

# History of Early Water Diversions and their Impact on Owens Lake

David E. Babb  
 City of Los Angeles  
 Department of Water and Power  
 Bishop, California 93514

*Abstract.* The first Europeans to explore the Owens Valley found this westernmost of the desiccated valleys of the Great Basin region to be a barren desert differing from the others in that it had an abundant water supply derived from the melting snows on the Sierra Nevada range. The Valley was an undrained basin traversed its entire length by the Owens River, terminating in Owens Lake, a body of highly saline water covering over 110 sq mi (286 sq km) and averaging 8 to 10 ft (2.5 to 3 m) in depth.

By the late 1860s, several settlements had been established throughout the Valley, and a program of clearing sagebrush lands and diverting water from the river and streams to irrigate farmlands had been established.

In 1874 the first of several large canals was constructed to carry water from the Owens River onto adjacent sagebrush-covered lands, and by 1890 more than a dozen canals and ditches, with a cumulative total length of 250 mi (400 km), had been completed, with a combined capacity to divert nearly the total average flow of 60,000 miner's inches (1,200 cfs) from the river.

With the bulk of the flow of Owens River being diverted, the level of Owens Lake was lowering at the rate of 30 in (75 cm) a year, and by 1899, the old Cartago Wharf—which stood in 8 to 10 ft (2.5 to 3 m) of water in the 1870s—was now 2 mi (4 km) from shore.

Local newspapers in 1904 noted that the level of Owens Lake had dropped 32 ft (10 m) in just 12 years, and its area had shrunk to less than 70 sq mi (182 sq km) from its 1870 size of 110 sq mi (286 sq km). It was predicted that at the 1904 rate of decline, the lake would vanish by 1920.

By the mid 1920s, irrigation had reached its peak on 50,000 acres of pastureland and 25,000 acres of cropland, the Los Angeles Aqueduct was in full operation, and Owens Lake was dry.

## INTRODUCTION

This paper is not presented as a detailed research report or in-depth study of the hydrologic or climatic factors affecting Owens Valley water resources. It is instead intended to present a brief outline of historical events that occurred between the 1860s

and 1913, events that influenced surface water patterns and inflow to Owens Lake and that were reported in journals, field notes, government reports, and the media of the day.

The first Europeans to explore the Owens Valley found this westernmost of the dessicated valleys of the Great Basin region to be a barren desert differing from the others in that it had an abundant water supply derived from the melting snows on the Sierra Nevada range. The Valley was an undrained basin traversed its entire length by the Owens River, which terminated in Owens Lake, a body of highly saline water covering over 110 sq mi (286 sq km) and averaging 8 to 10 ft (2.5 to 3 m) in depth.

A review of the writings of these early visitors shows that their first impressions of the Valley were not always complimentary. For example, surveyor A. W. Von Schmidt [1855] observed in his field notes that in his opinion, the country forming the Owens Valley is unfit for white men in both soils and climate.

Captain J. M. Davidson, on an 1859 expedition to Owens Valley from Fort Tejon, noted that as he travelled north through the Valley, the more barren expanses of the south gave way to broad areas of lush green grass north of what is now the town of Big Pine [Wilke and Lawton, 1976]. Captain Davidson also noted that the native Paiute Indians had established an excellent irrigation system adjacent to the major tributary streams.

In 1864, William H. Brewer observed that where certain streams flowed from the Sierra onto the Valley floor, they spread out, forming vast meadows of fine grass that would support thousands of grazing cattle. Brewer noted, however, that these meadows comprised only 10 percent of the Valley floor, the rest being sagebrush desert, and no trees grew on the Valley floor [Farquhar, 1966].

## SETTLEMENT AND IRRIGATION

The meadows described by Brewer and the abundant water supply did indeed attract cattlemen, and by the late 1860s, several settlements had been established throughout the Valley, and a program of clearing sagebrush and diverting water from the river and tributary streams to irrigate farmlands had been initiated.

As early as 1871, farmers observed that the surface waters of the Valley were not as abundant as previously thought, and much water "flowed to waste in Owens Lake." The *Inyo Independent* of November 18, 1871 observed that, "Since the surface water in this Valley is insufficient for irrigating purposes, we hear frequent inquiries in regard to artesian wells as a remedy. This method is not always successful, but it rarely if ever fails in valleys such as this, surrounded by lofty mountains."

By fall of 1873, the *Independent* was urging farmers to undertake the building of large irrigation canals for ". . . the reclamation of thousands of acres of land lying idle" [*Inyo Independent*, October 18, 1873].

In 1874 the first of several large canals was constructed to carry water from the Owens River onto adjacent sagebrush-covered lands; and by 1890 more than a dozen canals and ditches, with a cumulative total length of 250 mi (400 km), had been completed—with a combined capacity to divert nearly the total average flow of 60,000 miner's inches (1,200 cfs) from the river. At this time, over 46,000 acres were being irrigated (14,000 acres of cultivated cropland and 32,000 acres of pastureland).

This rapidly expanding program of irrigation was not without drawbacks, however, as mismanagement of irrigation water allowed water to overflow land and create swamps and bogs on what could otherwise be productive cropland [*Inyo Independent*, March 5, 1887]. Also, the *Inyo Register* of January 3, 1889, reporting on the completion of most of the large irrigation canals, suggested that, “. . . all of the water is appropriated, but the evaporated part will ultimately find its way back to the river and stay for a time the drying up of big Owens Lake.” This observation prompted a project in the mid 1890s which proposed to intercept the water remaining in Owens River north of Lone Pine and convey it via a canal, bypassing Owens Lake, to Salt Wells Valley, south of Little Lake. When it was determined that such a project would require a pumping plant to bring the water over the foothills between Lone Pine and Olancho, the project was abandoned.

The problem of misuse, mismanagement, or waste of diverted irrigation water continued to plague the farm community for many years thereafter. A survey of agriculture and industry in Inyo County, commissioned in 1917 by the Board of Supervisors, reported that, “The twin of irrigation in Owens Valley at the present time is WASTE—through three causes: excessive seepage, ignorant irrigation, and monumental self-ishness of those holding riparian rights to streams and who, when their irrigation needs are satisfied, woefully waste the water by letting it merrily run its natural course through their lands and further add to the high water table and alkali content of the valley lands” [Newcomb, 1917].

### **OWENS LAKE**

Owens Lake had for centuries been subject to wide fluctuations in surface level, influenced primarily by climatic changes modified by occasional changes in the outlet level to the south [Lee, 1915]. This climatic influence continued to some extent through the 1860s. In that decade, several years of abundant rainfall (including approximately 20 in (50 cm) recorded in 1867 at Fort Independence) caused the Lake to rise to a level that submerged roads along the shore to a depth of 5 ft (1.6 m) [*Inyo Independent*, August 3, 1872].

The Great Owens Valley earthquake of March 26, 1872, impacted the lake by tilting the Valley floor toward the west. A permanent

depression on the northwest corner and a corresponding rise on the northeast side resulted in the lake being approximately 2 ft (0.6 m) shallower at the Swansea landing than before the quake [Hobbs, 1907]. At that time the lake was estimated to cover an area of about 111 sq mi (288 sq km). The *Inyo Independent* of August 3, 1872, observed that during the month of July, the lake had risen at the rate of 4 or 5 in (10 or 13 cm) at night, even though the flow in the river was diminishing. It was also noted that for a short time immediately following the earthquake, the lake level had dropped several feet and remained at a stationary level for three months.

When the construction of the first of the large canals began in 1874, soundings from the steamer "Bessie Brady" showed the maximum depth of the lake was 51 ft (16 m) over a 4-sq-mi (10-sq-km) area in the middle [*Inyo Register*, August 4, 1904].

During the decade of the 1880s and into the early 1890s, while heavy snowpacks and associated runoff from the Sierra Nevada caused Mono Lake, 120 mi (195 km) to the north, to rise 25 to 30 ft (8 to 10 m), Owens Lake was declining as much water from the Owens River was diverted for irrigation. In 1894 alone, the shoreline receded approximately 200 ft (63 m) according to the *Inyo Independent* of November 2.

Beginning in 1895, ten years of unparalleled drought brought about a dramatic lowering of the level of Owens Lake [Lee, 1915]. With the bulk of the flow of the Owens River being diverted, the level of Owens Lake was lowering at the rate of 30 in (76 cm) a year; and by 1899 the old Carago Wharf, which stood in 8 to 10 ft (2.5 to 3.0 m) of water in the 1870s, was now 2 mi (4 km) from shore.

Finally, the *Inyo Register* of August 4, 1904, featured a story entitled, "Is Owens Lake Near Its End?" The lake level, which had been falling approximately 30 in (76 cm) each year, was now 32 ft (10 m) lower than in 1874; and the area of the lake had shrunk to less than 70 sq mi (182 sq km) from its 1870 size of 110 sq mi (286 sq km). It was predicted that should the rate of decline shown in the previous three years continue, it would be but fifteen years until Owens Lake will have become a memory.

In September 1905, the City of Los Angeles filed to appropriate all of the waters of the Owens River south of Charlie's Butte, including surplus and floodwater flows, for use in Los Angeles. Subsequent wet years during the construction of the first Los Angeles Aqueduct brought an increase in the flows of the Owens River, and the level of Owens Lake rose over 12 ft (4 m) between 1905 and 1913.

By 1920, irrigation reached its peak on 50,000 acres of pastureland and 25,000 acres of cropland. Full flow in the Los Angeles Aqueduct was reached in 1926, and by 1929 (except for a small pool of brine in the center) Owens Lake was dry.

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