

# LEGAL OFFICERS SINCE 1902

	FROM	TO
William Burgess Mathews, City Attorney.....	1902	1930
Stephen B. Robinson, Assistant City Attorney (L.A. Aqueduct)* .....	1906	1913
Stephen B. Robinson, Special Counsel for DWP .....	1934	1937
Stephen B. Robinson, Chief Assistant City Attorney for Water and Power .....	1937	1946
Gilmore Tillman, Chief Assistant City Attorney for Water and Power .....	1946	1971
Edward C. Farrell, Chief Assistant City Attorney for Water and Power .....	1971	—

\* Between 1930 and 1934 DWP legal affairs were handled by a number of individuals within the City Attorney's Office. The key individuals were: Pete Warner, Turney Fox, Mark Herron, Loren Butts, Ray Cheeseboro and Jim Stephens.

## DWP ASSISTANT SYSTEM HEADS SINCE 1943

### WATER

	FROM	TO
Laurance E. Goit, Asst. Chief Eng. of Water Works (ACEWW) & Eng. of Opr. & Dist. ....	Feb. 1944	Apr. 1945
Burton S. Grant, ACEWW .....	May 1945	Oct. 1950
Samuel B. Nelson, ACEWW .....	Oct. 1950	Oct. 1955
Max K. Socha, ACEWW .....	Oct. 1955	Jan. 1961
John G. Cowan, ACEWW .....	Apr. 1961	Aug. 1966
Robert V. Phillips, ACEWW .....	Aug. 1966	June 1967
Gerard A. Wyss, ACEWW .....	July 1967	July 1973
Sterling S. Green, ACEWW .....	July 1973	Aug. 1974
Le Val Lund .....	July 1974	Jan. 1976
Walter W. Hoye .....	Feb. 1976	Feb. 1982
Raul Sosa .....	Feb. 1982	Feb. 1985
Laurent McReynolds .....	Feb. 1985	—
James F. Wickser .....	Feb. 1987	March 1990
Ronald A. McCoy .....	Jan. 1988	March 1990
Bruce W. Kuebler .....	Apr. 1990	—

### POWER

Charles P. Garman, Asst. Chief Electrical Engineer (ACEE) .....	Nov. 1943	Apr. 1945
William S. Peterson, ACEE .....	May 1945	Apr. 1953
Roy Martindale, ACEE .....	Aug. 1946	June 1949
Bradley Cozzens, ACEE .....	Apr. 1951	Jan. 1965
Ivan L. Bateman, ACEE .....	May 1952	Apr. 1953
James D. Laughlin, ACEE .....	May 1953	July 1957
Arthur L. Williams, ACEE .....	Aug. 1957	Oct. 1962
T. M. Blakeslee, ACEE .....	Mar. 1963	Jan. 1965
Floyd L. Goss, ACEE .....	Jan. 1965	Sept 1966
Burton A. Currie, ACEE .....	Aug. 1966	Sept 1972
William A. Sells, ACEE .....	Apr. 1971	July 1977
James L. Mulloy, ACEE .....	Sept 1972	July 1973
Howard R. King, ACEE .....	Aug. 1973	Apr. 1975
Charles A. Erickson, ACEE .....	Jan. 1975	Feb. 1980
F. Carl Osborn, ACEE .....	July 1977	Sept 1980
H. L. Holland, ACEE .....	June 1980	Sept 1982
Daniel W. Waters, ACEE .....	June 1982	Nov. 1985
Kenneth S. Miyoshi, ACEE .....	July 1982	—
Eldon A. Cotton, ACEE .....	Dec. 1985	Feb. 1989
Bernard V. Palk, ACEE .....	Jan. 1989	—

## SIGNIFICANT DATES in DEPARTMENT HISTORY

1769 — Los Angeles River discovered August 2, by Gaspar de Portola. It was named Rio Porciuncula.

1781 — El Pueblo La Reina de Los Angeles sobre el rio de la Porciuncula. Founded September 4 with 11 families, comprised of 44 persons. First water system was a brush "toma" or dam across the river which diverted water into the "Zanja Madre" or mother ditch, and then on to irrigated fields.

1810 — New Spain which included all Spanish territory on the North American Continent declared its independence from the Spanish crown September 16.

1815 — Los Angeles River flooded and established a new course. The river jumped its banks about where Ninth Street is today, and flowed west to join Ballona Creek and empty into the ocean at Playa del Rey.

1822 — First Ayuntamiento (town council) elected in the pueblo January 1.

1825 — Los Angeles River flooded and established a new course. The flood waters joined those of the San Gabriel River and the two rivers cut a channel to the sea at San Pedro.

Alta California ratified the federal constitution of the Mexican Republic March 26 at Monterey and became a territory of the Republic of Mexico, since there was not enough population to become a state.

The citizens of Los Angeles through their local authorities ratified the Mexican constitution April 30.

1828 — Each owner of a house of more than two rooms on a principal street was required by ordinance to hang a lighted lantern before his door during the dark of the moon, from twilight to 8 p.m. in winter, 9 p.m. in summer.

1835 — Mexico by official decree raised El Pueblo de Los Angeles to a city, Ciudad de Los Angeles, and named it the capital of the territory. It was approximately 100 square miles in area.

1846 — California Republic revolt started in Sonoma, California. William Ide proclaimed as president of the new republic and the California Bear Flag was raised over the plaza in Sonoma, June 14.

1848 — First American city council in Los Angeles installed January 1.

1849 — Ord survey, first official plat of the City of Los Angeles, completed by Lt. E. O. C. Ord, August 29.

1850 — City of Los Angeles incorporated under laws of the United States, April 4, and area cut to 28.1 miles. Population 1,610.

1851 — First newspaper, The Los Angeles Star, established May 17.

First wooden house built in the city. All others were of adobe.

1853 — First brick house built in the city. Brick kilns were located on the former site of the Department of Water and Power building at 207 S. Broadway.

1854 — Water system made a department of the city, with "zanjero" or water overseer in charge.

1857 — First pipe system with pipes of hollowed logs for domestic water distribution, authorized by the Common Council.

1858 — Butterfield Stage arrived in Los Angeles. This established the first regular overland communication with the East.

1859 — Southern Extension, 1.20 square miles, first annexation made to city, August 29.

1860 — City of Los Angeles, 30.3 square miles. Population 4,385.

First domestic water system completed, with water wheel on the main ditch near College and Alameda Streets, and the first reservoir, a brick structure located in the plaza.

First telegraph message received in the City of Los Angeles October 8.

1861 — Ordinance adopted August 5, established rates for domestic water from the "Public Water Works of Los Angeles."

Heaviest rainfall yet recorded in Los Angeles. Rained continually from December 24 to January 27—a period of 34 days. Great floods occurred along the entire Pacific Coast.

1862 — Second reservoir built between present Bishops Road and Solano Street just above Buena Vista Street (now North Broadway). A water wheel was located at Solano Street and the Zanja Madre was used to fill it.

1865 — Municipal domestic water works leased to David Alexander for four years. After six months operation Alexander assigned his lease to Jean L. Sainsevain. The zanja system continued under control of the Common Council.

1866 — Common Council leased municipal domestic water works directly to Jean L. Sainsevain on October 16.

1867 — San Gabriel River flooded and established a new course to the ocean at Alamitos Bay.

Common Council awarded contract November 8, for the laying of first iron water mains in the city to Jean L. Sainsevain.

1868 — Rights to distribute water leased July 22 for 30 years to J. S. Griffin, Prudent Beaudry and Solomon Lazard, who later established the Los Angeles City Water Company. Construction of a fountain in the plaza was part consideration for the lease.

Original Buena Vista Reservoir built, fed by a ditch along the bluff in Elysian Park. Water delivered by an 11-inch main to First and Main streets (Los Angeles City Water Co.).

Number 4 Reservoir, now a public park and known as Echo Park Lake, constructed by the Los Angeles Canal and Reservoir Co.

1870 — City of Los Angeles, 30.3 square miles. Population 5,728.

First service installed on Eternity Street (later known as Buena Vista Street and now as Broadway) at residence of J. Bernard.

Brick reservoir in the plaza removed.

1872 — Permit given to Prudent Beaudry to lay pipes and to pump private well water to supply Bunker Hill.

1873 — First water main laid across river to serve land on East Side.

1877 — Angelo Heights Reservoir, known as "Beaudry's high reservoir" (596 ft.) built on hill above north end of Beaudry Avenue.

1878 — William Mulholland entered employment of the Los Angeles City Water Co., as a zanjero.

City purchased private distribution works installed by Los Angeles Canal and Reservoir Co., supplying tract of land at Sixth and Pearl (Figueroa) streets.

1880 — City of Los Angeles, 30.3 square miles. Population 11,183.

1882 — First electric outdoor lighting, with arcs installed on seven 150-foot poles, inaugurated New Year's Eve; located at Main Street near Commercial Street and at First and Hill streets.

1884 — First telephone installed at Water Company offices, Alameda and Marchessault streets.

Buena Vista Reservoir enlarged.

1886 — Redwood conduit completed to deliver Crystal Springs water to Buena Vista Reservoir.

William Mulholland made Superintendent of Water Company.

Prudent Beaudry water system sold to Citizens' Water Company.

1889 — First water meter installed at winery, located on Macy Street at Mission Road.

1890 — City of Los Angeles, 30.3 square miles. Population 50,395.

Electricity first used for house lighting in Los Angeles. The first alternating current, 133 cycle, 1000 volt generator was installed by Los Angeles Electric Co., successor to the Los Angeles Brush Electric Co., beginning incandescent lighting.

1891 — Los Angeles City Water Co. purchased Hazard Water System.

1892 — Los Angeles City Water Co. purchased system of Prudent Beaudry from the Citizens' Water Co.

1893 — Pelton Water Wheel installed to pump water from Buena Vista Reservoir to the Beaudry reservoirs.

1895 — Bellevue Reservoir built with an inlet tunnel almost a mile long from Hyperion and Riverside and a 30-inch outlet line extending to Figueroa Street.

1898 — Thirty year water lease expired. Negotiations opened for purchase of distribution system from Los Angeles City Water Co.

1899 — Citizens approved a \$2 million bond election to purchase the Los Angeles City Water Company on August 23.

1900 — City of Los Angeles, 44.35 miles. Population 102,479.

1902 — City of Los Angeles acquired title to all properties of the Los Angeles City Water Co., and affiliate corporations, at a cost of \$2 million, February 3. Included in the purchase were six reservoirs with a total capacity of 202 acre-feet, infiltration galleries,

two pumping stations, 535 fire hydrants, 325 miles of pipe, 319 meters and 23,119 services.

Board of Commissioners Domestic Water Works System established by City Council February 6, to administer the affairs of the municipal water plant. William Mulholland appointed superintendent of the Water Works System.

1903 — Elysian Reservoir built. (Enlarged in 1943.) Board of Water Commissioners established by City Charter to supersede Board of Commissioners Domestic Water Works System. Domestic Water Works System renamed Water Department.

U. S. Supreme Court affirmed Los Angeles' paramount rights to surface flow of the Los Angeles River, February 23; Pomeroy vs City of Los Angeles.

Buena Vista Pumping Plant, steam driven, enlarged in October.

Zanja system officially discontinued after serving 123 years.

1904 — Conduit to carry water from Pomeroy and Hooker lands to Ivanhoe and Silver Lake reservoirs completed. (Replaced in 1944.)

Beaudry Reservoir and Angeleno Heights reservoirs abandoned. Solano Reservoir constructed.

1905 — Slauson Pumping Plant, steam driven, built at Slauson and Compton avenues.

Fred Eaton posted a notice to divert 50 miners inches (1000cfs) for municipal purposes on the Owens River at Charlies Butte near the present Los Angeles Aqueduct Intake on October 23.

Citizens approved of a \$1.5 million bond election to purchase lands, rights of way, and water rights in the Owens Valley.

1906 — The Reclamation Service of the United States Government abandoned its Owens Valley Project in favor of the city which cleared the way for Los Angeles to obtain rights-of-way and control of surplus waters in the Owens Valley for the Owens River Aqueduct. Congress enacted legislation granting free rights-of-way to Los Angeles over all public lands required for canals, reservoirs and power plants in Inyo, Kern and Los Angeles counties.

First steel water storage tank in the modern water system erected on LeMoyne Avenue in June.

Bureau of Los Angeles Aqueduct established under the Board of Public Works. William Mulholland named Chief Engineer of the Bureau and continuing Superintendent of the Water Department.

E.F. Scattergood commissioned as Consulting Electrical Engineer.

Shoestring Strip, 18.64 square miles, annexed to city December 26.

1907 — H. A. Van Norman, first employed by the Department in February to build Figueroa Pumping Plant at Figueroa and Slauson.

Silverlake Reservoir completed and named for Herman Silver, first president of the Board of Commissioners, Domestic Water Works System. He served 1902-1903.

Work on Los Angeles Owens River Aqueduct began September 20, at south portal of Elizabeth Lake Tunnel.

1908 — First power plant, No. 1, approximately 120 kw, built by the city to supply hydroelectric power for aqueduct construction, placed in operation in April at Division Creek, Owens Valley. Removed from service in 1960.

General construction work along entire line of Los Angeles Owens River Aqueduct began October 1.

1909 — Cities of Wilmington and San Pedro consolidated with Los Angeles August 28, giving the city a harbor.

Bureau of Los Angeles Aqueduct Power established under the Board of Public Works September 10. E. F. Scattergood named Chief Electrical Engineer.

Supreme Court of California affirmed Los Angeles' paramount rights to the underground water of the Los Angeles River, December 1; Hunter vs City of Los Angeles.

1910 — City of Los Angeles, 86.25 square miles. Population 319,198.

City of Hollywood consolidated with Los Angeles February 7.

Water storage capacity reached 2,000 acre-feet, 10 times the 1902 capacity.

1911 — Citizens voted 11,809 to 1,312 in favor of distributing power rather than leasing aqueduct sites to private companies, March 6.

Department of Public Service established by charter amendment to supersede Water Department, effective March 25. New department consisted of Bureau of Water Works and Supply with William Mulholland as Chief Engineer, and Bureau of Power and Light with E. F. Scattergood as Chief Electrical Engineer when available from Bureau of Los Angeles Aqueduct Power, Board of Public Works.

Rowena Reservoir completed July on the site of the Wicks Reservoir, which had been abandoned in 1906.

Work started on waterways to power plants No. 1 and No. 2 in San Francisquito Canyon.

1912 — San Pedro Water Company acquired. In the years 1911, 1912 and 1913, 19 private systems acquired, starting process by which much of the growth of the municipal system was effected; 1910 to 1940, 198 private systems acquired.

Construction began in July on Power Plant 1.

1913 — Storage of Owens River Water began at Haiwee Reservoir.

City trunk line completed to deliver aqueduct water to Franklin Reservoir for distribution to the city.

Los Angeles Owens River Aqueduct dedicated November 5 at the Cascades. First aqueduct water reached San Fernando Reservoir.

City Council adopted a policy November 13 to distribute aqueduct water only within the city limits. Annexed areas joining the city to obtain water were to assume total costs for necessary distribution systems in addition to proportionate shares of the Aqueduct construction costs.

Bureau of Los Angeles Aqueduct became part of Department of Public Service.

1914 — Bureau of Los Angeles Aqueduct power was turned over to the Department of Public Service December 18.

1915 — Upper Franklin Reservoir and Lower San Fernando Reservoir, built to store and distribute aqueduct water, completed in February.

First Los Angeles Owens River Aqueduct water delivered to residents of the city, via new Third Street trunk line, in April.

Most of San Fernando Valley, 169.89 square miles, annexed to city May 22. Prior to this annexation, Los Angeles was 114.92 square miles in area.

Extensive property was acquired at 1630 North Main St., in October, for location of various shops and transportation, warehousing, testing and other facilities.

1916 — First power pole in the municipal electric system set March 30, at Piedmont and Pasadena avenues.

First distribution of municipal electricity began November 13, with energy purchased from Pasadena Municipal Power Plant.

1917 — San Fernando main completed to supply Ventura Boulevard and Stone Canyon Reservoir.

San Francisquito Hydroelectric Power Plant No. 1, rated at 9,375 kw, transmission line, and Receiving Station "A" in service March 19.

Department entered into operating agreement with Southern California Edison Company, including option to purchase company's distribution facilities within the City of Los Angeles in May.

River Hydroelectric Power Plant completed December 22 to help meet the emergency situation created by World War I.

1918 — Water system was 94% metered.

1920 — City of Los Angeles, 363.85 square miles. Population 576,673.

First 33 kV cable placed in service July 14. It was located at L.A. Shipbuilding and Dry Dock Co., San Pedro.

1921 — Westgate trunk line was built to serve areas of Bel Air, Brentwood and Pacific Palisades.

Department of Public Service offices moved into its own building at 207 S. Broadway in June.

1922 — Colorado River Commission was organized with Herbert Hoover as chairman, January 26.

After five years of litigation, Department purchased local distributing system of the Southern California Edison Co., and effected immediate rate reductions, May 19. Purchase added 110,566 light and 6,516 power meters to the municipal system's 18,787 light and 677 power meters.

City of Sawtelle consolidated with Los Angeles July 13.

Colorado River Compact executed by commission chairman and representatives of the seven basin states at Santa Fe, New Mexico, November 24.

1923 — Pico trunk line completed, supplying Franklin Reservoir water to main city area.

Hyde Park and Eagle Rock consolidated with Los Angeles May 17.

Construction began in August on Hollywood Reservoir and Mulholland Dam; first

concrete gravity-type dam built by Department.

The Board, on October 23, authorized William Mulholland to make surveys to determine feasibility of an aqueduct from the Colorado River to Los Angeles.

1924 — Citizens voted May 6, in favor of contracting for Boulder power, 121,516 to 27,828.

Application 4056 filed June 28 with the State Division of Water Resources by Los Angeles to appropriate 1,500 cubic feet per second (1 billion gallons per day) of water from the Colorado River.

Colorado River Aqueduct Association organized September 17, at Pasadena, California. Hiram Wadsworth was named president.

1925 — Department of Water and Power established by new city charter to supersede Department of Public Service, July 7. As a result of reorganizational action by the Board, William Mulholland appointed Chief Engineer and General Manager of the Bureau of Water Works and Supply; E. F. Scattergood appointed Chief Electrical Engineer and General Manager of the Bureau of Power and Light.

City of Venice consolidated with Los Angeles November 25.

1926 — Barnes City consolidated with Los Angeles April 11.

City of Watts consolidated with Los Angeles May 29.

1927 — Water system became 100% metered.

California State Legislature adopted an enabling act making possible formation of the Metropolitan Water District; the act was approved by the Governor, May 10, effective July 29.

1928 — St. Francis Dam collapsed March 12, destroying San Francisquito Power Plant No. 2.

San Francisquito Hydroelectric Power Plant No. 2 rebuilt and placed in operation November 1.

Electorates of Los Angeles and 12 other cities voted to form the Metropolitan Water District of Southern California November 6. Los Angeles voted 184,442 to 55,038 for the proposition.

William Mulholland — succeeded by H. A. Van Norman as Chief Engineer and General Manager, Bureau of Water Works and Supply, December 1.

Metropolitan Water District of Southern California incorporated with Los Angeles and ten other Southern California cities as members December 6.

Swing-Johnson bill, authorizing construction of Boulder Dam, adopted by U. S. Congress and signed by President Calvin Coolidge, December 21.

1929 — Bureau of Water Works and Supply and Bureau of Power and Light consolidated into the Department of Water and Power.

400 DWP employees became first subscribers to pre-paid medical plan co-founded by Drs. Ross and Loos.

All basin states except Arizona had ratified Colorado River Compact. Boulder Canyon Project Act declared effective by President Herbert Hoover, June 25.

Dual management of Department Water and Power reestablished December 3.

1930 — City of Los Angeles; 441.74 square miles. Population 1,238,048.

F. E. Weymouth left the Department April 30 to become General Manager and Chief Engineer of the Metropolitan Water District.

W. B. Mathews left Department to become Chief Counsel for Metropolitan Water District, April 30.

Metropolitan Water District took over engineering and construction of Colorado River Aqueduct, May 1. (Previously under DWP jurisdiction.)

Department contracted with Federal Government for share of Boulder power.

Work began on Boulder Canyon Project with the driving of a silver spike into a railroad tie on September 17.

Year of shortage of water in the Owens Valley, supply dropped to 50.6% of the long-term average.

1931 — Bureau of Water Works and Supply and the Bureau of Power and Light consolidated into the Department of Water and Power January 13.

Contract for construction of Boulder Dam awarded March 4 to Six Companies; work started March 11.

1932 — Dual management of Department of Water and Power reestablished May 9.

1934 — The Department purchased the Owens Gorge power plants (Adams main and auxiliary) from the Southern Sierra Power Company.

Mono Craters Tunnel construction began.

1935 — Filling of Lake Mead at Boulder Dam began February 1.

City Charter amended to allow the Board to issue refunding bonds which would not extend the life of the original bonds, April 2.

Last concrete for Boulder Dam poured May 29.

William Mulholland, first Superintendent of Water Works System died July 22.

Harbor trunk line completed in October, supplying aqueduct water to San Pedro area and permitting development of adequate water supply for Municipal Airport (now LAX.)

1936 — Double circuit Boulder transmission line completed.

First change to 60 cycle frequency made August 16.

First Boulder power reached Los Angeles October 9; regular operation, under contract, began October 26.

System change from 50 to 60 cycles, including adaptation of all Department and customer equipment to the new frequency, completed in December.

1937 — Department purchased electric system of the Los Angeles Gas and Electric Corp., February 1 (170,517 light and 12,461 power services).

Colorado River Board created July 1 by an act of the legislature. The Board to be composed of one representative, appointed by the governor from each of the six

agencies using Colorado River water and power; Los Angeles Department of Water and Power, Metropolitan Water District of Southern California, City of San Diego (now San Diego County Water Authority), Imperial Irrigation District, Coachella County Water District and the Palo Verde Irrigation District.

1938 — Employees' Retirement, Disability and Death Benefit Plan went into effect October 1.

1939 — Southern California Edison system taken over in territories annexed to Los Angeles since original purchase, completing municipal electric service to the city.

1940 — City of L.A., 450.83 square miles. Population 1,504,277.

River Power Plant, declared out of service February 1 after 23 years of service.

Frequency change, affecting approximately 54,000 customers acquired from Edison Co. in annexed territories of the city, completed June 23.

E. F. Scattergood retired as Chief Electrical Engineer and General Manager of the Bureau of Power and Light, July 9.

60-inch Stone Canyon inlet line completed across San Fernando Valley.

Colorado River Aqueduct completed to Lake Mathews.

1941 — Colorado River Aqueduct placed in service and first Colorado River water delivered to the Los Angeles area June 17.

Lake Mead reached an all-time high of 1,220.45 feet above sea level July 30. Spillway gates tested for the first time August 6.

Crowley Lake dedicated October 19

1942 — Inter-system connections made between Metropolitan Water District mains and Bureau of Water Works and Supply mains.

1943 — The two Bureaus consolidated into the Department of Water and Power, November 1.

1945 — Department, Southern California Edison Company and California Electric Power Corp. signed contract to take all unused Boulder power previously contracted for by Metropolitan Water District. Department receives 55%. Contract runs until 1987.

Mexican Water Treaty, allocating 1.5 million acre-feet of Colorado River water to Mexico, proclaimed to be in effect November 8, by President Truman.

1946 — Employee Grievance Plan adopted by Board.

1947 — Colorado River Association, a citizen organization, was created March 15, under the chairmanship of Preston Hotchkis and financed by the six agencies using Colorado River water.

E. F. Scattergood died November 15.

1948 — March 8, the Department made available 115,000 kw of surplus power to drought stricken areas in Northern California to help relieve critical power shortage.

1949 — River Supply Conduit in service March 24.

Palisades del Rey water system purchased by Department June 29.

Owens Gorge Power Project construction began in August.

1950 — City of L.A., 453.51 square miles. Population 1,970,358.

Franklin-Baldwin 57-inch trunk line, in service May 24. Baldwin 60-inch and 66-inch outlet line, in service May 25.

1951 — Alameda Steam Plant declared out of operation March 8.

Baldwin Hills Reservoir dedicated April 18.

Owens Gorge transmission line completed July 26.

Acquisition of Southern California Water Co. facilities completed October 15 (31,300 services, 1,525,000 feet of mains, 15 pumping plants, 21 wells, 3 tanks and 5 reservoirs).

George C. Sopp appointed to newly created position of Joint System Head and Assistant Manager, November 8.

1952 — Department celebrated its 50th anniversary, February 3-6.

First power transmitted to Los Angeles from Owens Gorge Project April 1.

Silver Lake outlet line, 60-inch and 66-inch trunk line, completed July 21.

Production of electric energy to Department customers surpassed 100 million kwh, for the week ending November 18.

1953 — Board adopted "Employees' Suggestion Plan," March 3.

A 200,000 kva capacity interconnection with Southern California Edison Co., at Receiving Station "B" placed in service, March 27.

Stone Canyon Reservoir by-pass line in service July 15.

Eagle Rock Reservoir and a six-mile section of the Eagle Rock-Hollywood conduit, the city's first large capacity connection with the Colorado River Aqueduct water supply, dedicated August 18.

The 48-inch Sheldon Street trunk line completed October 23.

Silver Lake Reservoir back in service December 28, after reshaping and other improvements.

1954 — West Los Angeles Underground District Headquarters, in service during June.

Alameda Street MWD feeder line, 30-inch and 32-inch pipe, completed September 1, providing an additional MWD water supply to the Harbor area.

Daily generation by DWP steam electric generating stations exceeded 10 million kwh, October 1.

1955 — Transmission and Communications Building at First and Bixel Streets completed January 3.

Hollywood Outlet Line, Unit II, 61-inch pipe, completed February 2.

Sheldon Pumping Station Discharge Line, 36-inch pipe, completed August 1.

1956 — Stone Canyon Dam and Reservoir improvements completed February 16.

✓ Eagle Rock-Hollywood Conduit, 68-inch and of 60-inch pipe, completed August 7. This trunk line made possible delivery of MWD water from Eagle Rock Reservoir to the main city area.

Communications Building, 6000 Van Nuys Blvd., in service October 6.

San Fernando Valley District commercial office in Van Nuys dedicated October 15.

The City Charter was amended November 6 to reduce the required ratio of equity to long-term debt from 100% to 80%.

1957 — Fairfax Construction Headquarters, Power System Field Headquarters for western and southern areas of the city, in service February 15.

Valley Generating Station dedicated May 17.

Heavy Mechanical Shops and Office Building at 1630 North Main Street dedicated October 10.

Fuel Adjustment Clause, effective October 12, applicable to all kilowatt-hours sold. The action was made necessary by the increased cost of fuel. The initial adjustment to basic rates was an increase of 9/10 mill per kilowatt-hour.

1958 — East Valley Water District facilities in North Hollywood completed February 5.

Direct current service by the Department was discontinued at midnight June 30 at DS 12.

1959 — A water-inflated "fabridam" was installed across the Los Angeles River in May, to divert water into the Headworks Spreading Grounds. This unique dam of synthetic fabric, developed by a Department engineer, collapses automatically when flood flows overtop it, and reinflates itself when the storm has passed.

Crenshaw Electric Living Center and Commercial Office dedicated August 26.

Scattergood Generating Station dedicated September 10 on the 50th anniversary of the establishment of the Bureau of Los Angeles Aqueduct Power.

1960 — City of Los Angeles, 457.92 square miles. Population 2,481,595.

Riverside Drive Trunk Line, 40-inch pipe, completed January 28.

Encino Reservoir Inlet-Outlet Line, Unit I, 72-inch and 60-inch steel pipe, completed April 20.

A gold plated meter, signifying the one-millionth meter installed by the Department in the city's electric system, was set in a private home in the Northridge area of the San Fernando Valley on May 17.

Encino Reservoir Inlet-Outlet Line Unit II, 60-inch steel pipe, completed August 8.

West Valley Water District Headquarters in Northridge completed November 18.

Of the \$1,520,000 payment to the City from the Revenue Fund of the Water System during the 1959-60 fiscal year, \$1,249,654 was paid to the General Fund as the final repayment of all amounts ever advanced from proceeds of general taxation for water works purposes. Commencing in 1895 and continuing until the mid-thirties, advances were made for this purpose which aggregated \$37,417,642, which amount has been liquidated by yearly payments since 1929, thus retiring the debt completely.

Fourth Street Trunk Line, 60-inch steel pipe, completed June 19.

Sunland Boulevard Trunk Line, Unit 1, 41-inch steel pipe, completed August 29.

1962 — The Harbor Water District Headquarters, completed January 11.

February 3, Department observed its 60th Anniversary.

First 230 kv circuit from Haynes Generating Station to Receiving Station F in service June 26.

Palos Verdes Reservoir Feeder Line, 49-1/2-inch pipe from MWD's Palos Verdes Reservoir, completed June 29.

Encino Reservoir and dam reconstruction completed September 19.

1963 — Granada Trunk Line, 48-inch steel, 48-inch modified prestressed concrete, and 800 feet of 60-inch steel pipe, completed May 15.

Adams Main and Auxiliary Power Plants purchased from Southern Sierras Power Company, were retired from the Power System July 2.

During July, an underground transmission line between RS "E" in North Hollywood and RS "S" in Van Nuys, was placed in service using a 230 kv pipe-type cable, the first of its kind in the West and one of the first in the United States. Initial operation was at 138 kv.

Granada Trunk Line extension to Girard Reservoir, 36-inch steel pipe, completed August 12.

Haynes Generating Station dedicated September 24.

The ten billion kwh mark for the twelve-month accumulative total of Net Energy for Load was exceeded October 1.

Baldwin Hills Reservoir failed December 14.

1964 — A portion of the Sunland Boulevard Trunk Line, consisting of 4,100 feet of 20- and 40-inch steel pipe completed January 24.

San Fernando Valley General Service Headquarters, Van Nuys, dedicated June 18.

Board authorized membership in WEST Associates (Western Energy Supply and Transmission Associates). WEST composed of 21 electric utilities in western U.S.

1965 — General Office Building, 111 North Hope Street dedicated June 24. Cost approximately \$32 million. Site area, 12.91 acres.

In December, Los Angeles was given a Class II rating — the highest attained by any American city over 100,000 — from the standpoint of fire protection. Only one other large city (Detroit) was so rated. The new rating produced significant savings to all property owners in reduction of fire insurance.

1966 — Seal Beach Steam Plant retired from the Power System July 21.

Contracts between the State and the Department signed September 2 for construction of a 1,250,000 kw peaking hydroelectric plant, with pumped-storage facilities, at Castaic Reservoir.

DWP and other California power utilities entered into agreements to supply power to the State Water Project, November 18.

Susana Trunk Line Unit IIB, 6,280 feet of 54-inch steel pipe, was installed to enable delivery of Second Aqueduct water to the Porter Ranch area. Completed November 30.

1967 — In February, DWP announced it would use low sulfur fuel oil in all Department fossil-fueled steam generating stations whenever natural gas was not available.

Major electric systems of the western and eastern United States were operated in parallel for the first time February 7.

System Development Division established February 27.

Contract for a long-term interruptible supply of natural gas with Southern California Gas Company and Southern Counties Gas Company signed May 4.

Charter Amendments No. 1 and No. 2 were approved at the general municipal election, May 31. No. 1 authorized the Department to contract with public and private entities for participation in construction, ownership, operation and maintenance of the new coal-fueled Mohave Generating Station. No. 2 allows for broadening the investment base of the DWP Retirement Plan.

Groundbreaking ceremony held June 8 for the \$44 million Sylmar High Voltage Direct Current Converter and Switching Station, the terminus for the 800 kv dc Intertie line being constructed by DWP.

Acquisition of the Conservative Water Company in the Watts area completed August 26 (9,974 services, 376,590 feet of mains, and 5 wells).

Contracts relating to the assignment, reassignment and transmission of Canadian Entitlement capacity and energy among the California utilities scheduled to receive Canadian Entitlement power, were executed August 29.

For the first time, the summer power peak, which occurred on August 30, exceeded the following winter peak.

September 14 DWP entered into an agreement with other electric systems in the western United States and Canada to form the Western Systems Coordinating Council to coordinate the reliable operation of their interconnected bulk power systems.

Acquisition of the town of Lone Pine water system in the Owens Valley completed October 1, purchase cost, \$165,000.

October 2, the City Council imposed a 4% Electricity Users Tax to be collected by the Department of Water and Power. Collection of the tax started November 1.

An IBM System 360 Model 50 was placed in service in the Engineering Computer Center December 12.

1968 — Hollywood Pumping Station in service January 15.

Department construction work on the Castaic Power Project began January 22.

Demolition of the Seal Beach Steam Plant completed March 13.

March 14, a trial court judgment in the lawsuit "City of Los Angeles vs City of San Fernando, et al" was entered. The trial court's decision became effective October 1, 1968 and adversely affected the Department's spreading and pumping program in the San Fernando Valley. The Department appealed the decision.

April 1, the Department began receiving power from the Pacific Northwest under Canadian Entitlement Power Agreement at an initial capacity of 17 mw.

All transmission line tower erection on the Pacific Intertie DC System between the Oregon border and Sylmar completed November 1.

Sylmar Switching Station was placed in service on November 29.



December 20, an ordinance was adopted approving participation by the Department in the Mohave Generating Station and the Eldorado Transmission System.

1969 — Installation of a 230 kv underground cable with aluminum conductor was started on January 9, between Toluca Receiving Station (RS E) and Van Nuys Receiving Station (RS S). This is the first known installation at this voltage using aluminum conductor.

On January 23, 186,000 barrels of fuel oil was moved from Olympic Tank Farm to Haynes Generating Station via a new fuel oil pipeline.

Certain water facilities purchased from the Conservative Water Company in 1957, and lying within an area outside of the City, were sold to the Southern California Water Company on February 1. The facilities transferred included 127,740 feet of water mains, 117 fire hydrants, 3,073 service connections and 2,740 meters.

In March a computerized Material Control System was placed into effect by the Power General Plant Stores.

By an election held April 1, the City Charter was amended to reduce the required ratio of equity to long-term debt from 80% to 70%.

May 27 voters approved a City Charter Amendment enabling the Department to participate in joint power supply projects.

The turbine runners on Units N-1 to N-4 at Hoover Power Plant were originally installed in 1936. On June 23 work was started on replacing the first of the original runners with a newly designed stainless steel fabricated unit.

Chatsworth Reservoir placed out of service for major reconstruction and improvement work. Draining started July 3.

The Victorville-Toluca section of the 287 kv Boulder III Transmission Line taken out of service on September 18 for conversion to 500 kv.

The Board, November 20, authorized participation in the Navajo Power Project.

The 54-inch Susana Trunk Line placed in service November 24.

A portion of the City of Torrance Water System (formerly Moneta Water Company) within the City of Los Angeles was acquired by the Department on December 20 (524 services [1-inch to 3-inch], 27 fire hydrants and 24,785 feet of pipe 2-inch to 8-inch diameter.)

In December, load-promotional advertising was discontinued. Emphasis in advertising was switched to consumer service and efficient use of energy resources.

1970 — City of Los Angeles, 463.90 square miles. Population 2,809,967.

January 20, the Inter-Agency Committee on Owens Valley Land and Wildlife was formed. Membership includes 7 County, State and Federal agencies and the Department of Water and Power.

March 5, litigation resulting from the destruction of the Baldwin Hills Reservoir on December 14, 1963, was settled out of court by an agreement to pay \$3,875,000 to the DWP and its insurance carriers.

Thursday, March 26 at 1:24 a.m., full power of 1,440 megawatts was transmitted from the Pacific Intertie DC System, establishing new world records for transmission of direct current (1,800 amperes), voltage magnitude (800 kilovolts), distance, and power

level.

Groundbreaking ceremony for the Navajo Generating Station at Page, Arizona, April 21.

Sylmar HVDC Converter Station and 800 kv D.C., Transmission System was placed in initial operation May 21.

The Second Los Angeles Aqueduct placed in operation June 26.

Boulder-Toluca Line 1, formerly the Boulder III line at 287 kv rebuilt for 500 kv, in service June 26.

August 1, the 4% Electricity Users Tax was raised to 5% by the City Council.

Dedication of the Pacific Intertie DC System was held at Sylmar Converter Station September 18.

The 500 kv transmission link between McCullough and Eldorado Switching Stations in service on September 1. The 500 kv Boulder III Transmission Line kv between Toluca Receiving Station and McCullough Switching Station in service November 1.

McCullough Switching Station, DWP's first 500 kv station, in service November 5 interconnecting the jointly owned Eldorado Substation and Receiving Station "E".

A 230 kv interconnection was established on December 5 with the Nevada Power Company.

1971 — Air Pollution Control District Rule 68 was passed January 7, by the Los Angeles County Board of Supervisors. This rule establishes emission limitations on nitrogen oxides concentrates from existing stationary sources, primarily power plant boilers.

An earthquake of approximate magnitude 6.5 (Richter) occurred at about 6 a.m. (PST) February 9 with the epicenter near the Newhall-Sylmar axis. The earthquake caused severe damage to Sylmar Converter Station facilities as well as extensive damage to other facilities and equipment throughout the Power System.

The earthquake caused major damage to the Van Norman Reservoir Complex, the Maclay Reservoir, portions of both the First and Second Los Angeles Aqueducts and to various northerly portions of the distribution system in the San Fernando Valley.

February 18, authority to construct Scattergood Unit 3 (natural gas only) was received from the Los Angeles Air Pollution Control District.

Lower Van Norman Reservoir, heavily damaged by the February 9 earthquake, was taken out of service February 26 and completely empty on March 17.

500/230 kv, 300 mva Transmission Bank J at McCullough Switching Station was placed in service March 14 completing the Boulder-McCullough line.

April 1, Mohave Generating Station began adding 152 megawatts to the Power System's steam generation capability. First out-of-state coal-fueled energy to L.A. on regular basis.

April 23, work was completed on Boulder I and II Transmission Lines to bypass Silver Lake Switching Station, which was taken out of service.

August 13, the Upper Van Norman Reservoir Bypass Line consisting of 120-inch and 99-inch welded steel pipe, was necessitated by the February 9 earthquake damage to the Van Norman Reservoir.

October 1, the Electricity Users Tax was increased to 10% for Commercial and Industrial



users, by the City Council. The previous rate had been 5%.

The Castaic Power Project-Olive Switching Station Transmission Line in service November 2.

1972 — In January 18 election, the City Charter was amended to reduce the required ratio of equity to long-term debt from 70% to 60%.

April 19, the Sylmar Converter Station began commercial operation at approximately one-half station capacity. Full capacity was reached August 31.

The Department acquired the Independence Water Company on June 8, at a total cost of \$50,000. The acquisition added 300 active service connections to the Water System.

June 26, the City of Los Angeles adopted Ordinance Number 143,605 establishing a Sewer Service Charge. This ordinance became effective August 3, 1972 and provided for a charge of 3.5¢ for each 100 cubic feet of water supplied to the premises of commercial, industrial, and governmental users of the city's sewerage system. It was further established that the Department would furnish its facilities for the billing and collection of this charge. Department expense resulting from designing and implementing these procedures, as well as continuing administrative costs, are accumulated and deducted from the Sewer Service Charge billings, prior to the monthly transmittal to the City Clerk's office. Billings for Sewer Service charges began with monthly and bi-monthly water accounts with starting dates of August 3, 1972.

In July, Department personnel began visiting large customers to suggest ways of curtailing load during peak hours and to determine effects of short-term blackouts on their operations should they become necessary.

Four 20-megawatt gas turbines were placed in commercial operation at Harbor Generating Station during fiscal year 1972-73.

San Fernando Power Plant Unit 1 was restored to service July 21, after being damaged in the February 9, 1971 earthquake. Unit 2 returned to service December 1, 1973.

October 27, construction was initiated at McCullough Switching Station to receive power from the Navajo Generating Station.

November 22, the Court of Appeal reversed the Superior Court's decision and ruled in favor of Los Angeles in the San Fernando Valley groundwater litigation. The State Supreme Court decided on March 2, 1973 to hear the case based on the appeals filed by the defendants.

1973 — The first shipments of towers from Yugoslavia and line hardware from Japan for the Navajo-McCullough Transmission Line arrived in Los Angeles Harbor March 23.

April 11, the contractor started tower erection in Arizona for the Navajo-McCullough Transmission Line.

June 5, the Third District Appellate Court reversed the Trial Court's decision in the Inyo County groundwater suit and stayed further extraction by the Department of underground water in the Owens Valley Basin in excess of the average being taken on November 23, 1970, pending determination by the Trial Court of that figure which is found to be the mean or average of the extraction during the years of highest and lowest precipitation from July 1, 1970 to date.

July 23, Construction begins of the marine tanker unloading pipeline connecting Berth 181 at Los Angeles Harbor with Harbor Generating Station.

The Materials Testing Laboratory was completed August 6. This new facility, located at Second and Rose Streets, replaces the brick building which had been used by the Water System since 1903. The old building was the first one constructed for the Los Angeles Water Department after the acquisition of the Los Angeles Water Company in 1902.

October 5, Victorville-Lugo Transmission Line in service providing a jointly-owned 500 kv intertie with Southern California Edison Company.

September 24, Los Angeles adopted an ordinance approving the San Joaquin Nuclear Project Feasibility Study Agreement among the Department of Water and Power, the Southern California Edison Company, the Pacific Gas and Electric Company and the San Diego Gas and Electric Company.

November 15, Board adopted the Total Energy Management Program in response to the possibility that the shortage of fuel would result in insufficient energy to meet the Power System load.

December 13, Ordinance No. 145,350 establishing an Emergency Energy Curtailment Program for the City was adopted by the City Council effective December 21. This program was necessitated by a shortage of fuel oil caused in great part by the Arab embargo and the Department's inability to enter into long-term fuel contracts. The program implemented by the Department consisted of an energy information and conservation plan whereby electric customers were requested to reduce energy consumption. As a result of the Department's efforts in obtaining additional fuel oil and the public's cooperation and response, the City Council suspended the Energy Curtailment Program May 21, 1974.

1974 — The 400 mva 525/300 kv transformer at Victorville Switching Station was energized February 22, providing a connection between the 500 kv and 287.5 kv transmission systems.

The Cottonwood Polymer Plant at Cottonwood Gates was completed June 18, and made available for service to provide turbidity control for the Los Angeles Aqueduct at the inlet to North Haiwee.

June 21, the City authorized participation in Intermountain Power Project feasibility studies with other California and Utah public utilities.

A new interconnection with Nevada Power Company (NPC) was established June 28 with the completion of NPC's 230 kv McCullough-Clark Line 1.

September 4, the Navajo-McCullough 500 kv Transmission Line was terminated into the McCullough Switching Station. The Line and the portions of McCullough Switching Station associated with the Navajo Power Project declared in service October 27.

The 230 kv Scattergood-Olympic Line 2 in service September 13. The length of the line is 9.64 miles, of which 8.83 miles are underground cable.

November 7, the contractor began work on the \$32 million Los Angeles Reservoir Project.

1975 — January 1, the Department began billing the state imposed energy surcharge. The surcharge, which was implemented for the purpose of financing California's new Energy Resources Conservation and Development Commission, is represented on the customer's bill as a charge of one-tenth mill per kilowatt hour of consumption.

January 26, the first successful test operation of a dc circuit breaker was conducted on the Pacific HVDC Intertie at Sylmar Converter Station.

January 31, the Los Angeles City Council adopted Ordinance Number 146,936 exempting eligible senior citizens from the Electricity Users Tax. The first exemption became effective July 1.

May 12, the State Supreme Court reaffirmed the City's Pueblo rights in the San Fernando Valley groundwater litigation. This action will increase the City's entitlement to water from the San Fernando groundwater basin by approximately 25,350 acre feet annually.

July 3, Facilities of the Riverwood Ranch Mutual Water Company located within the northeast San Fernando Valley area of Los Angeles were acquired. The company was the last privately owned water company within the City (37 metered services, 8 fire hydrants, 7,694 feet of main, and one 62,500-gallon tank).

Reconstruction of the lower San Fernando Dam was completed August 16 to permit use of the dam as a storm water flood control facility.

Rate increases averaging 15.4 percent for water and 13.8 percent for electricity were approved by the City Council October 8, effective November 9. Included in the rate changes are provisions for low-income senior citizens, granting them a lifeline rate amounting to a 50 percent discount on both the first 900 cubic feet of water and on the first 180 kw-hrs of electricity a month. The lifeline rates apply to senior citizens who have qualified for the City electricity users tax exemptions.

In December, the Commercial Division completed a major phase in the conversion of customer records to a computer based Customer Information System. Customer account information is now readily available by use of video display terminals, eliminating the need for maintenance of multiple paper record files.

1976 — During January through April, electric customers received an "Earthquake Rebate" which aggregated approximately \$11.8 million. The refund was made possible by a reimbursement by the Federal Disaster Assistance Administration of excess fuel expense incurred by the Department as a result of damage to facilities.

January 14, the 500 kv series capacitor on the Navajo Transmission Line at McCullough Switching Station was energized.

February 5, Board approved Resolution No. 557 greatly intensifying the Department's on-going energy conservation program. The \$5 million, ten-point program represents a concentrated effort to encourage changes in patterns of electric use in the City during the next five years.

February 20, the installation of the 230 kv Nichols Canyon-Hollywood underground transmission cable and the overhead portion of the Toluca-Hollywood Line 1 were completed.

The 230 kv Castaic-Olive Line, 24.2 miles long, in service April 10.

Work on the Interagency Committee Visitors Center near Lone Pine began with the April 20 groundbreaking ceremony at the site.

April 27, a revision of the electric rate ordinance was approved establishing experimental domestic rates effective June 1 to be used in a 30-month joint study with the Rand Corporation and the Federal Energy Administration of the effects of seasonal and "time-of-day" rates on energy use in Los Angeles.

In June the first stage of on-line entry of customers' orders was completed, allowing

employees to enter changes to customer accounts by use of the video display terminal, eliminating the need for transcription to data forms and keypunching.

August 27, the Owens Lake lawsuit was resolved when a jury of the San Bernardino County Superior Court found the Department not negligent in its Aqueduct operation. The lawsuit alleged \$800,000 in damages to a chemical gathering operation on the dry bed of Owens Lake which was inundated following record precipitation and runoff in 1969.

September 15, an explosion damaged two of the five Alabama Gates on the Los Angeles Aqueduct. Temporary repairs to the gates took only three days.

Filling of the reconstructed Silver Lake Reservoir officially began September 21.

November 5, construction of the Marine Tank Farm completed. Fuel loading began December 21.

November 8, the General Services Division was formed by combining all of the functions of the Power General Plant and Water Construction and General Services Divisions. The new division was assigned to the Water System.

November 19, the 230/115 kv interconnection with Southern California Edison Company was placed in service at the SCE Inyo Substation.

December 5, the Boulder-McCullough Line 1 was returned to service at 287.5 kv. The line had been operating at 230 kv.

Lower Franklin Reservoir was taken out of service on December 6 and later drained. This action was taken because the dam did not meet new stringent State dam safety criteria.

1977 — January 6, the Department, the Southern California Edison Company (SCE), and the California Energy Resources Conservation and Development Commission (ERCDC) were selected by the Energy Research and Development Administration (ERDA) to construct a 10,000 kilowatt, solar-thermal demonstration plant. The plant will be located near Barstow, California, and is scheduled to begin operation in 1980.

March 23, the Third District Court of Appeals in Sacramento denied a request by Los Angeles to lift the injunction which limits groundwater pumping in the Owens Valley to approximately one-half of well capacities.

Dedication ceremonies held April 29 for the opening of the Interagency Visitors Center located on Department property near Lone Pine. This facility was constructed by the Department and is being leased to the Interagency Committee on Owens Valley Land and Wildlife under a cooperative agreement.

May 12, the Council adopted the mandatory water conservation plan developed by the Mayor's 16-member Blue Ribbon Water Conservation Committee. The plan consists of three parts: (1) Continuation of conservation education; (2) Prohibition of specific wasteful uses of water, and (3) Four phases of reduced water use below 1976 consumption, depending on the water supply available to the City.

The Sheldon-Arleta Landfill/Valley Generating Station Project and the associated Bureau of Sanitation landfill gas supply contract were approved by the Board June 9. The project will include deep gas wells, a collection system and a compressor station at the Sheldon-Arleta Landfill. A 1.8-mile pipeline will transport the landfill gas to Valley Generating Station where it will be burned as supplementary boiler fuel. The project was dedicated November 14, 1979.

A final judgment was entered by the Los Angeles District Court on June 22 dissolving a court injunction which had delayed payment of \$33 million to the Department under the Federal Disaster Assistance Act for the new Los Angeles Reservoir.

June 27, the Third District Court of Appeals in Sacramento ruled that the Department's final EIR on Increased Groundwater Pumping in the Owens Valley was inadequate based primarily on project definition.

Phase II of the Blue Ribbon Water Conservation Plan, creating a mandatory 10 percent curtailment of water use by all Department customers, went into effect July 1.

Water conservation kits were made available to Department customers, free of charge, beginning July 11. 258,000 kits were distributed during July. One year later, 650,000 kits had been distributed. This is more than one per service connection in the Los Angeles Water System.

July 22, the Third District Court of Appeals conditionally approved pumping of another 10,000 acre-feet per month from the Owens Valley Groundwater Basin to ease drought conditions.

The new 10,000 acre-feet Los Angeles Reservoir was placed in service on August 3.

September 28, the City Council approved the Department's participation in the Coronado/Palo Verde generation projects. The purchase allows the Department a capacity entitlement in the coal-fueled Coronado Generating Station of 30 percent or approximately 210,000 kw. Upon the commercial operation date of the first Palo Verde unit, the Coronado entitlement will be exchanged for a 5.7 percent interest in the Palo Verde Nuclear Generating Station.

On October 19, the Department's Inyo Switching Station placed in service from the 230 kv Owens Gorge-Rinaldi Line 1 near Bishop, California, providing a second 34.5 kv feed to the Owens Valley Electric System.

October 24, the 230 kv Castaic-Olive Line 1 was placed in service.

In November a major water rate restructuring plan and an across-the-board 20 percent water rate increase were approved by the Board and sent to the City Council/Mayor for consideration. The water rate increase went into effect on December 23 and the rate restructuring on December 25.

1978 — Citing improvements in the L.A. water supply, the City Council unanimously approved the lifting of Phase II of the City's Emergency Water Conservation Ordinance January 26. Phase I, which prohibited certain uses of water and limited the hours of lawn watering, was lifted April 13.

March 16, Kern County Board of Supervisors were notified that the Department was not proceeding with the San Joaquin Nuclear Project.

June 23, installation of the Tarzana-Canoga 230 kv underground transmission line completed.

July 30, solid-state thyristor valve was installed at Sylmar Converter Station as a direct replacement demonstration for an existing mercury-arc valve.

October 6, Mead Transmission Line Interconnection completed.

November 1, Board approved DWP participation in the Orange-Los Angeles Counties Water Reuse Study.

November 6, the Chatsworth High Line was permanently removed from service to accommodate the Simi Freeway construction. This 6.6 mile-long concrete box conduit had been in continuous service since 1916.

1979 — January 26, after more than 23 years of litigation, the City's rights to all of the native waters, as well as waters imported by the City to the groundwater basin, were confirmed in the judgment filed in Los Angeles Superior Court.

March 22, Board approved expenditures for financing the Solar Water Heater Program.

April 2, 287 kv Boulder-Victorville Line 2 was taken out of service for conversion to 500 kv.

Bank M (417.5 mva) at Mead Substation was placed in service April 29. An interconnection with Western Area Power Administration was made with a connection from Bank M to a tap on the 287 kv Boulder-McCullough Line 1. The former Boulder-McCullough Line 1 with the tap to Bank M at Mead Substation has been named the Boulder-Mead-McCullough Line 1.

May 24, contract for \$6.5 million was awarded for construction of the building for the Energy Control Center.

June 28, Board approved expenditure of funds for the redevelopment of San Francisquito Power Plant No. 1. When completed an additional 6.4 mw of generating capacity and 47.6 million kwh per year of hydroelectric energy will be available to the Power System.

The Final Environmental Impact Report (FEIR) on Increased Pumping of the Owens Valley Groundwater Basin was completed and adopted by the Board June 28, pursuant to the June 27, 1977 mandate of the Third District Court of Appeals.

June 29, industrial wastewater treatment system at Scattergood Generating Station was completed.

September 4, Upper Van Norman Reservoir was permanently removed from service. The facility had operated since 1921.

September 10, the Rinaldi Trunk Line was placed in service to replace the decommissioned Chatsworth High Line. The new line consists of 4,636 feet of steel pipe liner in the Chatsworth Tunnel, 3,659 feet of new 68-inch pipe in Balboa Boulevard and 28,000 feet of 54-inch leased MWD West Valley Feeder No. 1.

November 13, the Metropolitan Water District adopted the Proportionate Use Formula as a replacement for Board Resolution 5821 for allocating District costs between water users and taxpayers.

November 20, metered water service billing was started in the town of Lone Pine with similar billings in the towns of Independence, Big Pine and Laws within two months after that.

1980 — City of Los Angeles, 463.90 square miles. Population 2,994,900.

January 7, construction of the Victorville-Rinaldi Transmission Line began.

February 25, 287 kv Boulder-McCullough Line 2 was placed in service using a portion of the former 287 kv Boulder-Victorville Line 2.

May 12, the 500 kv McCullough-Victorville Transmission Line 2 in service.

June 13, the Environmental Protection Agency issued a conditional construction and operation permit for the Intermountain Power Project.

June 23, dedication ceremonies were held for Optimum Energy House.

In July, the Energy Transaction System which utilizes the General Electric time-sharing computer to process the energy interchange scheduling and accounting, was placed in service at the Load Dispatching Headquarters.

In July, the Board approved the agreement with Brown & Caldwell/Camp, Dresser & McKee for design services on the Los Angeles Aqueduct Filtration Plant. Phase I consultant activities began on July 21.

In August, the Hyperion-Chevron Demonstration Project was created to determine the feasibility of using reclaimed water for industrial cooling. Funds for the \$350,000 project provided by the Environmental Protection Agency, State Water Resources Control Board, and the West Basin Municipal Water District. The Department's participation in the project will consist of providing the City of El Segundo with approximately two million gallons of reclaimed water daily.

August 19, Ordinance Number 154312 was adopted by the City Council authorizing the Department to continue in the White Pine Power Project and to execute the Power Development Agreement and the Development Work Agreement.

August 21, the Board approved a two-year cooperative agreement between the Department and the Great Basin Unified Air Pollution Control District to study sources of dust in the Owens Valley. The agreement puts off a lawsuit brought by the Department against the District regarding groundwater pumping.

The contract for construction of Lower Franklin Reservoir No. 2 was awarded.

October 1, Power Supply Development Agreement between the Department and White Pine County signed. Under the agreement, the Department becomes responsible for development work associated with the White Pine Power Project.

November 1, the Southern California Public Power Authority was formed for the purpose of undertaking the planning, financing, construction and operation of generation and transmission projects. Initial members in addition to the Department of Water and Power were the cities of Azusa, Anaheim, Banning, Burbank, Colton, Glendale, Riverside, and the Imperial Irrigation District.

In November, voters in Inyo County and the Inyo Board of Supervisors adopted groundwater ordinances aimed at reducing the Department's groundwater pumping. The ordinances established a department to manage operations.

December 29, the Hillmont Tank was placed in service replacing Hillmont Tank No. 1.

December 30, the City filed a lawsuit challenging the legality of Inyo County's new Groundwater Pumping Ordinance. The lawsuit is based on the Department's belief that Inyo County violated the California Environmental Quality Act in the process of approving the ordinance.

1981 — January 16, the City filed a second lawsuit in Superior Court against Inyo County challenging the constitutionality of the Groundwater Pumping Ordinance. The City maintains that Inyo County does not have the authority to pass an ordinance which interferes in the City's municipal affairs, and that the ordinance violates the State Constitutional provision calling for reasonable and beneficial water use.

January 30, construction of the landfill gas pipeline from Bradley Landfill to Valley Generating Station was completed and gas was first delivered.

The contract for construction of 13,550 feet of 60-inch pipe and 350 feet of 30-inch pipe in the Foothill Trunk Line was awarded.

March 26, DWP water conservation garden dedicated.

May 21, a contract for construction of the Fairmont Reservoir No. 2 was awarded.

Implementation of Inyo County's Groundwater Pumping Ordinance was halted by Superior Court Judge Turner pending the filing of an Environmental Impact Report. This ruling renders the ballot proposition, approved by Inyo County voters, an advisory vote only.

May 27, San Francisquito Power Plant 1, Units 1 and 2 were taken out of service for replacement.

June 14, the 287 kv Boulder-Mead-McCullough Line 1 with the Mead Interconnection was renamed Boulder-McCullough Line 1.

Water conservation kits were mailed to all Los Angeles City residents.

June 24, the 500 kv Victorville-Rinaldi Transmission Line 1 and Bank G (800 mva), 525/230 kv autotransformers at Rinaldi Receiving Station were placed in service.

July 15, the Sanitary Engineering Division received a \$500,000 EPA Grant to conduct a two-year study on the groundwater quality in the San Fernando Valley.

August 6, the Negative Declaration for the 400,000 kw capacity increase of the existing Pacific Intertie HVDC System was approved by the Board.

September 30, the Third District Court of Appeal ruled against the City on the 1979 Environmental Impact Report (EIR) on Increasing Pumping of the Owens Valley Groundwater Basin. The ruling in effect ordered the City to prepare a third EIR, this time covering surface water activities related to the Second Aqueduct project, completed in 1970. A petition for rehearing was denied by the California Supreme Court.

Inyo County attempted unsuccessfully to have the State Supreme Court dismiss the City's lawsuit challenging the Court dismiss the City's lawsuit challenging the County's authority to regulate groundwater activities, and the question of the County's jurisdiction awaits trial in the Superior Court.

In October, Mulholland Memorial Fountain was relandscaped using low-water-using vegetation by personnel of the General Services Division and members of the California Conservation Corps.

October 9, groundbreaking ceremonies for the Intermountain Generating Station were held in Delta, Utah.

December 3, the Board approved the first interconnection of a cogeneration facility with the Department's power system. The 3.8-megawatt facility produces steam to serve the heating, cooling and processing requirements of the Times-Mirror Square in downtown Los Angeles.

1982 — In February, the newly formed Inyo County Water Commission issued a Water Management Report and Draft EIR recommending a substantial reduction in the City's groundwater pumping. Public hearings were held in Lone Pine, Bishop and Los Angeles on June 1, 3 and 5, 1982.

February 1, the Department's Federal geothermal leases for 4,986 acres in the Coso Known Geothermal Resource Area in Inyo County became effective. Rights to an additional 1,839 acres were obtained June 9, 1983.

April 12, the 10,000 kw Solar One Project, located near Barstow, California, became operational. Solar One is jointly funded by DOE, SCE, and the Department.

April 22, the Board awarded a \$4.2 million contract for the purchase of the Los Angeles Water System Data Acquisition and Control (LAWS-DAC) System. The LAWS-DAC System will provide the ability to remotely monitor and control Water System facilities.

May 12, a Prototype Thermal DeNOx System was completed at Haynes.

July 23, first use of off-site use of reclaimed water in Los Angeles. Water from Los Angeles-Glendale Reclamation Plant began irrigating two Griffith Park golf courses (Wilson and Harding). An average 1.6 million gallons per day will be used. This use saves fresh water equivalent to that used by 1,800 families.

July 29, Southern California Utility Power Pool was formed by the the Burbank Public Service Department, the Glendale Public Service Department and the Pasadena Department of Water and Power.

September 2, field construction was started at the Sylmar Converter Station for the Pacific Intertie HVDC Capacity Upgrade.

September 10, the Southern California Public Power Authority (SCPPA) purchased a 5.91-percent (225 mw) ownership interest in the Palo Verde Project from the Salt River Project. DWP participation through a power sales contract with SCPPA amounts to approximately 150 mw from the nuclear power station.

September 28, 62 Los Angeles companies were presented awards for outstanding water conservation. The companies conserved approximately 500 million gallons of water during the twelve month period.

October 12, a Power Distribution Division was created to combine the Distribution Engineering and Services Section of the Power Design and Construction Division with the Distribution Construction and Maintenance Section of the Power Operating Division.

December 18, the new Energy Control Center began commercial operation at the Green Verdugo Facility at 7 a.m. The Energy Control Center will perform scheduling, dispatching, and security assessment functions related to energy and power flow.

1983 — January 27, Project ANGEL, a voluntary fund-raising campaign for customers and DWP employees approved by the Board. Project ANGEL assists low-income and unemployed DWP residential customers who temporarily cannot afford to pay their electric and water bills. By July 28, about \$200,000 had been collected and distributed to about 1,600 customers and the Board approved Project ANGEL as a year-round program. The program is administered by United Way.

February 1, Sanitary Engineering Division renamed Water Quality Division.

February 3, a bill (SB 270) to exempt water diversion activities from air quality permit requirements was introduced in the California Senate by Senator Ralph C. Dills (D-Gardena). SB 270 was conceived in response to the Great Basin Unified Air Pollution Control District's ruling which required the Water System to obtain air quality permits for existing water diversion operations in the Mono Basin and Owens Valley prior to the issuance of permits for the Power System's Coso Geothermal Development. This bill was approved by the state Assembly on July 19.

February 17, the California Supreme Court reversed the Superior Court decision of September 8, 1982, on the Audubon lawsuit seeking to limit the Mono Basin diversion. The Court ruled that the city's water rights were subject to re-evaluation and possible modification consistent with human and environmental values protected by the public trust doctrine.

March 10, Conservation Division functions and personnel transferred to System Development Division.

May 11, a new interconnection point was established with Nevada Power Company (NPC) at McCullough Switching Station. The interconnection is made between the Department's 500-kv Rack E, Position 4 and NPC's Bank H.

May 18, a new interconnection with the Department of Energy was placed in service at McCullough Switching Station through the new 400-mva Bank I and DWP Position E-4.

May 26, Adelanto Converter and Switching Station groundbreaking held. The \$160 million station will be the Southern California terminus for the 490-mile,  $\pm 500$  kV DC transmission line beginning at the IPP site.

June 28, groundbreaking ceremonies were held for the \$140 million Los Angeles Aqueduct Filtration Plant in Sylmar. The facility will enable Los Angeles' city water supply to meet updated federal and state standards for turbidity (cloudiness).

June 30, the Department completed a two-year study and development of a plan to protect the groundwater in the San Fernando Valley.

July, beginning early in the month, record Colorado River runoff caused water over spillways at Hoover Dam, the first time since a 1941 test.

July 8, Superior Court Judge Don Turner declared Inyo County's Groundwater Pumping Ordinance unconstitutional. The lawsuit challenged the county's authority to regulate the city's groundwater pumping.

July 11, Major Projects Division established within the Power System.

September 28, 52 large DWP commercial and industrial customers were honored by Mayor Bradley, City and DWP officials for outstanding energy conservation programs. The combined energy savings over the past year totaled 168 million kilowatt-hours, equivalent to the power used by 35,000 DWP residential customers.

The program of installing a 6-inch concrete slab inside the lined aqueduct section between the Alabama Gates and Haiwee Reservoir was completed. This program involving 36.6 miles of aqueduct lining was begun in 1933, continued intermittently through 1952 and then annually, except for extremely wet years until completed in October.

1984 — January 23, "History of Water in Los Angeles" exhibit opened at El Pueblo de Los Angeles State Historic Park at Olvera Street.

February 6, Los Angeles Aqueduct shut down for 10 days to allow construction of a bypass channel to divert the aqueduct around the construction site of the Los Angeles Aqueduct Filtration Plant.

March 15, the Toluca-Arwater Transmission Line 1 Loop into Air Way Receiving Station, required for future delivery of power from the Intermountain Power Project to the City of Glendale, completed.

April 18, Los Angeles and Inyo County officials ratified an agreement to set aside several legal actions and begin a five-year program for groundwater management in the Owens Valley.

May 1, construction began on the  $\pm 500$  kV DC Intermountain-Adelanto Line 1.

June 13, the Board approved the Negative Declaration for the expansion of the California

portion of the Pacific HVDC Intertie Transmission System from 2000 mw to 3100 mw capacity.

July 10, the city's first residential use of utility-interactive photovoltaic energy began at the DWP's Optimum Energy House where demonstration units had been installed.

July 19, GOB fountains and exterior lights were turned on to celebrate the XXIIIrd Olympiad. Lights remained on for one month.

In September, Water Quality Division Organic Laboratory certified by Department of Health Services to perform tests mandated by Assembly Bill 1803 for monitoring contaminants in ground-water.

49 Los Angeles businesses were honored for outstanding achievement in water conservation by Mayor Bradley and DWP board and management on September 20. More than one billion gallons of water were saved over a period of one year.

September 28, to ensure water deliveries to Southern California during emergencies, a connection was made between the Los Angeles Aqueduct and the State Water Project in the Antelope Valley.

October 22, contract for line construction of the 230 kV Intermountain-Gonder Line 1 was awarded to Irby Construction Company, Inc. by the Intermountain Power Agency Board of Directors.

October 22, Industrial Relations Division renamed Human Resources Division.

October 22, Land Division renamed Real Estate Division.

October 29, San Francisquito Power Plant 1 Unit 5 taken out of service for replacement.

November 13, the 345 kV Intermountain-Mona Line 2 was energized.

November 20, construction began on the replacement of Unit 5 at San Francisquito Power Plant 1.

November 30, construction began on the 230 kV Intermountain Gonder Line 1.

December 13, the Department's plan for the Commercial and Apartment Conservation Service (CACS) Program was approved by the Department of Energy. Subsequently, on February 28, 1985, the board approved a resolution directing implementation of the CACS Program.

1985 — January 10, the Department entered into an agreement with the Southern California Edison Company to participate in the testing of a 40 kw fuel cell fueled by processed landfill gas from a retired landfill in Industry, California.

January 30, final court approval given to four-year INYO/LA agreement on groundwater management in the Owens Valley.

January 31, dedication of the Pacific HVDC Intertie voltage upgrade project at Sylmar Converter Station which increased transmission capacity from 1,600 mw at  $\pm 400$  kV dc to 2,000 mw at  $\pm 500$  kV, making it the largest dc line in North America.

February 27, drilling of the first of three geothermal exploration wells at the Coso Known Geothermal Resource Area was completed at a drilling depth of 2,976 feet. The second well was completed April 27 (4,650 ft.) and the third, June 22 (6,431 ft.).

In March, the South Coast Air Quality Management District granted a permit to operate Scattergood Generating Station Unit 3, replacing the previous load limit with a NOx

emission unit, and enabling a capacity increase of approximately 80 mw to a maximum 370 mw.

On March 26, the Record of Decision for the White Pine Power Project (WPPP) was signed by the Bureau of Land Management, Nevada State Director. The Record of Decision approves the proposed WPPP site and routes. This completes a process that began with the site selection studies in 1981.

April 15, the Intermountain Power Project's Southern Transmission Microwave System was placed in operation.

April 20, construction began on the Gonder Substation.

April 25, Board approved resolution directing development of a Minority Business Enterprise and Women Business Enterprise program having a goal of awarding 12 percent of DWP total contractual dollars to minority and 4 percent to women-owned businesses.

May 24, installation of the second uninterruptible power supply was completed at the Energy Control Center.

May 28, contract for construction of the Intermountain-Mona Line 1 was awarded.

May 31, construction was completed on the looping of the 500 kV Victorville-Toluca and Victorville-Rinaldi transmission lines through Adelanto Switching Station, thus forming Victorville-Adelanto Lines 1 and 2, Adelanto-Rinaldi Line 1 and Adelanto-Toluca Line 1.

July 1-8, the Department administered commissioning activities at Adelanto Converter Station in Adelanto, California.

July 12, construction began on the dc transmission line in Henderson, Nevada.

July 31, Distributing Station 92 placed in service with first commercial load.

August 22, a two-year extension of a USGS vegetation survivability study in the Owens Valley was approved.

September 12, DWP board issued a draft of the Urban Water Management Plan, prepared in compliance with the California Urban Water Management Planning Act of 1983. It describes the city's program promoting efficient water use and efficient management of water resources.

September 26, two resolutions to promote contaminant cleanup and water supply protection in the San Fernando Valley Groundwater Basin adopted by the Board. Actions include adopting resolution urging U.S. Environmental Protection Agency (EPA) to expedite a study and begin interim cleanup measures in the North Hollywood-Burbank portion of the San Fernando Valley Groundwater Basin. The other resolution authorizes application to EPA for a cooperative agreement allowing DWP to perform remedial investigation of cleanup alternatives.

October 3, the Gonder Microwave System placed in service. It was officially commissioned on November 1.

October 4, the 345-kV Intermountain-Mona Line 2 placed in service.

October 15, 167 Los Angeles businesses were honored for outstanding achievement in energy efficiency. Saved more than 175 million kwh.

October 30, Congress authorizes DWP to exchange Upper Franklin property (16 acres) with BLM for 2,731 acres of land adjacent to Haiwee Reservoir in Inyo County. Upper



Franklin Reservoir had been removed from service in 1983. Property added to the Santa Monica Mountains National Recreation Area.

October 30, under terms of the Inyo/LA. Agreement, the Millpond Park and Manzanar Tree Pruning Enhancement/Mitigation projects were completed.

November 7, Board authorizes up to \$300,000 to expedite the initiation of remedial investigation of groundwater contamination in San Fernando Valley.

November 24, water and power revenue increases of 4.5 percent and 5.3 percent respectively, become effective. Seasonal water pricing is a feature of the new rates. Water rates will be higher from April 1 through September 30, to promote an awareness and conservation of water usage. In the winter period, October 1 through March 31, water rates will be lower.

December 4, the  $\pm 500$  kV dc Intermountain-Adelanto Line 1 energized.

December 8, the 230 kV Intermountain-Gonder Line 1 was energized.

December 14, Toluca-Arwater Line 1 extended into Glendale's Airway Station, renamed Toluca-Airway Line 1 and Arwater-Airway Line 1.

December 19, \$57 million contract to expand the Pacific Intertie HVDC Transmission System to the Pacific Northwest was awarded.

December 21, the 345 kV Intermountain-Mona Line 1 was energized.

1986 — January 1, the Intermountain Power Project's Northern Transmission Microwave System was placed in operation.

January 27, Palo Verde Generating Station into commercial operation. DWP is a 5.7 percent owner (210 mw).

January 29, new interconnection established with Glendale at Airway Station when Glendale Banks 1 and 2 placed in service.

February 10, Department of Water Resources selects DWP to participate in pilot landscape water conservation program.

February 13, a contract for the 500 kV transmission towers for Victorville-Rinaldi Line was awarded.

February 20, Board authorizes \$2.5 million for removal of groundwater contaminants from portions of the North Hollywood-Burbank well field.

February 27, Intermountain Generating Station Unit 1 was synchronized to the Utah Power and Light System, representing the first generation at Intermountain. The unit reached a load of 80 mw.

March 27, Board approved an agreement with Citizens Energy Corporation (Citizens), a nonprofit organization engaged in the business of establishing funds to be used to make energy available and affordable for low-income and elderly ratepayers. The agreement enables DWP to make energy purchases and Citizens to establish a new source of funds for Project ANGEL program.

March 28, the Intermountain-Adelanto HVDC system conditionally accepted for bipolar operation up to 800 mw.

March 31, Department's Power Control Area was expanded to include Intermountain

Generating Station, Intermountain and Adelanto Converter Stations and the Intermountain Transmission System.

June 5, water was released from the Aqueduct at Blackrock spill gates to officially open the lower Owens River enhancement/mitigation project as authorized by the Inyo/LA. Agreement.

June 5, a new warm water fishery and wildlife habitat was established along a 25-mile section of the lower Owens River that had been dry since the early 1900s. This is one of the projects under study by the Inyo-LA. representatives as part of enhancement mitigation measures.

June 5, Sawtelle Power Plant placed in service.

June 10, the first unit of the Intermountain Generating Station, its common facilities and the Intermountain Power Project Transmission Systems became commercially available three weeks ahead of schedule and significantly under budget.

June 26, Board Resolution adopted authorizing execution of new power sales agreement with Bonneville Power Administration, replacing the expiring 20-year 1966 agreement.

July 24, Board approved \$242,000 agreement to conduct a five-month bathymetric and geophysical survey of saline Mono Lake's underwater features.

July 28, following the lead of Mayor Bradley and the City Council, the Board voted to limit purchases from firms doing business with South Africa.

August 4, Major Projects Division was reorganized into a section within the Power Design and Construction Division.

August 27, the initial reservoir assessment, which showed a potential of 200 mw to 400 mw, of the Department's geothermal leases at the Coso Known Geothermal Resource Area was completed. The assessment was based on data from the first three wells which were drilled in 1985.

September 17, under the terms of the Inyo/LA. Agreement the Shepherd Creek Alfalfa Lands Enhancement/Mitigation project was completed.

October 31, 31 L.A. businesses received awards for outstanding achievement in water conservation. They collectively saved 47 million gallons of water over a 12-month period.

November 6, DWP contributions to the city reserve fund will total \$79,214,000 for fiscal 1986-87. Under a long-standing practice, the DWP each year transfers to the city an amount equal to 5 percent of gross revenues from the sale of water and electricity in the past fiscal year.

November 7, winners in first Los Angeles Water Conserving Garden Contest named. Contest co-sponsored by DWP and Los Angeles Beautiful.

November 20, DWP and University of California at Los Angeles enter into \$263,350, two-year study of treatment process to remove organic contaminants from San Fernando Valley groundwater.

During November the DWP began distribution of conservation kits to its 104,000 lifeline customers.

December 10, Project ANGEL distributes \$100,000 to help eligible DWP customers pay their water and electric bills.



1987 — January 21, the 1,600-mva Transformer H replaced the 800-mva Transformer G as the terminal for the Adelanto-Rinaldi line at Rinaldi Receiving Station. Transformer G will be used with the future Victorville-Rinaldi line.

February 19, Sawtelle Tank placed in service.

March 12, the Board approved a High Efficiency Heat Pump Program which provides cash incentive for residential, commercial and industrial installations. Also approved was a Thermal Energy Storage Program to encourage off-peak cooling.

March 25, Palo Verde Unit 3 licensed by the Nuclear Regulatory Commission.

April 1 & 4, the former Haynes-Toluca line was looped into Arwater Receiving Station G, and replaced by the Toluca-Arwater Line 1 and the Haynes-Arwater Line 1.

April 2, the \$146 million Los Angeles Aqueduct Filtration Plant was dedicated. It is the largest ozone filtration plant in the United States and has a capacity of 600 million gallons per day.

April 8, the Department executed an electric service contract with the United States resulting in a continuation of Hoover Dam power until September 30, 2017.

April 22, An agreement to purchase assets of the Nevada Northern Railway from Kennecott Copper Corp., by DWP, signed in Ely, Nevada.

April 24, a new city ordinance in effect requiring all buildings sold in the city, constructed before December 1978, to have "low-flow" shower heads and rest rooms with "flush reduction devices."

June 2, the 500-kV Victorville-Rinaldi line was placed in service through the 800-mva Transformer G at Rinaldi Receiving Station for commercial operation.

June 25, the Board approved a Lighting Efficiency Cash Incentive Program to reduce "on-peak" use of electricity.

June 25, DWP began the first employee child care assistance program sponsored by a city department.

July 8, the most extensive water conservation campaign since the 1976-77 drought began with a press conference featuring local TV weathercasters as spokespersons for the advertising program.

July 23, the Department entered into a cooperative agreement with the Environmental Protection Agency for the sum of \$7.6 million to perform a remedial investigation of the San Fernando Valley Groundwater contamination problem.

July 31, Solar One, the world's largest central-receiver, solar-thermal generating station, will operate at least one more year under a new and reduced production schedule.

July 31, five Pacific Intertie Transmission System towers were sabotaged at a location nine miles north of Independence, California. The line was restored August 3.

During the spring and summer, nine enhancement/mitigation projects under the Inyo/LA. Agreement were completed. They included the upper zone well sealing study, Klondike Lake, Laws-Poleta pasture lands, McNally ponds, Lone Pine Riparian Park, Richards and Van Norman fields, Lone Pine woodlots, Independence woodlot and Independence ditch system.

August 27, the Department entered into a cooperative agreement with EPA for the sum of \$4 million to construct and operate a 2,000 gpm groundwater treatment facility to be located in North Hollywood.

September 8, work began on eight shallow groundwater production wells, part of the DWP effort to remove industrial solvents from the San Fernando Groundwater Basin.

September 18, the First L.A. Aqueduct was removed from service for an extensive eight-week inspection and renovation program. Returned to service Nov. 23.

October 1, a 5.9 earthquake centered in the Whittier Narrows east of the city caused only cosmetic and minor damage to the Department's downtown facilities. An aftershock of 5.3 magnitude struck October 4.

October 6, a fire occurred in the center transformer bank at Receiving Station P, rupturing the transformer vessel and causing several thousand gallons of the 16,500 gallons of mineral oil in the transformer to spill.

October 30, a 287-kV circuit breaker fire at Victorville Switching Station caused deenergization of Transformer K and the 287 kV switchyard until early November.

November 5, marked the beginning of the 75th year of Aqueduct System operations.

November 12, operational jurisdiction for a new Receiving Station L was transferred from Scattergood Generating Station, and the new station was placed in service November 24.

1988 — January 7, Harbor Generating Station Units 1 and 2 were placed in standby status.

January 12, a Civil Defense Radio System to link communications between Fire, Police, City Emergency Command Centers and other emergency support groups was placed in service at the General Office Building with remote control at both the Energy Control Center and the Telecommunications Center of Operations.

January 19, Palo Verde Nuclear Generating Station Unit 3 was made available for commercial operation. Coronado contingency capability was discontinued at this time.

January 27, the Palo Verde Nuclear Generating Station received the nation's highest engineering honor—the "Outstanding Engineering Achievement Award."

February 26, the Department received the "Engineering Project Achievement Award" from the Institute for the Advancement of Engineering for its Los Angeles Aqueduct Filtration Plant.

March 1, the Power System published its first Strategic Plan. The Plan describes goals and objectives for the Power System.

March 24, the Board of Water and Power Commissioners authorized the environmental assessment and design of a 2,000 gpm demonstration plant to treat contaminated groundwater for volatile organics in the San Fernando Valley Groundwater Basin. This process, known as an advanced oxidation process, utilizes ozone and hydrogen peroxide to destroy (oxidize) the contaminants.

April 7, two new Energy Management System computers at the Energy Control Center became fully operational to monitor and control the Power System as it expands.

April 23, the first annual Spring Garden Expo was held at the GOB. The half-day symposium featured speakers presenting information on water-efficient irrigation techniques and low-water using plants. Approximately 400 people attended the event.

April 28, a new ordinance became effective requiring all residential, commercial, and industrial properties to retrofit with low-flow shower heads and toilet tank displacement devices. The ordinance made the Department responsible for purchasing and distributing these devices to all of its residential customers.

April 28, a contract was awarded to construct the East Los Angeles trunk line, Unit III.

May 1, Celilo-Sylmar High Voltage DC Pacific Intertie was sabotaged east of Mono Lake in Nevada. Five towers were damaged and the line returned to service May 4.

May 3, construction was completed on the Merritt Pumping Station, which will maintain the capability to supply the full Los Angeles Aqueduct flow after South Haiwee Reservoir is removed from service in accordance with a state mandate.

May 8, the Department-Southern California Edison Exchange Agreement went into effect to provide Southern California Edison Company with 200 megawatts of Castaic power.

May 11, the American Society of Civil Engineering named the Los Angeles Aqueduct Filtration Plant as one of the top 10 engineering projects for 1988.

May 12, a contract was awarded to construct the Ocean Park supply line.

June 2, construction of the North Hollywood Trunk Collector Line was completed. It will provide for the transfer of additional Los Angeles Aqueduct water to the North Hollywood Pumping Station.

June 27, the Heaps Peak at Adelanto Microwave System was placed in service.

July, over 1.3 million low flow shower heads were distributed to customers as part of water conservation activities.

August 5, at 7:00 pm., five of the new Rinaldi-Toluca Wells began production for the first time. It was necessary to shut down one of the wells shortly thereafter when trouble developed with that well's discharge gate. Turning on the new Rinaldi-Toluca Wells allowed the shutting down of two wells with trichloroethylene (TCE) values in excess of 10 parts per billion. On August 6, two more Rinaldi-Toluca Wells were turned on, making a total of six Rinaldi-Toluca Wells now in production with a combined flow of approximately 55 cfs.

August 15, the first digital microwave system was placed in service at Castaic Power Plant, replacing the obsolete microwave equipment.

August 19, Valley Generating Station 1B and 3B Cooling Towers erupted in flames and sustained heavy damage. Valley Units 3 and 4 share the 3B Tower and are limited to 238 megawatts combined net when both units are on line. Damage to the 1B Tower did not impose a generation limitation.

September 11, the temporary 230-kv Castaic-Northridge Line, in service since August 8, was reconnected at Rinaldi Receiving Station. This changed the normal Castaic-Rinaldi and Rinaldi-Northridge Line 1 configuration.

September, the Commuter Services Office was honored for the DWP Vanpool Program by the Association for Commuter Transportation. On a national level, the Department was presented the "Distinguished Service Award" in recognition for "Creative Public Sector Efforts to Respond to Identified Commuter Needs." On the local level, the Department received the "Meritorious Achievement Award."

October 4, the Department received approval from the South Coast Air Quality Management District to upgrade Scattergood Generating Station Unit 3 in return for deactivating Harbor Generating Station Units 1 and 2. This upgrade will result in an estimated net annual reduction of 50 tons of nitrogen oxides and smaller reductions of sulfur dioxides and hydrocarbons. The project will cost about one-tenth of the amount needed to construct new replacement generating capacity.

October 7, filling of Eagle Rock Reservoir in stages began. The reservoir had been taken out of service on July 29, 1986, for installation of a floating cover.

November 14, Lower Franklin Reservoir No. 2 was taken out of service for installation of a floating cover. During the outage, supply to the area was provided from Eagle Rock Reservoir.

November 18, Merritt Pump Station put into service.

December 3, an earthquake of 5.0 magnitude occurred in the Los Angeles Basin with the epicenter located between Pasadena City Hall and the Rose Bowl. Four Receiving Stations were affected and all transformer supplying load were restored.

December 5, a power outage occurred at 3:45 a.m. at the Los Angeles Aqueduct Filtration Plant which initiated the emergency operation plan for a major power outage to the Van Norman Complex area. The operation involved personnel from East and West Valley Districts, Water Control, Water Quality and Pumping Station Operations. Power to the filtration plant was restored at about 4:15 a.m.

December 12, a ceremony was held to formally dedicate a 17-foot high, 5-1/2 ton sculpture of bronze wings (Colpo D'ala) that rests in the reflecting pool on the south side of the GOB. The sculpture was a gift from Italy to the United States in commemoration of the 40th anniversary of the Marshall Plan.

December 19, Water Quality Division assumed responsibility for maintenance of Los Angeles Aqueduct Filtration Plant and distribution system.

1989 — January 6, the construction of a floating cover was completed for Eagle Rock Reservoir.

February 2, General Services Division's Quality Circles were presented an award for improvements in efficiency and productivity by the City's Productivity Council.

February 4, the Pacific Northwest High Voltage DC System was interrupted and taken out of service when ten towers were downed near Inyokem close to Highway 395 and Indian Wells Road during high wind and cold conditions.

February 5, construction completed on a \$1 million pilot plant research facility providing water treatment data for scale-up design of four in-town reservoir filtration plants.

February 9, the Environmental Impact Report for the Tujunga Well Field Project was approved by the Commission. This project consists of 100 cfs. of new wells and distribution facilities to provide increased flexibility to pump and distribute groundwater. The City Planning Commission granted a conditional use permit on July 16.

March 9, an emergency exercise was performed to simulate a power outage at the Van Norman Pump Station No. 2. Emergency pumping units were started and tested. West Valley crews removed the nipples in the Susana Trunk Line that were installed in August, 1988. The air gaps are now in the Susana and Granada Trunk Lines, which means these trunk lines cannot be gravity-fed.

March 9, a satisfactory settlement of the M. A. Mortenson Company's litigation against the City and Department, involving the Los Angeles Aqueduct Filtration Plant, was approved by the Board of Commissioners.

March 30, the North Hollywood groundwater Treatment Facility dedicated. This groundwater treatment facility was a major Department effort to clean up the groundwater pollution in the San Fernando Valley.

March 31, an initial tentative agreement reached with Inyo County regarding long-term cooperative groundwater management.

March, the Commuter Services Offices expanded the rideshare program to include all 21 Department facilities and the participation of more than 100 employees. This was in compliance with the South Coast Air Quality Management District's Regulation XV - Trip Reduction Ordinance.

April 17, the six remaining Rinaldi-Toluca Wells started production. These wells are located in North Hollywood and each has a pumping capacity of approximately 9 cfs.

April 22, the Spring Garden Expo, focusing on xeriscape techniques for conserving water, was held with 300 attendees.

April 25, Sylmar Converter Station Expansion Project AC/DC Converters 1 and 2 were declared in-service in parallel operation with the existing Sylmar Converter Station Pole 3 and Pole 4 Valve Groups (re-named Converter 3 and Converter 4, respectively). The Celilo-Sylmar HVDC Intertie rating is now increased from 2,000 megawatts to 3,100 megawatts in both north and south directions.

April, the fuel oil inventory was critically low. To conserve fuel oil, energy purchases were made that were higher than DWP incremental costs.

May 3, fuel oil inventory levels are no longer critically low. Energy purchases, higher than DWP incremental costs, were suspended.

May 7, the First and Second Aqueducts were shut down south of the San Francisquito Power Plant No. 1, allowing Aqueduct Division personnel to do repair work in the San Francisquito siphon. During the outage, the City was supplied water through the Jensen Filtration Plant connection (IA-35T). On May 11, the First Aqueduct was returned to service with a flow of 400 cfs.

May 30, letters were distributed to residents adjacent to the remaining uncovered reservoirs, explaining plans to prepare a Program Environmental Impact Report.

May 31, by the end of the month, new microwave multiplex channel terminals were installed by the Telecommunications Section at Independence, Bishop and the Control Gorge Power Plant.

Fiscal Year 1988-89, contractors completed cleaning and cement lining a total of 288,641 feet of 4-inch, 6-inch and 8-inch cast iron mains. Contractors also replaced 2,249 old service laterals with new 1-inch copper services.

July 17, the one millionth low-flow shower head is distributed to DWP customers. The program began in August 1988.

August, AQMD Rule 1135 requires DWP to reduce in-basin NOX emissions an additional 75% by year 2000.

August 8, a flash flood closed a two mile section of the Los Angeles Aqueduct near Olancho for 11 days. Repairs cost \$800,000.

August 22, DWP was ordered by El Dorado County Superior Court Judge Terrence M. Finney, to halt all diversions in the Mono Basin to allow the Mono Lake elevation to reach 6,377 feet.

August 24, an historic agreement between Inyo County and Los Angeles for a long-term groundwater management plan for the Owens Valley was approved by the Board. The goal of the plan is to provide a reliable supply of water for export to Los Angeles and for use in the Owens Valley in a manner that will cause no significant adverse impacts on the Owens Valley environment that cannot be acceptably mitigated.

September 28, in response to community concerns about the aesthetic value and water quality of open reservoirs, the Board adopted a policy to prepare a program environmental impact report to study the effects of future water quality improvement projects.

October 4, three, six-person DWP Power Distribution crews flew to Puerto Rico to assist in restoring lines downed by Hurricane Hugo.

October 8, construction began on a \$17.4 million water pumping station in North Hollywood that will replace a small station in operation since 1930. A small hydroelectric unit will be included in the facility design.

November 30, DWP purchases six emissions-free electric vehicles (EV) for fleet use. DWP and Southern California Edison Company also sponsor "LA EV Initiative," an international design competition to put 10,000 EVs into the Los Angeles area by 1995.

December 6, "Project Angel" distributes \$120,000 to customers needing assistance in paying their bills. "Project Angel" was established in 1983 and has helped over 10,000 families. Over \$1 million has been contributed by customers and DWP employees.

1990 — City of Los Angeles, 463.90 square miles, Population 3,485,000.

March 30, DWP enters into partnership with Natural Resources Defense Council to expand conservation/energy efficiency programs and activities.

April 3, DWP employee "INFO" daily telephone newsline begins.

April 3, Department suspends pumping Owens Valley groundwater for export to Los Angeles because of drought conditions in the Owens Valley. Los Angeles Aqueduct to carry less than 25% of City supply in 1990 rather than normal +/-75%.

April 6, DWP begins releasing water into the lower portions of Walker (2.5cfs) and Parker (3cfs) creeks in the Mono Basin in compliance with a State Water Resources Control Board decision to require LA to release sufficient water into the streams to re-establish and maintain fisheries.

April 18, The Department and SCE join to develop an electrified roadway concept near Westchester. Electric powered vehicles would receive most, or all of their power from electric cables buried in conventional road surfaces.

May, AQMD Rule 1135 Compliance Plan submitted. Cost to DWP \$500 million.

May 4, DWP proposes to use approximately 4,000 a/f of San Fernando Valley reclaimed water from the Donald Tillman Water Reclamation Plant at Valley Generating Station for power plant cooling and landscape irrigation.

May 25, Board endorses mandatory water conservation and urged the City Council to enact Phase II (requires 10% reduction in water use) of the Emergency Conservation Plan.

May 31, \$2.2 million water conservation advertising campaign announced.

June 14, Board approves \$2.15 million contract to construct a groundwater treatment demonstration facility in North Hollywood. The advanced oxidation process will use a combination of ozone and hydrogen peroxide to destroy contaminants by breaking them into harmless by-products — carbon dioxide, water and chloride ions. Startup and testing will begin in 1991.

June 25, James H. Anthony Center (formerly Computer Operations Facility), groundbreaking held. The four-story, 315,000 s/f office complex will consolidate all

customer service, meter reading, and billing operations; finance and accounting functions; and the water quality laboratory. A childcare center will also be included. Approximately 1,400 employees will work at the facility. Completion is scheduled for November 1991.

July 26, Board approves EIR for Harbor Generating Station Repowering Project that will repower 240mw of the station's steam-turbine generators with more efficient equipment including state-of-the-art emissions control equipment.

September 4, Department, SCE, and Clean Air Transport, a vehicle manufacturer, entered into agreements to produce electric vehicles for use in SoCal. DWP and SCE will provide \$3.5 million each to the Swedish firm over the next three years to assist in development, production and marketing. Target date is 1992. Electric vehicles are 97% cleaner than conventional automobiles, including power plant emissions in the generation of electricity needed to operate the vehicle.

September, the preparation of plans and EIRs began for a project that could use up to 45 million gallons of reclaimed wastewater presently discharged to the Los Angeles River from the Tillman Water Reclamation plant in the Sepulveda Basin for irrigation, industrial purposes and groundwater recharge in the east San Fernando Valley.

October 15, a \$60+ million annual plan to expand energy efficiency programs for all customers beginning in the 1990-91 fy begins.

October, Board approves \$224,000 well drilling contract near Headworks Spreading Grounds, San Fernando Valley, to determine feasibility of recharging Los Angeles River water into the SFV groundwater basin.

November 2, The list of potential developers for DWP's geothermal holdings at Coso in Inyo County was narrowed to three companies. Final negotiations were begun and the developer is expected to be selected by mid-1991.

November 13, A Los Angeles Superior Court judge ruled that the California Energy Commission (CEC) had incorrectly asserted jurisdiction over the Harbor Generating Station Repowering Project in August 1990. The Los Angeles City Attorney filed against the CEC in September 1990.

November 15, fiber optic communications cable system installation begins to improve communications between GOB, Sylmar Station and DWP facilities along the route.

## GENERAL DATA — WATER

The first water works system in America, built in Boston, Mass., in 1652, was privately owned, changing over to municipal ownership in 1848.

By 1820, there were 25 municipally owned water systems; by 1896, 1470; by 1915, 3045.

The McGraw Water Works Directory for 1916 listed 4,437 water works, approximately 70% under public ownership.

In January 1938, in California, 99 municipally owned plants were serving 3,727,300 population, and 38 privately owned plants were serving 348,100 — 91.5 percent of the State's population served under municipal ownership, compared to a national percentage of 83.6.

As of January 1955, 348 California cities and communities having a total population of 6,733,000 (1950 census) were served by municipally owned water works as compared with 1,204,000 population served by privately owned water plants.

At the end of 1954, an analysis of an inventory of Municipal water facilities compiled by the U.S. Department of Health showed that 6,126,000 (1950 census) people living in 82 California cities of 10,000 or more population were served by municipally owned water systems as compared with 585,302 people in 27 cities of like size served by privately owned water works.

In 1980, the American Water Works Association reported that of approximately 50,000 systems serving a U.S. population of 200 million, 44 percent were publicly owned serving 80 percent of the population and 56 percent were investor-owned serving 20 percent of the population.

### Water Usage Annual Peak Demand Day — DWP (24 hour period, 7 a.m.-7 a.m.)

July 12, 1940	— 422	million gallons
Aug. 8, 1945	— 516	million gallons
Aug. 9, 1950	— 566	million gallons
Sept. 1, 1955	— 756	million gallons
July 20, 1960	— 761	million gallons
Aug. 9, 1965	— 763	million gallons
Aug. 7, 1970	— 778	million gallons
Aug. 7, 1975	— 767	million gallons
June 28, 1976	— 857	million gallons
July 26, 1977	— 621	million gallons
Sept. 24, 1978	— 725	million gallons
June 11, 1979	— 788	million gallons
July 30, 1980	— 776	million gallons
June 16, 1981	— 923	million gallons (DWP record)
Sept. 2, 1982	— 791	million gallons
July 13, 1983	— 798	million gallons
Sept. 5, 1984	— 883	million gallons
July 3, 1985	— 914	million gallons
Aug. 19, 1986	— 873	million gallons
Sept. 2, 1987	— 841	million gallons
July 22, 1988	— 798	million gallons
July 20, 1989	— 836	million gallons
July 26, 1990	— 822	million gallons

1989-90 per capita consumption in Los Angeles 180.0 gallons per day.  
Average annual precipitation in the Los Angeles basin is 12.48 inches.  
1989-90 rainfall was 8.91 inches.