

The Newlands Project

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1996

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The Newlands Project

The idea was a simple one: irrigate more than 400,000 acres of land in western Nevada using the combined waters of the Truckee and Carson Rivers. To accomplish this, construct a small dam at the outlet of Lake Tahoe, the source of the Truckee River, to control releases into the river, while downstream, a small dam would divert the water into a canal that would carry it to the Carson River where the combined flows would help bring almost a half a million acres of desert land to life. A simple idea that resulted in almost a century of conflict and controversy punctuated by numerous legal and legislative battles that are not yet fully resolved.

Project Location

The Newlands Project covers lands in the west-central Nevada counties of Churchill, Lyon, Storey, and Washoe. Water for the project comes from Lake Tahoe, which lies on the California/Nevada border, the Truckee River which drains Lake Tahoe, and the Carson River. Annual precipitation in the region is less than 4½ inches and temperatures range from a low of -17° to a high over 100°.¹

Historic Setting

Humans have occupied the areas along the Truckee and Carson Rivers in western Nevada for over 10,000 years. Archeological evidence indicates that the earliest human activity in the region focused around the pursuit of game along the shores of the long dry Lake Lahontan. Over time, climactic changes forced the inhabitants of the region to conform to new patterns of subsistence. A lake-based subsistence pattern gradually shifted to the new realities of life in the arid Great Basin. By the time the first Europeans entered the region in the early 1800s, the primary inhabitants were the Paiute Indians.²

The first Europeans to enter western Nevada were explorers and trappers. In 1827, Jedediah Strong Smith, leading a party of trappers for the Rocky Mountain Fur Company, passed

1. United States Department of Interior, Water and Power Resources Service, *Project Data*, (Denver: United States Government Printing Office, 1981), 689.

2. John M. Townley, *Turn This Water Into Gold. The Story of the Newlands Project*, (Reno: Nevada Historical Society, 1977), 1.

through the region some 75 miles south of Truckee Meadows. The following year, Peter Skene Ogden, while exploring for the Hudson's Bay Company, discovered the Humboldt River near Winnemucca. Driven by poor weather, Ogden and his party moved east to the area Salt Lake City without having explored the Humboldt to any great extent. The following spring, Ogden returned to the river and followed it to its end in the Humboldt Sink. While camping on the river near Lovelock, local Indians described to Ogden the Truckee River and told of the abundance of large trout. Discouraged by the report that no beaver inhabited the river, Ogden chose not to explore the Truckee River further.³

In early 1844, Lieutenant John Frémont, leading a party for the U.S. Bureau of Topographical Engineers, became the first white man to view Pyramid Lake, naming the lake for a large rock formation on its eastern shore. From Pyramid Lake, Frémont followed the Truckee River to where it turns to the west near present day Wadsworth. Continuing south, Frémont first crossed the Carson River then the Walker River before turning to the north-west and heading up into the Sierra Nevada. In mid-February, after considerable effort, Frémont's party reached the top of the Sierra where they were able to look down upon Lake Tahoe. Due to harsh weather and the difficulty encountered getting to that point, Frémont did not continue on to the lake, but turned instead to the west and on to Sutter's Fort, arriving there in early March.⁴

In the spring of 1844, the Stevens-Murphy-Townsend emigrant party departed Council Bluffs, Iowa headed for California. They would become the first party to use the direct route to California along the Humboldt and Truckee Rivers and Donner Pass. When the party reached the headwaters of the Humboldt River, they met an Indian guide named Truckee who offered to help them. Instead of traveling south to the Carson Sink, the guide directed the party west to the Truckee River. In appreciation of their guide's services, the party named the river in his honor. The party continued up the river to Donner Creek where they turned, and followed the creek to Donner Pass and into California. It has been reported that several members of the party left the

3. Gary A. Horton, *Truckee River Chronology. A Chronological History of the Truckee River and Related Water Issues*, Nevada Water Basin Information and Chronology Series, (State of Nevada, Department of Conservation and Natural Resources, October 1995), II 2-II 3.

4. *Ibid.*, II 4-II 5.

main group and continued up the Truckee River and became the first white men to reach Lake Tahoe. Two years later, the infamous Donner Party, for which Donner Lake and Pass are named, would become stranded near Donner Lake. Word of the party's misfortune would discourage use of the Truckee River route for several years.⁵

The discovery of gold at Sutter's Mill near Sacramento in 1848 signaled the beginning of an unprecedented period of expansion throughout the west. Many who traveled to the California gold fields chose either the Truckee River/Donner Pass route or the more southerly route along the Carson River and through Sonora Pass. Both routes proved difficult, but the lure of the gold fields helped travelers overcome the obstacles. With the influx of immigrants to the region, settlement soon began. In 1852, the first permanent settlement along the Truckee River was established with the opening of "Jamison's Station" in the Truckee Meadows near the site of Reno. In 1854, Asa L. Kenyon and his wife, Catherine, established a station on the Carson River. Known as Ragtown, the station prospered throughout the 1850s, serving as a stage and mail station on the route from Salt Lake City to California.⁶

In June 1859, gold was discovered near Virginia City in Storey County. Early prospectors soon discovered that silver, not gold, would be the primary ore mined in the region. The Comstock Lode, as it would come to be called, began an influx of settlers to northern Nevada that would place heavy demands on the region's natural resources, including water and timber. Water to supply the growing needs of the Comstock mines was diverted from the Truckee River and Lake Tahoe Basins, marking the beginning of interbasin water diversions. The demands for lumber to supply the mines and railroads led to the rapid growth of logging and milling operations throughout the Sierra Nevada. Before long, the rivers and streams in the area became clogged with sawdust and logging debris, preventing fish migration and seriously degrading the quality of water in the Truckee River.⁷

The 1860s was a period of rapid growth and settlement along the Truckee River. With

5. *Ibid.*, II 5-II 6.

6. *Ibid.*, II 6-II 8; *Turn This Water Into Gold*, 3.

7. *Ibid.*, II 8-II 9.

the growth came conflict and controversy. The 1860 Pyramid Lake Indian War resulted in the deaths of over 150 Indians and 75 whites. The City of San Francisco began to look to the water of Lake Tahoe to supply the needs of the growing city. Logging and mining continued to pollute the rivers and streams. Sawdust bars blocked rivers preventing fish from migrating upstream to spawn, and silt washed from hillsides stripped of trees fouled the waters. In 1861, Congress granted Nevada territorial status. Among the first acts of the Territorial Assembly was to pass a requirement that all dams constructed in Nevada allow for the natural transit of fish.

Unfortunately, this requirement was frequently overlooked.⁸

In the early 1860s, the first irrigation ditches began to appear. The Pioneer and Cochran Ditches diverted water from the Truckee River to irrigate lands in Truckee Meadows. Numerous dams were constructed on the Truckee River to divert water for irrigation or to power mills. In 1870, the California Legislature authorized the Donner Lumber and Boom Company⁹ to improve the channel of the Truckee River from the outlet of Lake Tahoe to the California/Nevada state line. The company constructed a rockfilled timber crib dam at the outlet of the lake, controlling the outflow of the lake for the first time.¹⁰

Throughout the later part of the 1800s, growth along the Truckee River continued at a rapid pace. More dams were constructed, increasing diversions from the river and further limiting migration of fish. Industrial and municipal wastes flowed untreated into the river. The drinking water of Reno and other towns was alive with bacteria and other organisms, requiring the residents to boil the water before using it. By the time the Reclamation Service authorized construction of the Truckee-Carson Project¹¹ in 1903, the waters of the Truckee River were virtually all appropriated.¹²

Project Authorization

The United States Geological Survey (USGS) began investigations into possible

8. *Ibid.*, II 10.

9. Two different names for the company that owned the dam are given in different sources. The name used in the particular source cited is used in the text. See also "Donner Boom and Logging Company."

10. *Ibid.*, II 13.

11. The Newlands Project was authorized as the Truckee-Carson Project in 1903. the name was changed to Newlands in 1919.

12. *Ibid.*, II 13-II 21.

irrigation projects in the Truckee and Carson River Basins in the late 1880s. In 1902, the newly organized United States Reclamation Service took over investigations. On March 14, 1903, the Secretary of the Interior authorized the Truckee-Carson Project, making it one of the first projects authorized for construction by the Reclamation Service.¹³

Construction History

Work on the Truckee-Carson Project began in mid-1903. The original plan proposed reclamation of over 300,000 acres of land in western Nevada. The plan called for the diversion of water from the Truckee River to the Carson River where it could be used to irrigate lands in the Carson River Basin. To accomplish this, a diversion dam constructed on the Truckee River would divert water into a 30-mile long main canal that would convey it to the Carson River. A second dam constructed on the Carson River would divert water into project canals for delivery to project lands. To ensure an adequate supply of water during the late portions of the irrigation season when the flows of the rivers were at their lowest, water would be released from Lake Tahoe and several storage reservoirs to be constructed on the Truckee and Carson Rivers.

To control the release of water from Lake Tahoe, Reclamation would construct a dam at the outlet of the lake. The dam would control the top six feet of the lake providing storage for more than 700,000 acre-feet (af) which would be released as needed to supplement the natural flow of the Truckee River. To provide additional storage, as many as five reservoirs would be constructed on the Truckee River, and an equal number on the Carson River.

Construction of the project was directed by Leon H. Taylor. Taylor joined the Reclamation Service in 1903 after serving as a hydrographer for the USGS in the 1890s. Taylor spent years studying irrigation possibilities along the Truckee and Carson Rivers and was instrumental in selection of the site of the Truckee-Carson Project. The initial phase of the plan called for the construction of canals and diversion dams. Construction of the storage facilities would begin at a later date.

Construction of the main canal to convey water from the Truckee River to the Carson

13. *Project Data*, 688.

River was divided into three divisions. Division 1 included the Derby Diversion Dam on the Truckee River, Truckee Canal headworks, and the first six miles of canal. Division 2 covered miles seven through thirteen, and Division 3 covered the remaining 17 miles of the canal. Bids for construction of the dam and canal were opened in Washington by the Secretary of Interior on July 15, 1903. The contract for Divisions 1 and 2 was awarded to C. A. Warren & Company with bids of \$324,967 for Division 1, and \$415,020 for Division 2. The contract for construction of Division 3 was awarded to the E. B. & A. L. Stone Company who submitted a low bid of \$250,700. The contracts for the diversion dam and canal were among the first contracts awarded by the Reclamation Service.¹⁴

Construction of the diversion dam required the labor of over 500 men. A temporary diversion channel around the site of the dam and an earthen embankment protected the site. Once the dam site was free of water, the foundation area was cleared and excavated, exposing bedrock which would serve as the foundation for the structure. Then the contractor erected concrete forms and placed concrete for the gate structure. Work on the dam was completed in early 1905. The Derby Diversion Dam is an earthfill embankment structure 31 feet (ft) high and 1,300 ft long with a concrete control structure. It contains more than 35,000 cubic yards (cy) of material and has a diversion capacity of 1,500 cubic feet per second (cfs). Flow into the canal is controlled by 9 slide gates.

The Truckee Canal was constructed at the same time as the diversion dam. Excavation and construction of the 32-mile long canal required more than 1,000 men and two years to complete. Started in September 1903, excavations were carried out using three large drag-line excavators. In addition to more than 30 miles of canal, three tunnels were constructed on the canal route. The tunnels range in length from 309 feet to 1,521 feet and are 15.3 feet in diameter. Work on Division 3 was completed September 30, 1904, followed by Division 2 on February 2, 1905, and Division 1 on May 20, 1905. The Truckee Canal is 31.2 miles long and

14. *Turn This Water into Gold*, 31; W. E. Hardesty, "The Truckee-Carson Project of the United States Reclamation Service," *Engineering News*, 18 October, 1906, 391-2; Enos Brown, "The Truckee-Carson Reclamation Project," *Scientific American Supplement*, 16 September, 1905, 24830.

has an initial bottom width of 20 feet with a capacity of 1,500 cfs and a maximum depth of 13 feet. At several points along its route, the canal has control gates to release water for irrigation of lands adjacent to the canal. The canal then terminated at the Carson River where the flow discharged into the river via a timber chute that was later replaced by a concrete chute.¹⁵

While the Derby Diversion Dam and Truckee Canal were being constructed, the Carson River Diversion Dam and project canals were also under construction. The Carson River Diversion Dam is located about five-miles downstream from where the Truckee Canal empties into the Carson River.

Reclamation designers divided construction of the Carson River Dam and project canals into four schedules. Schedule A covered canal excavations and embankment work. The contract for schedule A was awarded on September 9, 1904, to the Pacific Coast Construction Company, which bid \$195,887. Work began on September 1, 1904 and continued until completion on May 31, 1905. The contract for schedule B, which covered construction of the concrete headworks, was awarded to R. C. Mattingly of San Francisco on September 17, 1904. The winning bid was \$52,168. Work under the contract began on December 1, 1904, and was completed on September 20, 1905. Schedule C covered spillways, drops, lateral headgates, and other minor structures along the canals. The winning bid of \$43,219 was submitted by the San Francisco Construction Company. Reclamation awarded the contract on September 17, 1904, with work commencing on December 1. All work under the contract was completed on July 21, 1905. Reclamation awarded Schedule D, which covered construction of several bridges over the canals, to Clarence W. Swain of Ione, California. The winning bid was \$4,288. Work began on September 13, 1904, and continued through July 21, 1905.¹⁶

The Carson River Diversion Dam is 241-feet long with a 225 ft long, 31-ft high, concrete control section, and has a diversion capacity of 1,950 cfs. It was completed in 1906. Two canals

15. *Turn This Water into Gold*, 31-3, 35(photo), 39(photo); *Project Data*, 690; W. E. Hardesty, "The Truckee-Carson Project of the United States Reclamation Service." United States Department of Interior, United States Geological Survey, February 1906, Record Group 115, Records of the Bureau of Reclamation. National Archives-Rocky Mountain Region, Denver, Colorado, 103-4.

16. W. E. Hardesty, "The Truckee-Carson Project of the United States Reclamation Service." United States Department of Interior, United States Geological Survey, February 1906, 175A-177.

carry water from the Carson River Dam to project lands. The "T" Canal serves lands on the north side of the river. It is 9 miles long with a bottom width of 10-feet, and has a capacity of 450 cfs. The "V" Canal serves lands on the south side of the river and is 27 miles long. It has a bottom width of 22-feet and a capacity of 1,500 cfs. In addition to the primary canals, more than 300 miles of laterals and almost 350 miles of drains have been constructed since work on the first laterals began in 1904.¹⁷

On June 17, 1905, a congressional delegation led by Senator Francis G. Newlands, sponsor of the 1902 Reclamation Act, dedicated the Derby Diversion Dam and Truckee Canal. Upon the opening of the headgates, water flowed into a federally controlled reclamation project for the first time. The first water deliveries to project settlers began in February 1906.¹⁸

Reclamation began preliminary work on the Lake Tahoe Dam in 1905, but work was immediately halted when power companies that held previously existing water claims filed an injunction against the government. This action was simply the latest in a series of actions that had been going on since 1902.

In 1902, following passage of the Reclamation Act, the government began negotiations with the Donner Boom and Logging Company, owners of a small dam at the outlet of Lake Tahoe. Unknown to the government, downriver power companies were also negotiating with the Donner Company, and in September 1902, The Truckee River General Electric Company purchased the dam for \$40,000. Following the transfer, the government began negotiating with the power company and in April 1903, agreed to purchase the dam for \$100,000 and a guarantee of sufficient water flows to generate electricity. Government officials in Washington believed the price to be too high and opted to condemn the dam and take control via the courts.

In July 1904, Reclamation gained control of 63 acres just below the existing dam and began plans to construct a new dam to control flows from Lake Tahoe. The contract for construction of the Lake Tahoe Dam was awarded to Edward Malley of San Francisco on July

17. *Project Data*, 690; W. E. Hardesty, "The Truckee-Carson Project of the United States Reclamation Service." *Engineering News*, 400.

18. *Turn This Water into Gold*, 33, 36.

19, 1905. The contract price was \$32,200. This action caused great concern among the owners of land along the shores of Lake Tahoe. Rumors began to circulate that the new dam would allow the lake to be drained to a level five feet lower than the existing minimum level, while the storage level would be raised more than ten feet above the current maximum. Despite assurances that existing maximum and minimum levels would be maintained, when construction began in 1905, legal action was taken to halt construction.¹⁹

While the Reclamation Service studied alternative approaches to gain control of Lake Tahoe, water use on project lands increased. In 1908, water use reached the point that the combined flows of the Truckee and Carson Rivers could not meet late summer irrigation demands. To provide a more secure water supply, Reclamation planners investigated several sites on the Carson River for construction of a dam and reservoir. One site, known as the Lower Carson Reservoir site, was near the point where the Truckee Canal emptied into the Carson River. In December 1910, after several years of water shortages and the inability of the government to gain control of the waters of Lake Tahoe, the Secretary of Interior approved construction of Lahontan Dam at the Lower Carson site.²⁰

Construction of the Lahontan Dam began in February 1911. The remote location of the site prompted construction of a hydroelectric powerplant to provide power for construction activities. The design of the powerplant took advantage of the more than 100 foot fall of the Truckee Canal into the Carson River. Work on the plant began in late March 1911, and was completed in early November. Water was supplied to the two, 500 kilowatt generators by a single, 500-foot long, 72-inch diameter, steel penstock originating near the end of the Truckee Canal (the penstock system would later be replaced by a system that supplies water to the powerhouse from Lahontan Reservoir). Water not used for power generation was discharged into Lahontan Reservoir. The generators, supplied by General Electric, are driven by Francis

19. Ibid., 47-9; W. E. Hardesty, "The Truckee-Carson Project of the United States Reclamation Service." United States Department of Interior: United States Geological Survey, February 1906, 402B-402C.

20. *Turn This Water into Gold*, 41,49; Denver, National Archives and Records Administration: Rocky Mountain Region, Record group 115: Records of the Bureau of Reclamation, "Project Histories: Newlands," Vol. I-Outline 1906-12, 30 (hereafter cited as "Project History," followed by volume number, year, and page).

turbines manufactured by the Pelton Waterwheel Company.²¹

Work on the dam itself began in early 1911 and was carried out by government forces. Blasting for the trench for the cut-off wall near the upstream toe of the dam began in late March. Designed to prevent seepage of water under the dam embankment, the bottom of the wall extends between 30 and 60 feet below the original ground surface with the top of the wall extending 6 to 8 feet above the surface and into the dam embankment. Additional protection was provided by pressure grouting the areas surrounding the cut-off wall.²²

Control of the Carson River during construction was achieved by first constructing the outlet conduit and then diverting the river through the conduit. The outlet works consisted of two reinforced concrete conduits each nine-feet in diameter that discharged into the spillway pool. Flow into the conduits was controlled from the outlet tower which is located upstream from the dam. The tower consists of two reinforced concrete barrels, each 14-feet in diameter. At the base of each barrel there is a cylinder gate that controls flows into the conduits. Water is admitted into the barrels by two sets of three vertical lift gates located at different elevations along the sides of each of the barrels. The slide gates and cylinder gates are operated from a control house atop the tower. The total capacity of the outlet works is 2,000 cfs. Access to the control house is via a 220-foot long suspension bridge from the top of the dam. Excavations for the outlet conduit began in early May 1911 and were completed by mid-August. Concrete placement in the conduit began in mid-February 1912, with placement of the invert section of the left conduit. The left conduit was completed from the base of the tower to the spillway pool on June 13, and the river diverted through it on November 20, 1912. The right outlet conduit was completed in late December.²³

A unique feature of Lahontan Dam is the twin spillways, one at each end of the main

21. "Project History" Vol. I-Outline 1906-12, Lahontan Dam, History of Construction: February 7, 1911-December 31, 1911, 10; F. H. Tillinghast, "The Lahontan Dam, Truckee-Carson Irrigation Project U. S. Reclamation Service, in *Engineering and Contracting*, 12 February 1913, 189; Information on the manufacture of the turbines was supplied by the Bureau of Reclamation Lahontan Basin Area Office.

22. Tillinghast, 193, 195-6; D. W. Cole. "Lahontan Dam, Truckee-Carson Irrigation Project, Nevada," *Engineering News*, 22 April 1915, 761.

23. Tillinghast, 193, 196; "Project History" Vol. I-Outline 1906-12, Lahontan Dam, History of Construction: February 7, 1911-December 31, 1911, 19; Lahontan Dam: History of Construction, January 1, 1912-December 31, 1912, 20-1.

dam, that discharge into a common stilling pool. Each spillway has an uncontrolled concrete crest approximately 250-feet long with an open channel that curves nearly 90° before ending at the stilling pool. The pool, located at the base of the dam, is 230-feet across with an area of almost one acre. The spillway system was designed so that the energy of the flows will cancel one another when they converge in the pool. The combined design capacity of the spillway system is 30,000 cfs. Excavations for the left spillway began June 12, 1911, with work on the right spillway commencing on August 10. Construction of concrete forms in the left spillway began in late June 1912, with the first placement of concrete on July 13. Concrete was delivered using a 1,600-foot long cableway with a capacity of 15-tons. Some 70,000 cy of concrete were used in the spillways, outlet works, and other structures. Excavations for the spillway pool were completed in late November 1912. Both spillways and the stilling pool were completed by the beginning of 1915.²⁴

Embankment placing operations began in early November 1912. Stripping of the dam site was carried out just in advance of embankment placing. The embankment is composed of two zones of compacted fill material. The downstream zone consists of gravel fill, while the upstream zone is made up of a mixture of earth and gravel placed in layers, wetted, and rolled by 10-ton, steam powered traction engines. The materials were transported from storage bins to the center of the embankment by a 925-foot long conveyor belt. The materials were then spread out using horse drawn dump wagons, moistened, and rolled into 3-inch layers. The entire embankment is protected by a 12-inch layer of gravel. In addition, the upstream slope is covered by a 2-foot layer of riprap. The embankment was completed December 15, 1914. Lahontan Dam is a earth and gravel structure 162-feet high and 1,300-feet long. The embankment contains more than 730,000 cy of material. The design capacity of Lahontan Reservoir is 273,600 af. The use of flashboards across the spillway crests brings the storage capacity up to more than

24. Cole, 760; "Project History" Vol. I-Outline 1906-12, Lahontan Dam, History of Construction; February 7, 1911-December 31, 1911, 18-9; Lahontan Dam: History of Construction, January 1, 1912-December 31, 1912, 15, 18; "Project History," Vol. I, 1914, 12-4.

310,000 af with a surface area of 11,200 acres and almost 70 miles of shoreline.²⁵

While the Reclamation Service progressed with work on Lahontan Dam, efforts to gain control of Lake Tahoe continued. Because of severe drought conditions in 1912, the Reclamation Service was forced to close the downstream gates of the Derby Diversion Dam, diverting the entire flow of the Truckee River into the Truckee Canal. As a result of this action, the stream bed for several miles below the dam became clogged with dead and dying trout. Eventually, the Reclamation Service and the Truckee River General Electric Company, whom many believed were intentionally withholding water from the farmers, sent a party of workers to Lake Tahoe to dredge the channel and cut down the rim to release more water. Although the action was blocked by a court injunction, the incident is typical of the kinds of activities that surrounded the controversy.²⁶

In 1913, the controversy surrounding construction of the Lake Tahoe Dam was finally resolved when the Reclamation Service and the power company agreed to complete construction of the dam which had been started in 1905, but delayed by the protracted legal battle. The dam was completed in late 1913, and is a concrete slab and buttress dam, 109-feet long and 18-feet high. Flows are controlled by seventeen, 5-foot by 4-foot gates. The dam controls the top 6 feet of the lake. With a surface area of 120,000 acres, the effective storage capacity is over 730,000 af.²⁷

The completion of Lahontan Dam in early 1915 marked the end of construction of the major features of the Truckee-Carson Project, but construction of distribution canals, laterals, and drains continued for several years. In January 1915, the Canyon Power Company, operators of the Lahontan Powerplant under a lease agreement with the U.S. Government, began installation of a third, 500 kw generating unit. The installation was completed on June 20, 1915,

25. Cole, 761-2; Tillinghast, 190; "Project History" Vol. I-Outline 1906-12, Lahontan Dam: History of Construction, January 1, 1912-December 31, 1912, 9; "Project History," Vol. I, 1914, 9-10; Department of Interior, Bureau of Reclamation, *Reclamation Project Data*, (Washington: U.S. Government Printing Office, 1961), 537; *Project Data*, 1981, 689; *Truckee River Chronology*, I 12.

26. *Truckee River Chronology*, III 5; Jeanine Jones, *Truckee River Atlas*, (State of California, Department of Water Resources, June 1991), 44.

27. *Truckee River Chronology*, III 6; *Project Data*, 689.

bringing the capacity of the plant up to 1,500 kw.²⁸

On July 1, 1915, based on a June 4, 1915 consent decree issued in federal court (*United States v. Truckee River General Electric Company*), the United States assumed control of the dam at Lake Tahoe. The decree, known as the Truckee River General Electric Decree, gave the Reclamation Service an easement to operate the dam and use the surrounding property, subject to certain restrictions. Under the agreement, the Reclamation Service was to guarantee certain year-round flow rates to support hydropower operations downstream. These flow rates, known as "Floriston Rates",²⁹ would be used as the basis for future Truckee River water use agreements. After more than a decade of controversy and conflict, the Reclamation Service had finally gained limited control of the waters of Lake Tahoe.³⁰

Post-Construction History

The settlement that awarded the Reclamation Service control of the Lake Tahoe Dam and the waters of Lake Tahoe did not mark the end of water rights controversies on the Truckee-Carson Project. In 1913, in order to quantify and clarify the water rights of users upstream from the Derby Diversion Dam, the Reclamation Service initiated litigation proceedings to adjudicate the rights of water users on the Truckee River.³¹ It was expected that the proceedings would be brief and friendly, taking only a short amount of time to be resolved. However, it took more than 30 years to determine who had rights to how much water.³²

In November 1916, Truckee-Carson water users voted to form an irrigation district to represent the interests of the water users. As early as 1908 it had been recognized that there were serious problems throughout the project. In spite the Reclamation Service's belief that soils would support a wide variety of crops, that sufficient water would be available to farms, and that markets existed for produce, many entrymen soon discovered that a forty-acre farm was too

28. Project History 1915-6, Vol. 2, 13; 1917-8, Vol. 3, 9-10.

29. **Floriston Rates** means the rate of flow of the Truckee River at the head of the power penstock at Floriston, California. The Reclamation Service was required to maintain an average flow of 500 cubic feet per second (cfs) during the period commencing March 1 and ending September 30 each year. An average flow of 400 cfs was required for the period beginning October 1 and ending on the last day of February. During periods of low water at Lake Tahoe, these rates would be adjusted to compensate for the low water levels.

30. *Truckee River Chronology*, III 7.

31. See *United States v. Orr Ditch Water Company et. al.*

32. *Truckee River Chronology*, III 6.

small to produce an adequate income, that irrigation water did not drain properly, and that little water was available during the later part of the irrigation season. By 1912, large areas on the project were saturated and unusable, and farm prices were much lower than expected. Drainage ditches excavated in 1906 did not sufficiently drain irrigated fields, and the water table was very near the surface, saturating the root zone.

Lack of adequate drainage was a significant impediment to successful farming in the region. Area water users formed an informal organization and began to demand that the Reclamation Service provide a solution to the drainage problem. Conflicts over who was responsible delayed resolution of the situation. The water users claimed that the Reclamation Service had promised adequate drainage, while the Reclamation Service contended that the problem was due to over-irrigation and that the farmers should assume the cost of constructing a drainage system. Offers by the Reclamation Service to correct the drainage problems with the costs paid by the water users were overwhelmingly rejected.

In late December 1917, Nevada Senator Francis G. Newlands, sponsor of the Reclamation Act of 1902 and a staunch supporter of the Truckee-Carson Project and western irrigation, passed away at the age of 69. Newlands was a primary author of the Reclamation Act that created the Reclamation Service and was instrumental in the selection of the Truckee-Carson Project as one of the first projects approved for construction. In March 1919, the name of the Truckee-Carson Project was officially changed to the Newlands Project in honor of Senator Newland's commitment to Western reclamation and to the farmers of western Nevada.³³

In 1916, after several years of resisting the formation of a formal water users organization, the Reclamation Service proposed to begin work on a drainage system as soon as an irrigation district could be formed that could contract for payment of the costs of the drainage system. In March 1917, the Nevada Legislature passed a bill approving formation of the irrigation district, and on November 16, the Truckee-Carson Irrigation District (TCID) was

33. *Turn This Water into Gold*, 17-28; *Reclamation Era*, February 1918, 50; Project History, 1919-20, Vol. 5, 8.

created by a vote of nine-to-one in favor of organization.³⁴

A contract for construction of a drainage system was not approved until 1921, and a second contract had to be approved in 1924. By 1928, when work under the contracts was complete, more than 230 miles of drains had been excavated. Following completion of the system, drainage was no longer a serious problem.

Following World War I, conditions on many Reclamation projects had become so bad with many farmers unable to fulfill their payment obligations that the Secretary of the Interior appointed a fact finding commission to investigate the situation and make recommendations. The commission determined that by 1926, \$7,899,479 had been spent on the Newlands Project. Of that amount, the commission determined that \$4,437,820 had been spent without proper cause and that the water users should not be responsible for repayment of that amount. The Omnibus Adjustment Act of 1926 relieved the water users of that amount and gave them forty years to repay the remaining \$3,281,999.³⁵

Negotiations for transfer of operation and maintenance of the project to the irrigation district began in 1921. Settlement of the repayment problem removed a major barrier to transfer of the project to the district. On December 1, 1926, water users narrowly approved the transfer, and on December 31, the Secretary of the Interior signed the contract transferring operation and maintenance of the Newlands Project to the TCID.³⁶

Following completion of Lahontan Dam, the generators at the Lahontan Powerplant were supplied with water from two different penstock systems. The primary system fed water to the units via a 72-inch steel penstock from the Truckee Canal. An auxiliary system consisting of a 48-inch concrete pipe supplied water from Lahontan Reservoir when the primary system was shut down. Power operations were often disrupted during the late summer when flows in the canal were reduced and the level of the lake fell below the intake of the auxiliary system. To alleviate this situation, a more reliable system was constructed. Constructed between March

34. *Turn This Water into Gold*, 53-60.

35. *Ibid.*, 60.

36. *Ibid.*, 53-60.

1923 and June 1925, the new system consists of a 1,128-foot long, 72-inch diameter steel pipe running through the left outlet conduit from the base of the intake tower, under the left spillway and onto the powerhouse. A 66-inch fixed-cone valve bypasses flows into the spillway pool when power operations are suspended.³⁷

By 1926, after more than twenty years of operation, many elements of the project had deteriorated significantly and were in need of repair. Among the problems described by Reclamation engineer A. W. Walker in his report of October 23, 1926, was cracking of several hundred feet of concrete lining in Tunnels No. 1 and 3, accumulation of almost 160,000 cy of material in the main canal, and significant deterioration of the concrete apron downstream from the Derby Diversion Dam. In addition, numerous other minor problems were reported. Work to correct the deficiencies began in October 1927 and was carried out by government forces. Tunnel repairs consisted of placement of railroad rails as supports for the roof of the tunnels. The rails were bent into shape and the ends embedded in the existing lining of the tunnel. Wedges were then driven into place between the rail and roof of the tunnel to provide firm support. Work to repair almost 700 feet of lining in Tunnel No. 3 was completed on March 7, 1928, with repair on Tunnel No. 1, almost 100 feet, completed on March 26. Repairs in Tunnel No.3 required the use of 136 bent rails while repairs in Tunnel No. 1 required placement of just 27 rails.³⁸

In 1926, the US District Court in Reno issued the Talbot Decree, a temporary ruling that divided the waters of the Truckee River among its various users and appointed a Federal Water Master to oversee operation of the river. In 1929, an intense study of the Truckee River and the Truckee River Basin was begun. This study looked at numerous issues including river storage and operations and would lead to establishment of an operational criteria for the Truckee River.³⁹

In the 1920s and early 1930s, drought conditions gripped western Nevada. In 1924, when

37. "Project History" Vol. 7, 1923, 23; Vol. 7, 1924, 1,88-9; Vol. 7, 1925, 29.

38. A. W. Walker, "Reconstruction of Truckee Canal, Newlands Project." United States Department of Interior: Bureau of Reclamation, 23 October 1926, 1-2; A. W. Walker, "Newlands Project - Nevada, Report on Reconstruction of Truckee Canal," United States Department of Interior: Bureau of Reclamation, 1929, 2-6.

39. *Truckee River Chronology*, III 8-III 9.

the water level at Lake Tahoe dropped below the natural rim of the lake, desperate water users convinced lake side property owners to allow water to be pumped from the lake. In 1924, lakeside property owners allowed 34,000 af to be pumped from Lake Tahoe for downstream users. As conditions worsened, property owners at Lake Tahoe began to fear that the Bureau of Reclamation⁴⁰ or the farmers would attempt to withdraw more water from the lake by cutting down the lake's natural rim. In 1924, a group of Truckee Meadows farmers threatened to dynamite the rim of the lake to get more water. In 1929, just under 34,000 af was pumped from the lake to relieve conditions downstream. In 1930, drought conditions continued to worsen and an additional 25,000 af was pumped from the lake. In an attempt to get more water from the lake, group of Nevada water interests sent a steam shovel with a Reno city police force guard to the lake to cut a trench through the lake's rim. Lake Tahoe land owners sought and got an injunction to halt the digging, and the trench was filled in, ending one of the more colorful incidents in the history of the Lake Tahoe water rights conflict.⁴¹

In addition to water pumped from Lake Tahoe during low water years, a temporary pumping plant was constructed at Lahontan Dam to supply water to the Swingle Bench district. First used in 1924, the plant, consisting of two-500 hp units, pumped water from the lake into the Truckee Canal until the water backed up to the canal outlets at Swingle Bench. In 1924, 4,603 af was delivered to Swingle Bench by pumping. The plant has been operated in subsequent years as needed and was last operated in 1971.⁴²

In 1935, the Truckee River Agreement was enacted. The agreement formally established the natural rim of Lake Tahoe, and allowed for storage of just over six feet of water in the lake. The agreement also incorporated the Floriston Rates for inflow requirements and contained language aimed at settling on-going disputes over pumping of Lake Tahoe during periods of low water. In September 1944, a settlement in the 1913 adjudication suit was finally reached with the issuance of the Orr Ditch Decree. The decree established individual water rights on the

40. The name of the Reclamation Service was changed to the Bureau of Reclamation in 1923.

41. *Truckee River Atlas*, 50-1.

42. "Project History" 1924, Vol. 7, 31; 1975-6, Vol. 27, Appendix 1976, Technical and Administrative Reports: Lahontan Dam, 5.

Truckee River and incorporated the 1935 agreement as the operational framework used to satisfy those rights. The two most senior rights were granted to the Pyramid Lake Paiute Indian Tribe for irrigation of 5,800 acres of reservation land.⁴³

In 1939, Boca Dam, on the Little Truckee River, was completed. Part of the Truckee Storage Project authorized in 1935, the 41,000 af reservoir is used to maintain flow rates in the Truckee River and to provide supplemental irrigation water to farmers in the Truckee Meadows. Under certain circumstances, water from Boca Reservoir can be made available to farmers on the Newlands Project. Boca Dam and Reservoir is operated by the Washoe County Water Conservation District.⁴⁴

In 1947, the TCID began upgrading the generating units at the Lahontan Powerplant. The upgrade, completed in 1954, increased the capacity of the units to 640 kw each, raising the total capacity of the plant to 1,920 kw. In addition to the upgrade program, the TCID installed two, 1,000 kw diesel powered generators adjacent to the Lahontan Powerplant bringing the ultimate capacity of the plant to just under 4,000 kw. The total project capacity was increased in 1955 with the completion of the "V" Canal Powerplant. The "V" Canal Powerplant is located on a drop in the "V" Canal about 6 miles west of Falcon and was constructed with two, 400 kw generating units.⁴⁵

The summer of 1954 would prove to be very eventful for the farmers on the Newlands Project. At 4:14 a.m. on July 6, an earthquake measuring 6.8 on the Richter scale shook the residents of western Nevada from their sleep and caused significant damage to many project features. While the major features such as the Lake Tahoe Dam and Lahontan Dam escaped serious damage, many miles of canals and drains, and numerous culverts, flumes and bridges suffered significant damage or failed completely. In addition, a small diversion dam constructed by the irrigation district near Falcon was totally destroyed. As a result of the quake, much of the project was without water at the warmest time of the season, and crops were in need of

43. *Truckee River Chronology*, III 6- III 12.

44. *Truckee River Atlas*, 20; *Truckee River Chronology*, I 6; *Project Data*, 1217-22.

45. United States Department of Interior, Bureau of Reclamation, *Federal Reclamation Projects: Water & Land Resource Accomplishments*, 1974. *Project Data: Statistical Index III*, US Government Printing Office, 1975, 174.

irrigation.

Because of the serious nature of the situation, the Governor of Nevada appealed to President Eisenhower for assistance, and July 14, the region affected by the quake was declared a disaster area and federal emergency funds were made available to make repairs to the project. By July 16, more than 50 pieces of heavy equipment were at work repairing canals, culverts and other project features, and by mid-August, water service had been restored to all project lands.

Just when it appeared that the project had fully recovered from the events of July 6, disaster struck for a second time. On August 23, a second quake, equal in intensity to the first, struck the region. Much of the repair work that had been completed following the first quake was completely obliterated and large portions of the project were once again without water. Local, state, and federal officials moved quickly to repair the damage, and by September 1, service had been restored to about 80% of the project. The events of 1954 tested the will of all involved, but through the cooperation of many different agencies, both state and federal, crop and livestock losses were kept to a minimum.⁴⁶

In 1967, the surface level of Pyramid Lake reached its lowest recorded level, more than 85 feet lower than it was in 1912, shortly after completion of Derby Diversion Dam. In February of 1967, the Secretary of the Interior issued the first in a series of Newlands Project Operating Criteria and Procedures (OACP). The OACP required project farmers to reduce diversions from the Truckee River and use more water from the Carson River, conserve water, improve water use efficiency. The OACP also established the total irrigable project acreage at 74,500 acres, and set the maximum total water deliveries at 406,000 af - amounts that had been originally set in the 1926 contract between Reclamation and the irrigation district. Project OACP would be issued annually through 1972.⁴⁷

Accelerated deterioration of the first ten miles of the Truckee Canal during the 1970 water year, and the poor condition of Tunnels No. 1 and 3 prompted the TCID and Reclamation

46. George P. South, "Cooperation to the Rescue: The Story of the Newlands Project Earthquakes," *Reclamation Era*, August 1956, 61.

47. *Truckee River Chronology*, III-16.

to undertake emergency repairs of these structures. Bids for repairs were opened on December 22, 1970, with the low bid of \$545,244 submitted by Crooks Brothers Construction Company of Sparks, Nevada. Work on the repairs began in early January 1971 with all work completed by April 7. Repairs were accepted as complete on April 13, 1971.⁴⁸

1973 was an important year in the history of the Newlands Project and the entire Truckee River Basin. In February, the Gesell Opinion was released. This decision was the result of a number of law suits (*Pyramid Tribe of Paiute Indians v. Walter J. Hickel, Secretary of the Interior*, 1968, and *Pyramid Lake Paiute Tribe of Indians v. Rogers C.B. Morton, et. al.*, 1970) filed by the Pyramid Lake Paiute Indian Tribe seeking more water for restoration of Pyramid Lake. The opinion contained new operating criteria for the Newlands Project that called for a gradual reduction in diversions at Derby Dam from 406,000 af per year under the 1926 contract between Reclamation and the TCID, down to 288,129 af per year by 1984. The opinion also required that all water in excess of valid Newlands Project rights be delivered to Pyramid Lake.

As a result of the Gesell opinion, Secretary of the Interior, Rogers Morton, notified TCID that any water diverted in violation of the Gesell Opinion would have to be returned to Pyramid Lake. This announcement placed a significant amount of pressure on the already strained relationship between Reclamation and the TCID. Because of continuing frustrations and lack of cooperation, the Department of Interior gave a one year notice of its intention to cancel its contract with the TCID to operate the Newlands Project. A later court decision upheld Reclamation's contract cancellation, after which time, the project would be operated by the TCID under an interim contract.

Further complicating the situation was passage in 1973 of the Endangered Species Act. Under provisions of the act, agencies of the federal government would be responsible for the protection of endangered species and habitats and their restoration. These provisions would have a significant effect on the future operation of the Newlands Project and the Truckee River.

In the later part on 1973, based on the growing controversies surrounding the Newlands

48. "Project History" 1969-70, Vol. 24, (1970) 1-2; 1971-2, Vol. 25, (1970-Construction) 1-2.

Project and the many associated water rights issues, the Federal District Court in Washington D.C., ordered that new operating criteria for the project be implemented. Because of their concerns over the effects of the 1973 operating criteria on supplemental water users and wildlife in the wetlands adjoining the project, several Lahontan Valley interests joined together to prevent Reclamation from implementing the 1973 criteria before a formal environmental statement was in place. It was due to this suit that the TCID believed themselves justified in not following the requirements of the Gesell Opinion. It is now estimated that more than 1,000,000 af of excess diversions have taken place since 1973.⁴⁹

During inspection in 1975, it became clear the repairs carried out on the lining of Tunnel No. 3 in 1971 did not halt deterioration of the structure, and Reclamation inspectors determined that a new lining was the only way to ensure the continued safe operation of the tunnel. Bids for the work were opened on October 9, with a low bid of \$588,227 submitted by a joint venture of the National Bridge Company and P. C. Lambert. The contract was awarded on October 28, 1975, and the work was accepted as complete on May 7, 1976.⁵⁰

In 1975, Marble Bluff Dam and the Pyramid Lake Fishway were completed. Located on the Truckee River just upstream from Pyramid Lake, the dam serves as a heading for flows through the fishway which allows fish to migrate past the Truckee River delta during periods of low river flows. The dam and fishway, designed as a fish restoration project, were constructed by Reclamation and are features of the Washoe Project.⁵¹

Even before construction of Lahontan Dam was completed, the concrete in the spillways had begun to deteriorate. In 1918, repairs were attempted by using a gunite coating on the affected areas, but by 1922, it was evident that the gunite repairs would not solve the problem. Numerous reports and investigations addressed the concrete deterioration problems, but little was done to correct the situation. By the mid-1970s, the situation had reached a point where operation of the spillways as designed represented a significant threat to the structural safety of

49. *Truckee River Chronology*, III 19 - III 21.

50. "Project History" 1975-6, Vol. 27, 1-2, 10, 16.

51. *Project Data*, 1291.

the dam. In 1977, in order to reduce the risk of failure, interim operating criteria were established limiting the maximum spillway release to 4,000 cfs. A report issued in March 1980, recommended the immediate repair of both spillways. In 1985, both spillways were rehabilitated by placement of concrete overlays 6-inches thick on the spillway walls and floors, and in the walls and floor of the stilling basin.⁵²

Lake Tahoe Dam was inspected by a dam safety team in 1978 and again in 1980. These inspections revealed a significant amount of damage and deterioration to the concrete apron downstream from the dam. The concrete was cracked and broken, and the area beneath the apron was severely undermined, threatening the structure of the dam itself. In addition to these problems, the inspection team raised concerns about the ability of the dam to withstand the predicted maximum seismic event. In 1982, as a result of these findings, Lake Tahoe Dam was given a poor rating by Reclamation's Dam Safety Branch.⁵³

Following the 1982 Safety Evaluation of Existing Dams (SEED) report, plans to correct the deficiencies were drawn up and repairs and modification were scheduled. Bids for the repair and modification contract were opened on July 9, 1987. The contract was awarded to J. E. McAmis, Inc., of Chico, California, on September 17. The winning bid was \$463,845. The contract called for removal of the damaged portion of the downstream apron, construction of a sheet pile wall downstream from the dam with a new reinforced concrete apron to replace the damaged sections. The contract also called for construction of reinforced concrete stabilizing walls in the existing embankments, concrete embankment caps over both embankments, and reinforced embankment and slope protection.⁵⁴

Work under the contract began on September 29, 1987 when the contractor began removing trees and clearing the construction area. Installation of the system for dewatering the river channel below the dam began on October 9. The dewatering system consisted of two 48-

52. United States Department of Interior, Bureau of Reclamation. "SEED Report on Lahontan Dam, Newlands Project, Nevada." September 1982, 10-1, 13; United States Department of Interior, Water and Power Resources Service. *Modification of Lahontan Dam*. March 1980, 42; Memorandum: A. E. Couture to Head, Dam Safety Inspection Section, 17 May 1993. Memo on file in Dam Safety Section, Bureau of Reclamation, Denver, Colorado.

53. "SEED Report on Lake Tahoe Dam, Newlands Project, California," Management Summary, 1-5.

54. Department of Interior, Bureau of Reclamation, "Final Construction Report, Lake Tahoe Dam Modification, Newlands Project," Lahontan Basin Projects Office, Mid-Pacific Region, February 1989, 1-2.

inch steel conduits, one at each end of the dam, to convey water around the construction site and discharge it into the river channel several hundred feet down stream. After some delays and modifications, the system began operation on November 10.⁵⁵

With the dewatering system in place and operating, it was possible to begin modifications and repairs. Repairs began with the cutting and removal of portions of the concrete apron. The portion to be removed was cut into rectangles of approximately 25-feet by 20-feet and broken up using a wrecking ball. The debris was then removed and hauled away. Unstable areas beneath the apron were excavated and backfilled with gravel and cobbles up to 6-inches in diameter. The contractor began driving the sheet piles in late November. About half the wall was in place when the contractor halted operations to begin replacement of the concrete apron. Sheet pile driving operations resumed on December 23 and were completed on January 6, 1988. The sheet pile wall is just over 123-feet long and extends more than 12-feet below the surface of the ground. The final concrete placements for the apron and cut-off wall were completed on January 21. A total of 161 cy of concrete was used in the apron. Grouting of the voids beneath the existing portions of the apron was completed on January 27.⁵⁶

Construction of the concrete stabilizing walls in the dam embankment began with work on the left embankment on March 10, 1988. The stabilizing walls consist of a series of 26-inch diameter holes drilled into the embankment on 3½ foot centers and filled with concrete. Following concrete placement, a steel reinforcement beam was lowered into the newly poured concrete and the concrete was allowed to set. When the concrete was hard, a secondary series of holes was drilled between the first series of holes, and filled with concrete. When all concrete had been placed and set, a concrete cap was placed atop the stabilizing wall and over the entire embankment. Each wall is just over 44-feet long and extends down into the embankment approximately 20-feet. The cut-off wall was designed to provide increased stability to the dam and embankment in the event of a severe earthquake. The work under the repair and modification contract was completed and accepted on May 6, 1988, and the dam was returned to

55. *Ibid.*, 3.

56. *Ibid.*, 3-5, 22(photo).

operational status on June 1.⁵⁷

In 1988, a second powerhouse was constructed at Lahontan Dam to house a single, 4-MW generator. To supply the additional water needed to power the new unit plus the existing units, the 72-inch diameter penstock was replaced with a 96-inch diameter steel pipe.⁵⁸

Since the watershed year of 1973, a complicated series of suits and counter-suits have been filed by almost all parties involved in the controversies surrounding the Newlands Project and the Truckee River. In 1990, the Falcon Paiute-Shoshone Indian Tribal Settlement Act/Truckee-Carson-Pyramid Lake Water Rights Settlement Act⁵⁹ was enacted into law by the Congress. The act called for the enhancement and recovery of threatened and endangered species and the protection of wetlands, improved efficiency and management of the Newlands Project, and the settlement of outstanding water rights issues. In July 1994, a professional mediator was appointed to conduct negotiations to resolve outstanding issues on the Truckee and Carson Rivers, and in September, the first negotiating sessions took place. In 1995, the negotiations ended with a commitment to continue negotiations in the future. While a number of issues were resolved, including settlement of several lawsuits, some more than ten years old, many major issues including the restoration of Pyramid Lake and the Lahontan Valley wetlands remain to be resolved.⁶⁰

The winter of 1994-95 saw near record precipitation in the Truckee and Carson River Basins with precipitation of more than 200% of normal. With the spring runoff, water levels throughout the region rose, bringing most reservoirs to near full capacity. Lake Tahoe, which had been at a level nearly 2 feet below its natural rim at the end of October 1994, rose almost 6 feet. By the end of the 1995 spring runoff season, reservoirs in the Truckee River Basin held over 1,000,000 af more than at the end of the summer of 1994. At Pyramid Lake, the water level rose almost 4 feet. In the Carson River Basin, Lahontan Reservoir filled to its maximum

57. *Ibid.*, 2, 5-8.

58. Information supplied by the Bureau of Reclamation, Lahontan Basin Area Office.

59. Public Law 101-618.

60. *Truckee River Chronology*, III 19- III 31.

capacity, holding back more than 316,000 af.⁶¹

The Pyramid Lake Controversy

For hundreds of years, Pyramid Lake has been the focus of life for the Indians that have lived upon its shores. The Pyramid Lake Paiute Indians have relied on the lake for their survival for centuries before the white men ventured into the region. Fed by the waters of the Truckee River, the lake supported several varieties of fish and waterfowl. Each season, hundreds of fish, some as large as 40 pounds or more, would make their way upstream to spawning grounds far up the Truckee River. In the mid-1800s, the first white settlers moved into the area and began constructing dams on the river to divert water for irrigation and power production, cutting off the spawning grounds. Silt and debris from the local timber industry formed a large delta, clogging the river leading into the lake, further preventing migration to spawning grounds. Commercial fishing by both Indians and whites in the late 1800s reduced the numbers of fish. Over-fishing, poor water quality and inaccessibility to spawning grounds led to the extinction of at least one species of indigenous trout.

As more and more water was diverted from the river, the level of Pyramid Lake began to fall. In 1906, with completion of the Derby Diversion Dam, flows into the lake were cut in half. The reduction of inflows combined with the high amount of surface evaporation, over 440,000 af per year, threaten to reduce the lake to a fraction of its historic norm. In 1967, the level of Pyramid Lake reached its lowest point in recorded history, 87 feet lower than when diversions began at Derby in 1906, and prevented Pyramid Lake fish species from migrating upstream to spawn.

Beginning in 1968, the Pyramid Lake Paiute Indian Tribe began a series of law suits aimed at halting the decline of Pyramid Lake. These suits led to the February 1973 Gesell Opinion. This judgement contained new requirements for operation of the Newlands Project which called for the gradual reduction of diversions from the Truckee River at the Derby Diversion Dam. The Gesell decision also required that any flows in excess of valid Newlands

61. *Ibid.*, I 12.

project water rights be delivered to Pyramid Lake.

In 1973, the United States, acting on behalf of the Pyramid Lake Paiute Indian Tribe, filed suit against the Nevada parties in the Orr Ditch Decree, including Newlands Project water users, seeking to reopen the decree to obtain additional water rights for the Paiute Tribe. The claim focused on the Tribe's contention that its culture was based on fishing, not farming, and that the water rights granted under the 1944 decree should have been based on the amount necessary to maintain the lake's fishery rather than on the lesser amount set aside for irrigation of reservation lands. The case, *Nevada v. United States*, was decided by the U.S. Supreme Court which rejected the tribe's claims and declared the Orr Ditch Decree to be final.⁶²

In 1982, the Pyramid Lake Paiute Tribe won an important decision that obtained dedicated water rights for restoration of endangered Pyramid Lake fish species.⁶³ The decision grants the Secretary of the Interior the authority to designate the rights to all stored water in Stampede Reservoir, completed in 1970 as part of the Washoe Project, to preserve the endangered species of Pyramid Lake and directs that Stampede Reservoir be used benefit the Pyramid Lake fisheries.⁶⁴

In 1989, the Nevada State Legislature passed a bill that declared the use of water for the establishment and maintenance of wetlands, fisheries, and other wildlife habitats as a beneficial use of water. Prior to passage of this bill, the use of water for support of wildlife was not considered beneficial and was not included in establishing water rights priorities, usage rights, and schedules.⁶⁵

The future of Pyramid Lake is tightly entwined with that of the Newlands Project. Decisions and changes that effect one will likely adversely affect the other. The final solution to the controversies will involve striking a balance between the needs of each party. Even then it is likely that some elements will be adversely affected. If Newlands Project diversions are reduced to benefit Pyramid Lake, then the wetlands that have been supported by project runoff and

62. *Ibid.*, III 20-III 21, III 23; *Truckee River Atlas*, 63.

63. *Carson-Truckee Water Conservation District v. Clark*.

64. *Truckee River Chronology*, III 23.

65. *Ibid.*, III 27.

drainage may be negatively affected. Efforts to mitigate the potential damage are currently underway, including the acquisition of additional water rights to benefit the wetlands. If diversions are not reduced, it is possible that Pyramid Lake will be affected and the lake-based culture of the Pyramid Lake Paiute will suffer. Factor into the situation the needs of other water users along the Truckee River, and the Falcon Paiute-Shoshone Tribes on the Carson River whose culture and reservation are intimately linked to the Stillwater Wetlands, and the controversy becomes even more complex.⁶⁶

The near record runoff in the spring of 1995 helped raise the level of Pyramid Lake almost 4 feet, continuing a trend that has seen the level of the lake rise from its lowest point in 1967. While helping to restore the waters of Pyramid Lake, the runoff provided little or no relief from the controversies that surround the lake and the use of Truckee River water.

Settlement of Project Lands

During the first irrigation season in 1905, 108 farms were settled by 674 people. Their experiences during that first season would be repeated for many years to come. There was a lack of water for project lands during the late months of the irrigation season, and many settlers had little or no experience in irrigated farming. Fields requiring several weeks of hard work to level and prepare were ruined in a single wind storm. Although there were markets for produce and hay, it took several years before a farm could produce an adequate crop. Following two seasons of water shortages, 1907 saw the most destructive flooding in over four decades, and many homesteads were ruined. The Truckee-Carson Project was beginning to acquire a bad reputation and land seekers were starting to look elsewhere. When Reclamation opened project lands for settlement in 1904, 800 parcels were made available. By the beginning of 1908, only 300 parcels were occupied. In 1910, due to lack of water, project lands were closed to new settlement pending construction of storage facilities on the Carson or Truckee Rivers.⁶⁷

Following completion of Lahontan Dam in late 1914, the project was reopened to

66. David Yardas, "Water Transfers, Paper Rights, and the Truckee-Carson Settlement," in *Indian Water in the New West*, ed. Thomas R. McGuire, William B. Lord and Mary G. Wallace (Tucson: The University of Arizona Press, 1993), 195-6.

67. *Turn This Water into Gold*, 36, 41.

settlement and hundreds of homesteaders moved to claim land and began the difficult task of earning a living from the lands of Lahontan Valley. In 1915, 571 farms were occupied on project lands. By 1918, driven by increasing demands for agricultural goods to supply troops fighting in Europe, the number had risen to 648 units. Following the end of World War I, special programs designed to attract returning veterans to the project helped ensure continued growth. By 1922, 2,450 people lived on 906 farms within project boundaries.⁶⁸

In 1940, 729 farms with a population of 2,683 people received project water. The average size of farm units on the project was 108 acres with a total of 47,363 acres receiving water. Total crop value for 1940 was \$742,270. By 1950, the number of irrigated farms on the project had grown to 896, covering a little more than 55,400 acres. In 1950, the farm population was 3,500 people with another 4,000 people living in towns.⁶⁹

In 1965, 990 farms totaling just under 73,000 acres received project water. The gross crop value for 1965 was slightly more than \$4,500,000. In 1970, the gross crop value had risen to just over \$5,000,000, with 1,080 farms receiving project water. By 1980, the number of farms on the project had risen to 1,200 with just over 73,000 acres holding rights to project water. The gross value of crops in 1980 had soared to \$26,139,881. The number of people living on project lands in 1980 was 8,000. In 1992, the Newlands Project served 144 full-time farms averaging 143 acres each, and 4,041 part-time farms each averaging slightly less than 13 acres. The total population served in 1992 was just under 18,000 people including 2,200 non farms users.⁷⁰

Uses of Project Water

The primary use of Newlands Project water is agricultural. The project can provide

68. Ibid., 41, 62, 65-6; Congress, Senate, Committee of Special Advisors on Reclamation, *Federal Reclamation by Irrigation*, 68th Congress, 1st session, 1924, 182.

69. United States Department of Interior, Bureau of Reclamation, *Summarized Data on Federal Reclamation Projects*, November 1941, 123; United States Department of Interior, Bureau of Reclamation, *1950 Crop Report and Related Data, Federal Reclamation Projects*, August 1951, 1B, 37A.

70. United States Department of Interior, Bureau of Reclamation, *Federal Reclamation Projects: Statistical Appendix to 1965 Crop Report and Related Data*. (U.S. Government Printing Office, 1966) 63, 196; United States Department of the Interior, Bureau of Reclamation, *Federal Reclamation Projects, Water & Land Resource Accomplishments, 1970*, (U.S. Government Printing Office: 1971), 69, 233; United States Department of the Interior, Bureau of Reclamation, *1980 Annual Report, Appendix I, Crop and Related Data*, (U.S. Government Printing Office, 1981), 78; United States Department of the Interior, Bureau of Reclamation, *1992 Summary Statistics, Land, Water, and Related Data*, (U.S. Government Printing Office, 1995), 60, 63.

service to approximately 6,200 acres of fertile bench lands adjacent to the Truckee Canal west and south of Hazen, and another 66,700 acres on the north and south sides of the Carson River near Falcon. Since its inception, the Newlands Project has been home to many different types of crops. Among the most successful early crops was alfalfa, which was sold to support the extensive cattle industry in the Lahontan Valley. For a time, sugar beet production captured the attention of farmers in the valley. In 1910, the Nevada Sugar Company began construction of a large beet processing plant near Falcon. Completed in 1911, the plant promised production of 500 tons of sugar per day, but plant disease and uncertain markets spelled doom for the operation, and by 1918, the Lahontan Valley sugar boom was over. Orchards and melons provided many farmers with stable incomes. By 1920, the valley had acquired a reputation as one of the countries leading producers of high quality melons, supplying markets throughout the west. But by 1930, competition from other parts of the country had forced many farmers in the region to look to other crops. Egg and poultry production were important industries for a period of time, with project farmers supplying much of the West with high quality chickens and turkeys. But, like the melon and sugar industries, market fluctuations and competition from other areas saw to the demise of the poultry industry, firmly establishing forage crops as the primary agricultural products on project lands.⁷¹

When the Newlands Project was first authorized in 1903, it was believed that water could be supplied to more than 400,000 acres. By 1922 that figure had been reduced to just over 73,000 acres. Over-appropriation of the waters of the Truckee River and restrictions on the use of the waters of Lake Tahoe caused the Reclamation Service to severely alter its estimates of irrigable acreage. In 1913, about 43,000 acres were under irrigation. In 1922, the amount was slightly less than 45,000 acres. By 1940, the amount of land under irrigation had risen only slightly, to 47,363 acres. In 1950, project water was supplied to just over 55,400 acres, with the area under irrigation climbing to 57,817 acres by 1960. The irrigated acreage continued to climb during the 1960s, reaching 62,350 acres in 1970. By 1980, the area irrigated had grown to just

71. *Turn This Water into Gold*, 36, 58(photo), 73-86, 105-10; *Federal Reclamation Projects, Water & Land Resource Accomplishments, 1970*, 221.

over 67,000 acres.⁷²

In 1992, 73,859 acres were available for irrigation with 55,182 acres receiving project water. The primary crop grown on project lands is alfalfa, which is raised on just over 35,500 acres. Cereal crops are raised on another 9,950 acres, with a small amount of acreage devoted to corn, melons, squash and berries. In addition, there are 4,000 acres of irrigated pasture on the project. The total crop value for 1992 was \$13,291,921.⁷³

The waters of the Newlands Project also offer many recreational opportunities. In 1992, over 116,000 visitor days were recorded at Lahontan Reservoir. Camping, boating, and fishing are among the activities that can be enjoyed at the reservoir. Recreational activities at Lahontan Reservoir are administered by the Nevada Division of State Parks and the Truckee-Carson Irrigation District. The Fernley and Stillwater Wildlife Management Areas are also located within the boundaries of the Newlands project and provide numerous recreational activities including hunting, fishing, and sightseeing. These areas are administered by the Nevada Department of Wildlife and the Fish and Wildlife Service.⁷⁴

Conclusion

As the Bureau of Reclamation enters its second century, it seems unlikely that the controversies and conflicts surrounding the Newlands Project and the Truckee River will be any less complicated than in the previous hundred years. As in any case where conflicting interests fight over limited resources, results that are beneficial to all parties can only be achieved through hard work and cooperation. The problems are many and complicated, and the solutions promise to challenge Reclamation's expertise and innovativeness.

About the Author

William Joe Simonds was born and raised in Colorado and has a clear understanding of the importance of water in the American West and its influence

72. George Wharton James, *Reclaiming the Arid West, the Story of the United States Reclamation Service*, (New York: Dodd, Mead and Company, 1917), 227; *Federal Reclamation by Irrigation*, 181; *Summarized Data on Federal Reclamation Projects*, 123; *1950 Crop Summary and Related Data*, *Federal Reclamation Projects*, 1B; United States Department of Interior, Bureau of Reclamation, *1960 Crop Summary and Related Data*, *Federal Reclamation Projects*, (June 1961), 28; *Federal Reclamation Projects, Water & Land Resource Accomplishments*, 1970, 69; *1980 Annual Report, Appendix I, Crop and Related Data*, 78.

73. *1992 Summary Statistics, Water, Land, and Related Data*, 72.

74. *Ibid.*, 109, 114.

on the development of that region. He attended Colorado State University where he received a BA in History in 1992, and a Masters in Public History in 1995. He lives with his wife and two children in Fort Collins, Colorado.

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