
WATER WHEELS OF PROGRESS
1781
1935

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AN ACCOUNT OF LOS ANGELES
AND ITS WATER SUPPLY FROM

1781 — 1935

BUREAU *of* WATER WORKS *and* SUPPLY
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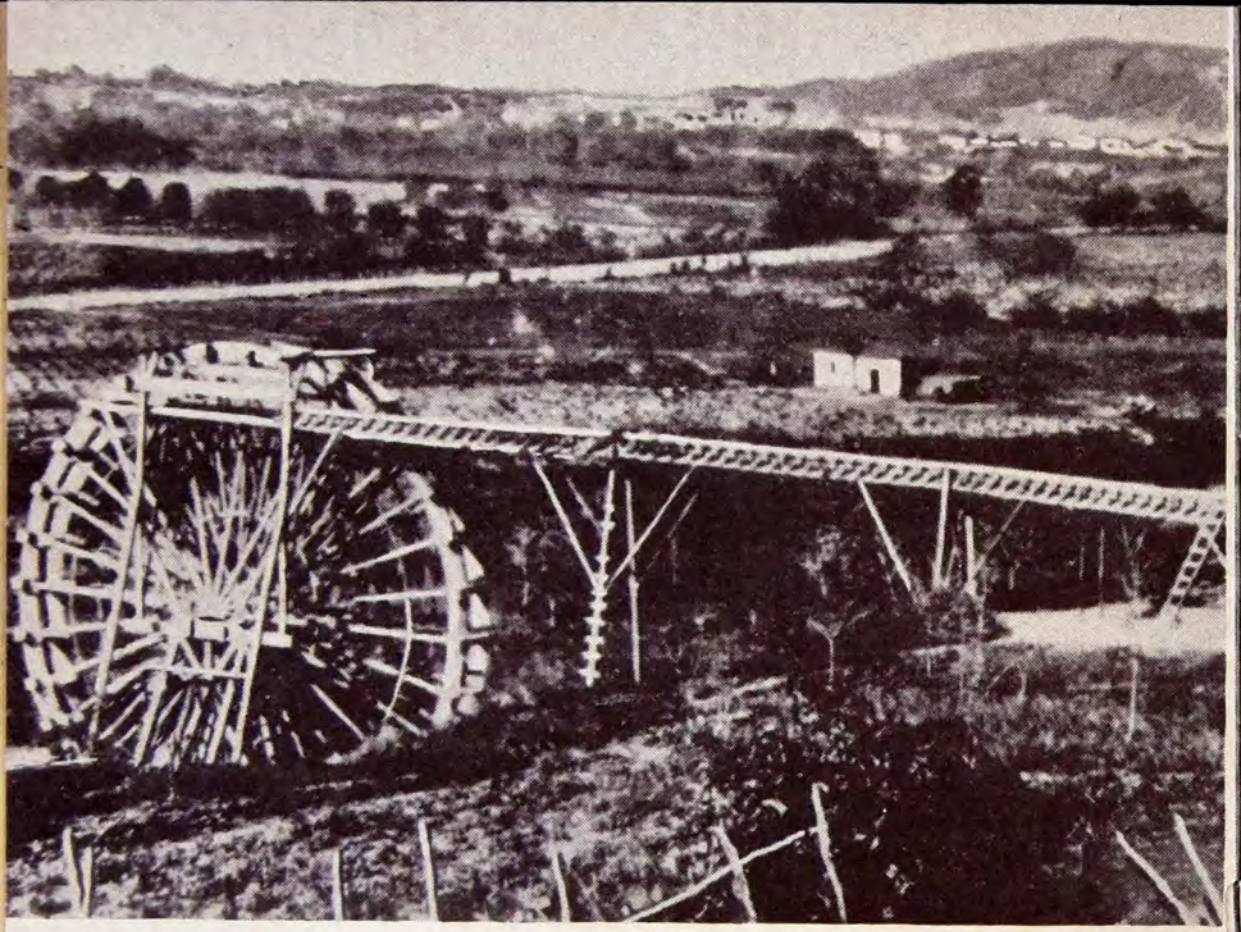
CHIEF ENGINEER AND GENERAL MANAGER



This crude irrigation wheel, used during the last half of the 1800's, is a symbol of the modest works from which has evolved a modern water system serving more than a million Los Angeles citizens and prepared to serve the second million.

WATER WHEELS OF PROGRESS

When Gaspar de Portola set forth from San Diego in 1769 on his historic march to Monterey, little did he know that his explorations would lead to the founding of what has become the metropolis of the West and the fifth city of the Nation.

Tired and dusty from its travels, the little band of soldiers he commanded found refreshment in the waters of what now is named the Los Angeles River. Making careful note of this plentiful water supply located in a semi-arid region, the party forged ahead to its northern destination. Ten years slipped by before Felipe de Neve, governor of Alta California, inspected the site and, noting its natural advantages, sent to Mexico for colonists.

Eleven families responded to the promise of abundant water supplies and fertile lands. Arriving at the banks of the Los Angeles River in 1781, they founded the City of Los Angeles. Their name, though, for the community was far more imposing. The little town bravely termed itself *El Pueblo de Nuestra Senora la Reina de Los Angeles*, which means: The Village of Our Lady, the Queen of the Angels.

The lazily moving waters of the Los Angeles River, which were the inducement for colonization, were the most valuable asset of the tiny pueblo. This asset was preserved to the City of Los Angeles for all time by royal proclamation of King Carlos III of Spain. Through all the glamorous, turbulent periods of California history, this paramount right to possession of the River's waters has remained fixed.

For more than a century the River served the City faithfully, meeting all its requirements for water. Then, in 1904, with the population at the 160,000 mark and increasing rapidly, it was apparent to far-sighted civic leaders that the margin between population and the ability of the River to serve the needs of not more than 350,000 persons, was uncomfortably narrow.

If the City were to continue its development, more water was needed. Searching for a new source of supply, engineers found the Owens River. Fed by the melting snows of the Sierra Nevada mountains, this stream, winding its way through the length of Owens Valley, was emptying its precious cargo of pure water into the desolate wastes of a saline lake.

Undaunted by the fact that an aqueduct 238 miles long, and costing $24,000,000, would have to be built to bring this water to the City, Los Angeles citizens undertook construction of the huge water carrier in 1908. Five years later work was completed. The greatest aqueduct in the world, crossing forbidding desert sands, boring through granite mountain ranges and hurdling steep canyons, stood ready to deliver the flow from countless mountain streams and lakes to the homes of Los Angeles citizens.

On the long journey from Owens Valley, the energy created by the water's drop from an elevation of 3800 feet to nearly sea level was harnessed by power plants built by the City and operated for the benefit of all its citizens. In this manner Los Angeles linked together its water and power resources, providing for their management through the municipal Department of Water and Power.

With the impetus of low cost, adequate water and power supplies, Los Angeles surged forward in an unprecedented period of growth. When the momentous million point in population was reached, engineers already were planning for the future. Once again they surveyed the vast reaches of deserts and mountains hemming in Los Angeles, then announced that the Colorado River, more than 250 miles to the east, held the key to the future expansion of the City.

From their broad vision came the mighty undertaking that all the Nation now knows as the Boulder Canyon Project, embracing water, power, irrigation and flood control features on a scale never before attempted.

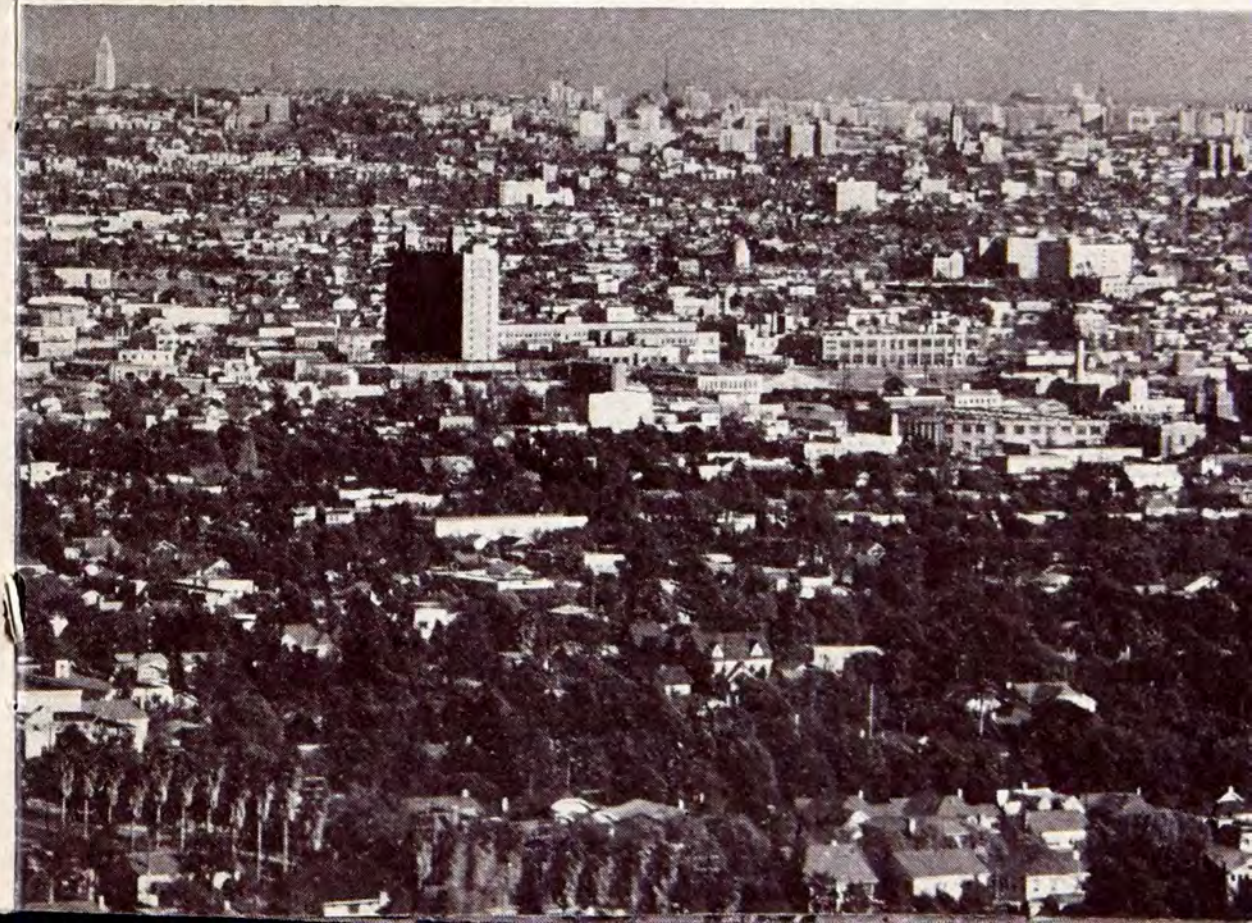
Los Angeles continues to grow, and the Department of Water and Power continues to anticipate the City's needs. To assure ample water for two million people, the Mono Basin addition is being made to the Owens River Aqueduct. The major unit of this work is an eleven-mile tunnel piercing the Mono Craters, through which the waters from five more Sierra Nevada streams will become available to the City. To spur the economic prosperity of the Metropolitan area, the world's greatest power line, to transmit power from Boulder Dam, is nearing completion by the municipal power system.

Add to these facts the promise of Colorado River water in a quantity sufficient to serve a population of more than seven million, and it is apparent that Los Angeles, acting in this project with other Southern California cities, has insured itself well against the vagaries of rains and the blight of droughts.

Photographs and further information concerning the Los Angeles Water System will be found in the pages that follow.

LOS ANGELES AND ITS WATER SYSTEM

Looking toward Downtown Los Angeles from the hills of Hollywood



A TRIPLE WATER SUPPLY FOR LOS ANGELES

For maximum reliability, Los Angeles utilizes three water supply sources, which are known as:

The Sierra Nevada supply — From this snow-mantled range that includes in its jagged peaks the soaring spires of Mt. Whitney—highest point in the U. S.—countless icy lakes and sparkling streams are fed. Finding their way into the Owens River they are diverted, at a point 238 miles north of Los Angeles, into the longest aqueduct ever built, providing the principal supply for the City.

The Los Angeles River supply — Although the bed of this River is dry most of the year, beneath its sandy surface runs a stream of naturally percolated water in a quantity sufficient normally to serve a population of 350,000. For 133 years it was the sole source of supply for Los Angeles.

The local wells supply — Vast subterranean reservoirs beneath the City can be tapped through a number of wells when it is necessary to augment other supply sources.

Sierra Nevada mountain scene (top); Municipal pumping plant and view of Los Angeles River (bottom, left to right).

THE WORLD'S LONGEST AQUEDUCT

RESIDENTS of Los Angeles receive the major portion of their water supply through the longest aqueduct in the world. Interesting facts about this giant water carrier are:

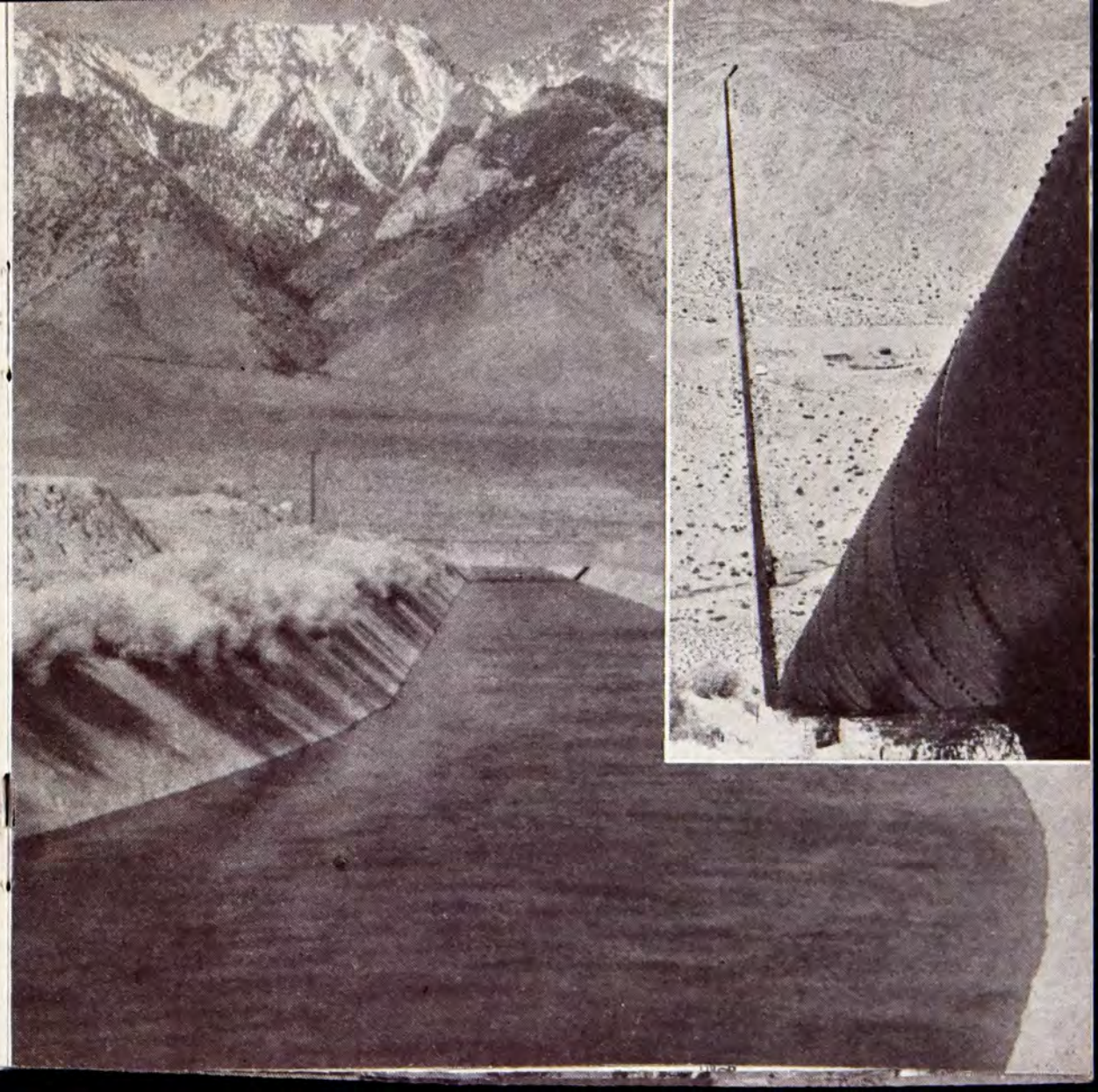
Length	**238 miles**
Cost	**$24,500,000**
Capacity	**310,000,000 gallons per day**
Started	**1908**
Completed	**1913**

The Mono Basin addition to bring more pure mountain water to Los Angeles via the Aqueduct, is now under construction. It includes the following features:

Length	**31 miles**
Distance from Los Angeles	**350 miles**
Cost	**$7,000,000**

From the outlet of 11-mile Mono Craters Tunnel the added water supply will empty into the Owens River, to be carried southward to the Aqueduct intake. To regulate and store some of the increased flow, what will be the largest reservoir in the entire system is being built in Long Valley. It will have a capacity of 163,000 acre feet.

Lined canal and steel siphon sections of Los Angeles Aqueduct.



WATER BROUGHT 250 MILES FOR 4 CENTS A TON

WATER RATES are low in Los Angeles and the result is apparent in the generous use of water for the lawns and flower gardens that beautify Los Angeles homes. Rates established by the publicly owned water system amount to only four cents a ton for water that has been brought from points 250 miles away. The new Mono Basin supply will increase the length of the bargain haul to 350 miles.

HOW LOS ANGELES RATES COMPARE NATIONALLY.

Average of 183 largest U. S. Cities—18 cents.
Los Angeles municipal rate—13 cents.

(Amount is for 100 cubic feet.)

Among the representative cities included in the comparison are the following, together with their base rate for domestic service:

Boston, Mass.	**15.4**	**San Francisco, Calif.**	**28**
Pittsburgh, Pa.	**25**	**Des Moines, Ia.**	**22**
Indianapolis, Ind.	**22**	**Miami, Fla.**	**19**
Youngstown, O.	**20**	**St. Louis, Mo.**	**15**

The Los Angeles rate for the same quantity of water is only 13 cents.

LOS ANGELES WATER IS PURE WATER

ABSOLUTE PURITY of its water supply is a major consideration of every city. Los Angeles has never had a known case of water-borne disease in its entire history of municipal operation of the water system. Los Angeles water is pure at its sources and is kept pure by scientific laboratory control methods. More than 30,000 tests annually show that the water supply surpasses the rigid requirements of U. S. authorities. In addition to being pure, it is healthful and palatable.

Laboratory tests certify to purity of water supply.

PLENTY OF WATER IN THE SHADOW OF THE DESERT

SITUATED at the edge of vast desert regions, Los Angeles always has realized the value of water. It has not depended upon rains and local supplies, which everywhere are subject to wide fluctuations. Instead, it has gone to remote mountain ranges that throughout the year release the imprisoned waters of winter's snowfall. Huge reservoirs have been built along the Aqueduct and in the City to store billions of gallons of surplus flow for the increased demands of the summer months, when local supplies diminish.

All in all, the chain of reservoirs can store the stupendous amount of 56 billion gallons of water. This valuable storage supply, added to the normal running supply, guarantees bounteous quantities of water for every industrial and domestic requirement of more than a million persons.

When large sections of the Nation were blighted by the drought last year Los Angeles, although built at the edge of the desert, was unaffected. Careful planning has bridged the gaps of seasonal rainfalls and their unpredictable supplies.

Lower San Fernando Reservoir, one of the storage basins in the Los Angeles municipal water system.

BEFORE AND AFTER

Typical San Fernando Valley scenes, showing how Aqueduct water has aided development of the Los Angeles back country.—*Security-First National Bank of Los Angeles photos.*

SERVING THE WORLD'S LARGEST CITY

SPREADING over 450 square miles the City of Los Angeles is the largest city in the world in area. To serve this expanse requires the second largest distribution system in the U. S. The network of water mains, comprised of pipes ranging in diameter from four inches to six feet, is 3800 miles in length and grows longer each year. Through these pipes flows more than 200 million gallons of water daily.

Laying water mains in the Los Angeles business district.

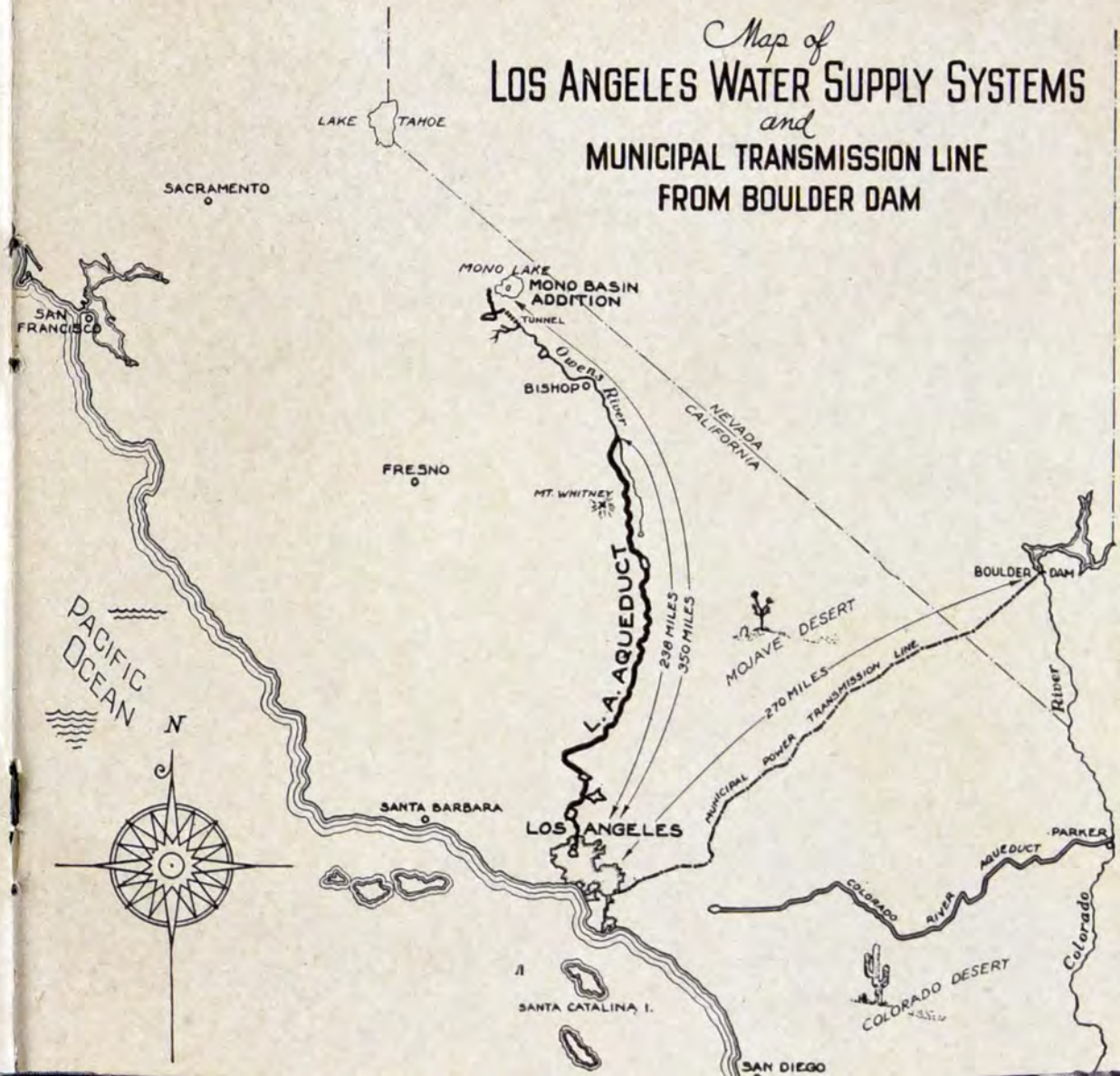
LOS ANGELES OWNS ITS OWN WATER SYSTEM

By community initiative Los Angeles has built a water system that is second in size in the Nation. During the period from 1865 to 1902, operation of the local distribution works was leased to private interests, although the City retained all its rights to ownership of the water supply. When the City regained sole control of the system in 1902, at a cost of $2,000,000, it started a period of spectacular growth, marked by an immediate rate cut of 63 percent.

As the City grew, the water system grew too, always setting the pace by providing sufficient water to meet the needs of new residents, new businesses and new industries. Operated by and for the citizens of Los Angeles, the municipal institution has achieved remarkable success. These facts illustrate the magnitude of its business enterprise:

Assets	**$149,000,000**
Gross income—fiscal year	**$ 9,291,000**
Accumulated surplus	**$ 20,680,000**
Bonds outstanding	**$ 70,000,000**
Number of active services	**257,363**

(Note: Figures are for the fiscal year ending June 30, 1934.)



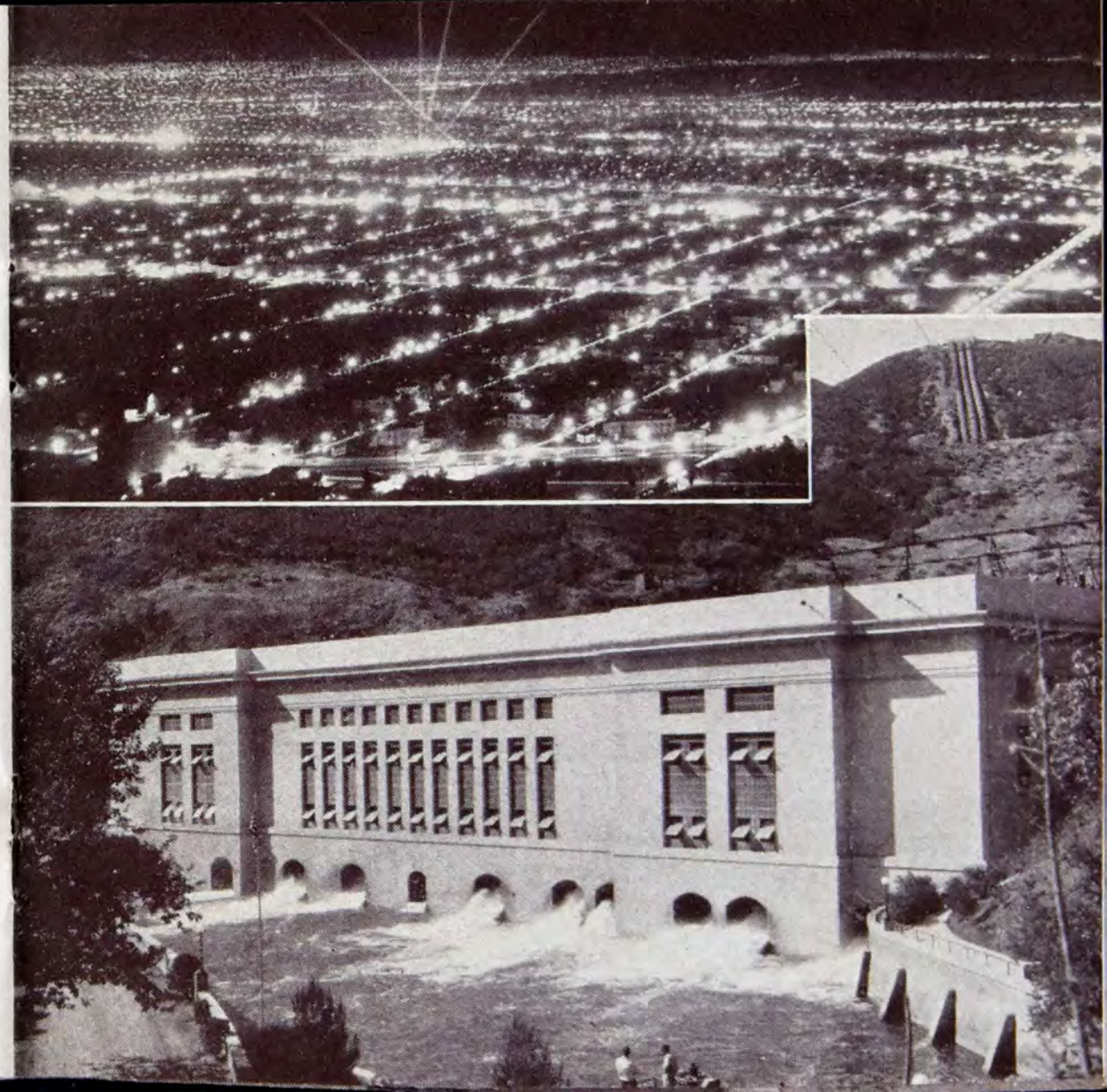
WATER POWER CREATES THE SMOKELESS CITY

Los Angeles has been electrically minded since the days when the Owens River Project first was proposed. Water and water power here have been inseparably linked, working under public control for the welfare of the entire community. Before the Los Angeles Aqueduct was built it was seen that by utilizing the force of the water's fall in its long journey from Owens Valley, electric power could be generated to stimulate industrial development and provide employment for thousands of new residents.

When municipal electricity became available in 1917, at low rates, Los Angeles became a balanced community. Today the Los Angeles municipal electric system is the largest city-owned electric utility in the United States. Its outstanding features include:

Assets	**$96,000,000**
Gross income—fiscal year	**$14,332,000**
Accumulated surplus	**$43,791,000**
Bonds outstanding	**$33,000,000**
Number of services	**232,643**

(Note: Figures are for fiscal year ending June 30, 1934.)



City owned power plants serve Los Angeles night and day.

TOMORROW'S SUPPLIES OF WATER AND POWER

ALL through its colorful history Los Angeles has had an eye to the future. As a result, with completion of the Boulder Canyon Project and its related features, Los Angeles will have the most valuable water and power reserves ever developed by a community. Early in 1936 the municipal electric system will place in operation the 275,000 volt power transmission line that will speed tremendous quantities of electricity to Los Angeles, to be distributed at low municipal rates. Completion of the Colorado River Aqueduct will bring to the doors of metropolitan Los Angeles and other Southern California cities one billion gallons of water daily.

Behind massive Boulder Dam is being created the largest artificial reservoir the world has ever seen. The regulated flow of the huge lake, rushing through the Federal power plant, then winding on its long journey to Los Angeles, will provide the basis for a new era in Southern California.

Tomorrow's water and power supplies for Los Angeles are provided for bounteously by its citizens, acting through their city-owned Department of Water and Power.

Boulder Dam—Key to tomorrow's water and power supplies.

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