190	70	SW	100	
1901	Jan	30	195	70	SW	100	
1901	Jan	31	200	70	SW	100	