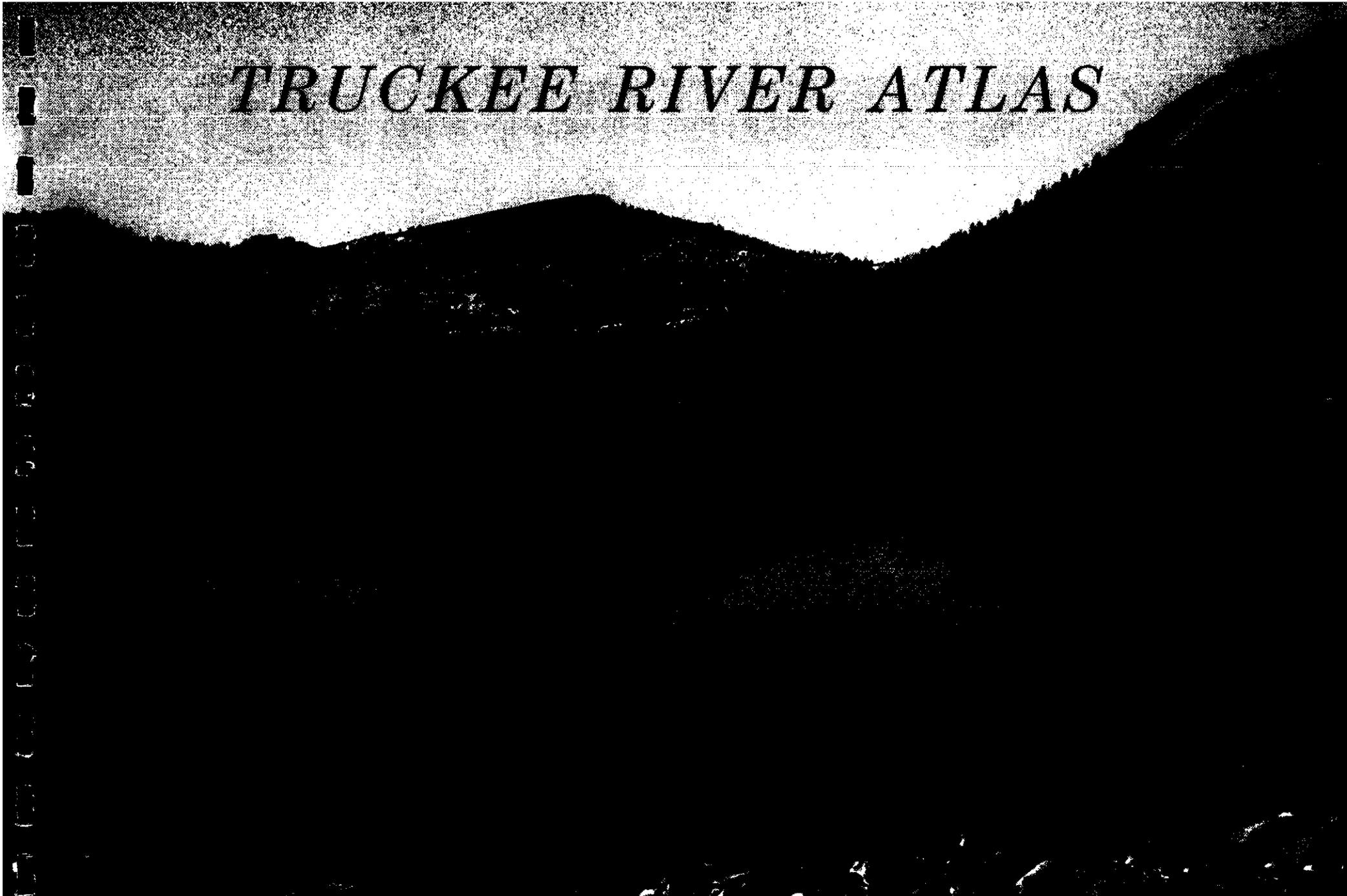


TRUCKEE RIVER ATLAS



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(Front Cover)
Independence Lake



(Back Cover)
Lake Tahoe

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The Resources Agency
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Secretary for Resources

Department of Water Resources
DAVID N. KENNEDY
Director



State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

TRUCKEE RIVER ATLAS

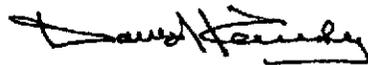
June 1991

FOREWORD

The Truckee River, shared between California and Nevada, has had a long history of water rights disputes that belie the river's relatively small size. Historical disputes over use of water in Lake Tahoe, referred to by early writers as the "crown jewel of the Sierras", illustrate in microcosm the issues faced on the Truckee River.

The 1990 passage of the federal Truckee-Carson-Pyramid Lake Water Rights Settlement Act marks a recent milestone for the Truckee River. Among other things, the act achieved an interstate allocation of the water resources, a goal both California and Nevada have pursued for many years. The act requires that additional measures be undertaken, including negotiation of a new operating agreement for the Truckee River. The Department of Water Resources is proceeding with this work and looks forward to better coordination of the river's water management facilities.

This atlas is the result of information gathered by the Department of Water Resources during negotiation of the recent settlement legislation. The atlas provides background information for people interested in historical conditions that have resulted in today's uses of the Truckee River and in the future direction of the river's water resources management.



David N. Kennedy
Director

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Chapter 1

INTRODUCTION

The Truckee River has its headwaters in California's high Sierras above Lake Tahoe and ultimately flows into a desert lake in Nevada. People's perceptions of this interstate river and its watershed vary with their interests. To a resident of Reno, Nevada, the river represents a source of Reno's municipal water. Tourists visiting Lake Tahoe may not even realize a small dam on the lake controls the river's downstream flow. Visitors to Truckee may think of the river and its tributaries in terms of fly-fishing opportunities. Farther downstream, Pyramid Lake and the surrounding area offer boating in a desert environment.

Water right disputes over the Truckee River and Lake Tahoe began before the turn of the century, leading to a 1912 recommendation by the California Conservation Commission that California petition the

U.S. Supreme Court for an allocation of the water between the two states. Claimants to Truckee River water rights became familiar figures in a long-running series of court cases that have characterized the river's 20th century history. Attempts to divide the water between California and Nevada reached a milestone in 1990, with enactment of a bill by Congress that established the amounts of the interstate allocations. The legislation and an accompanying agreement are contained in Appendixes 1 and 2.

The first major water development in the Truckee's drainage area was in conjunction with the mining and lumbering boom of the 1860s. Today the Truckee River provides a variety of benefits — serving as a municipal water supply for communities in California and Nevada, supporting fish and wildlife

habitat, generating hydroelectric power, furnishing river and reservoir recreational opportunities, and supplying water for agriculture.

This atlas presents information on the Truckee River gathered by the California Department of Water Resources as part of its work on the interstate water allocation issues. The intent of the atlas is to provide a brief introduction to characteristics of the river and its watershed to those not familiar with the region and to provide references for further information. Appendix 3 presents some suggestions for further reading and contains legal citations to statutes and judicial actions mentioned in the text. Figure 1 shows the general location of the Truckee River watershed, and Figure 2 is a detailed map of the watershed.

Captain Truckee

Dan De Quille was an early chronicler of Nevada history whose works were originally published near the end of the 19th century. In his book A History of the Comstock Mines: Mineral and Agricultural Resources of Silver Land, De Quille described how the Truckee River came to be so named.

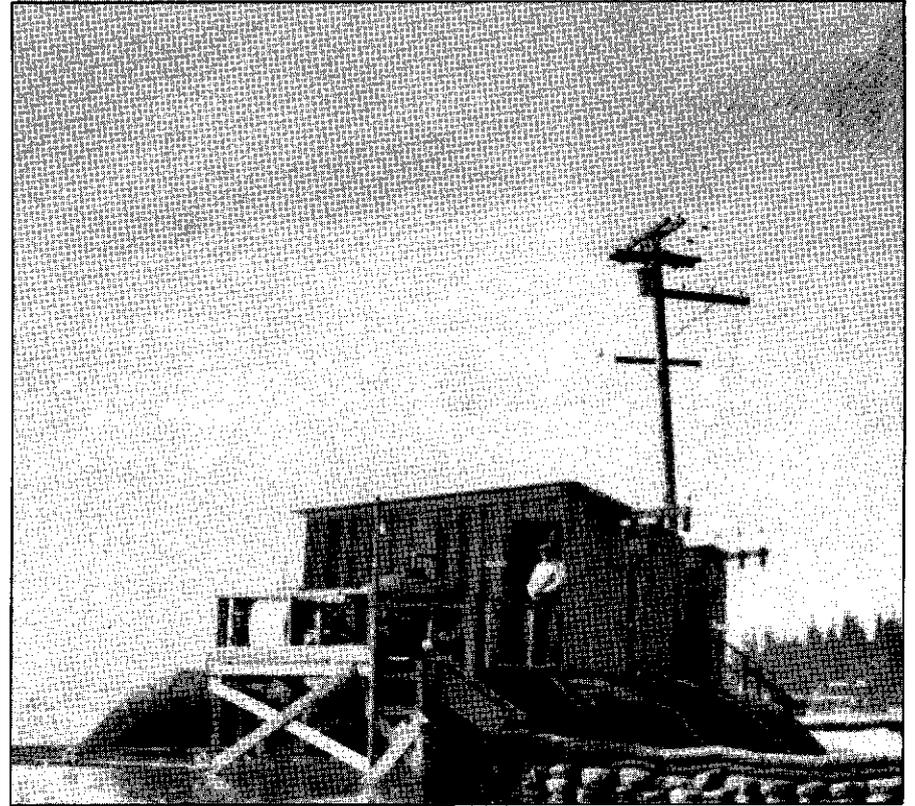
The Truckee River is named after "Captain Truckee", a Piute [sic] chief who in the early days guided a party of emigrants from the Humboldt to the beautiful stream and thence through Hennes Pass across the Sierras to California. Captain Truckee also acted as a guide for Colonel Fremont when he passed through the country in 1846.

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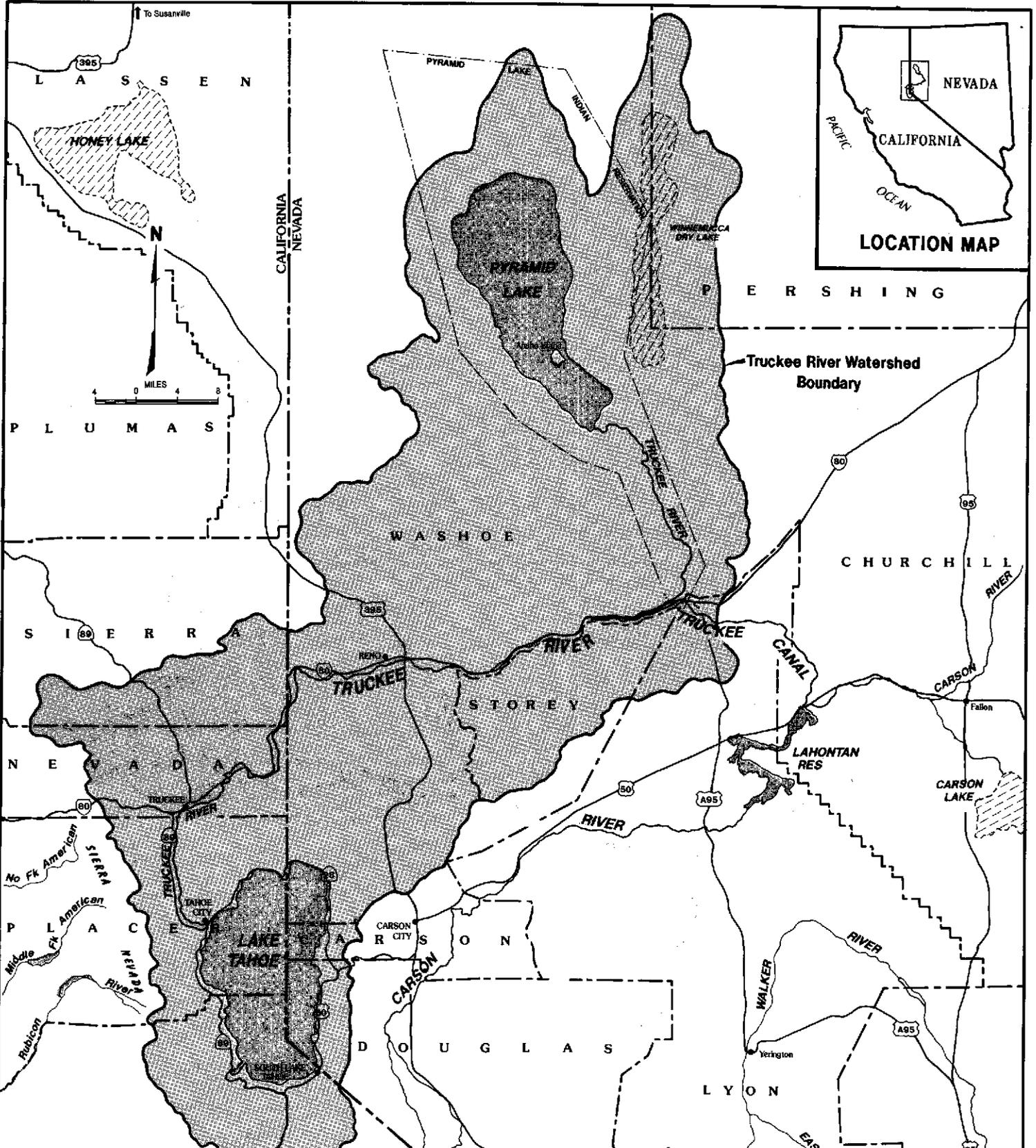


Pedestrians strolling by Von Schmidt's timber crib dam at Lake Tahoe, circa 1880. Note the plank facing showing at the lower left corner.

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A temporary pumping plant used at Lake Tahoe during the drought of the late 1920s and early 1930s. The pumps are housed in the wooden sheds; the intake and discharge pipelines can be seen on opposite sides of the sheds.



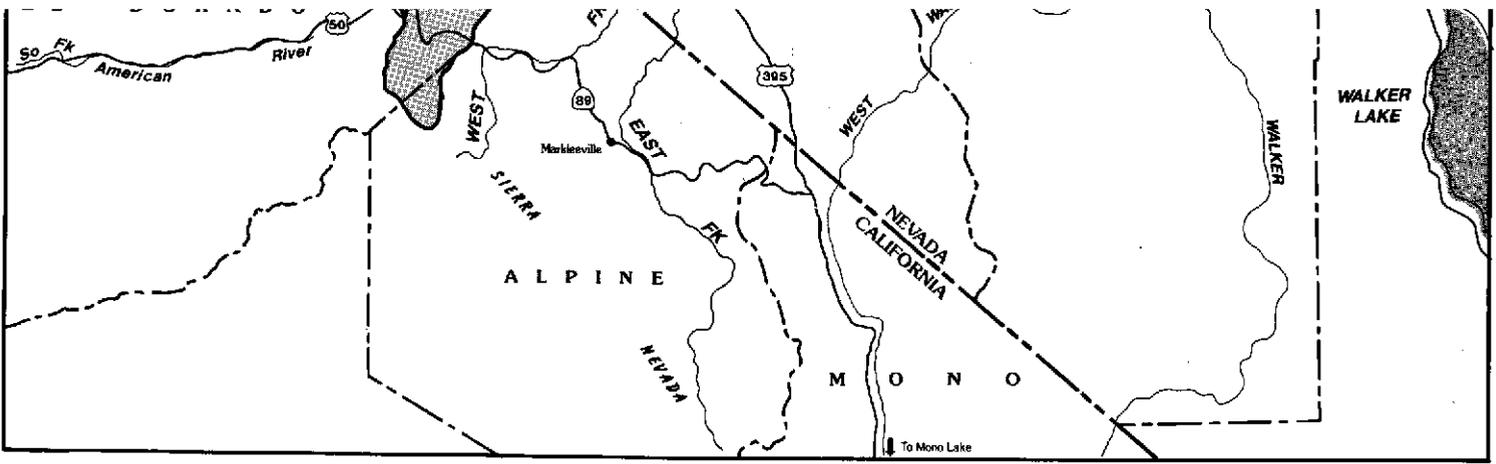
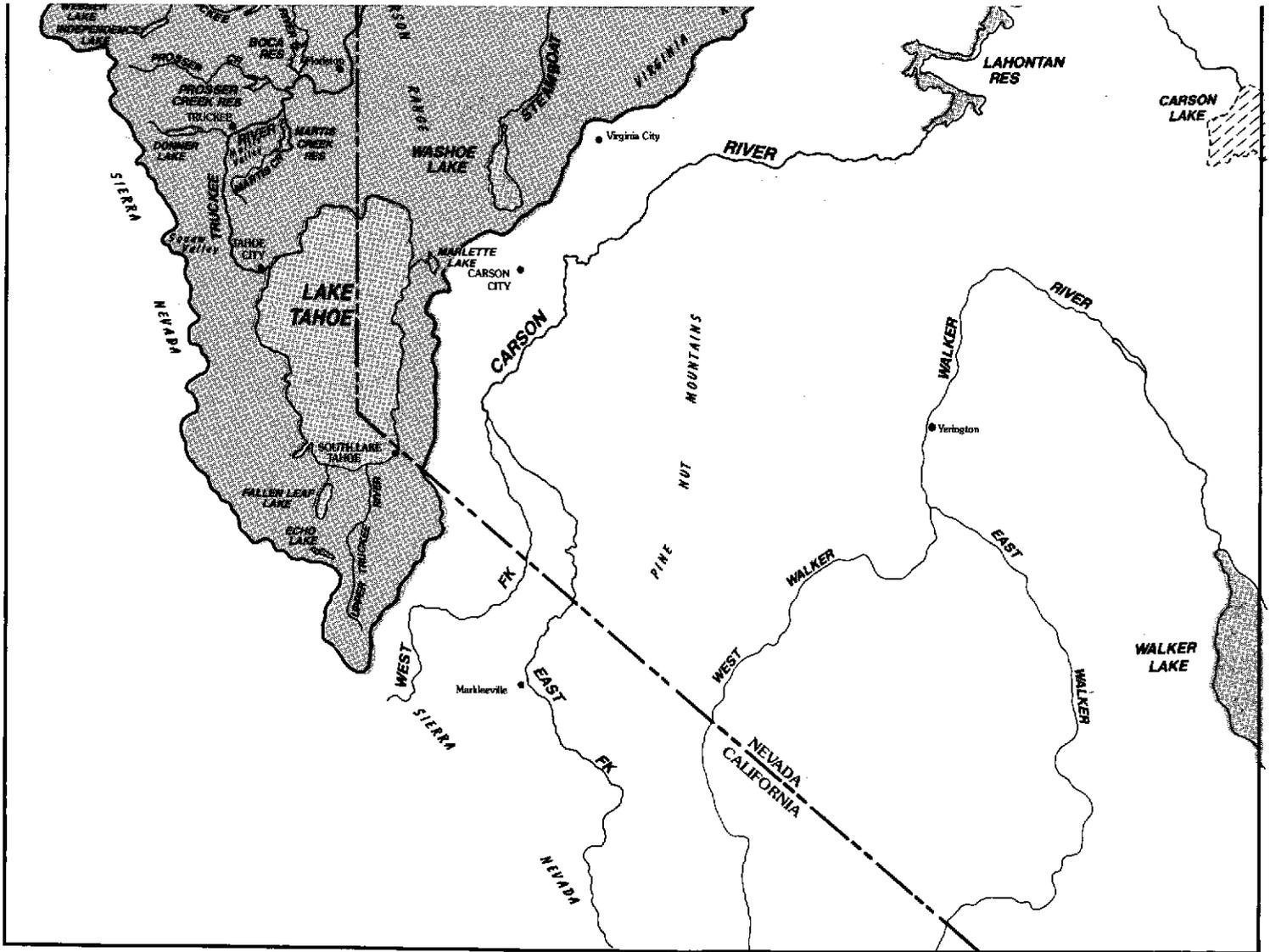


Figure 1
LOCATION MAP SHOWING TRUCKEE WATERSHED AND VICINITY



THE RIVER AND ITS ENVIRONMENT

This chapter traces the path of the Truckee River from its headwaters above Lake Tahoe to its terminus in Pyramid Lake. Chapter 3 describes in more detail the major lakes and reservoirs mentioned here.

The Truckee River has its headwaters in California's Sierra Nevada mountains, from which it flows into the southern end of Lake Tahoe. Some maps designate this portion of the river as the Upper Truckee River. This segment resembles a typical alpine stream, relatively unaffected by human activities. Its chief characteristic is its steep gradient, or slope of the river channel, as shown in Figure 3.

Lake Tahoe is the first point at which the river's flow can be controlled. Tahoe is a natural lake that has been converted to a reservoir controlled by a small dam at Tahoe City, on the lake's western shore. Lake Tahoe is unusual for many reasons, one being that few lakes of comparable size occupy as much of their immediate drainage area. Thus, much of the precipitation falling in the drainage basin falls directly on

the lake's surface, and inflow from tributary streams constitutes a smaller portion of inflow to the lake.

Numerous creeks and streams are directly tributary to Lake Tahoe, all of them small compared to the Upper Truckee River.

DWR Photo 1119-30



Emerald Bay, Lake Tahoe.

There are also a number of small alpine lakes in the mountains surrounding Lake Tahoe, most of which are known only for their recreational potential. Three small lakes in the upper watershed — Fallen Leaf, Echo, and Marlette — are described in Chapter 3.

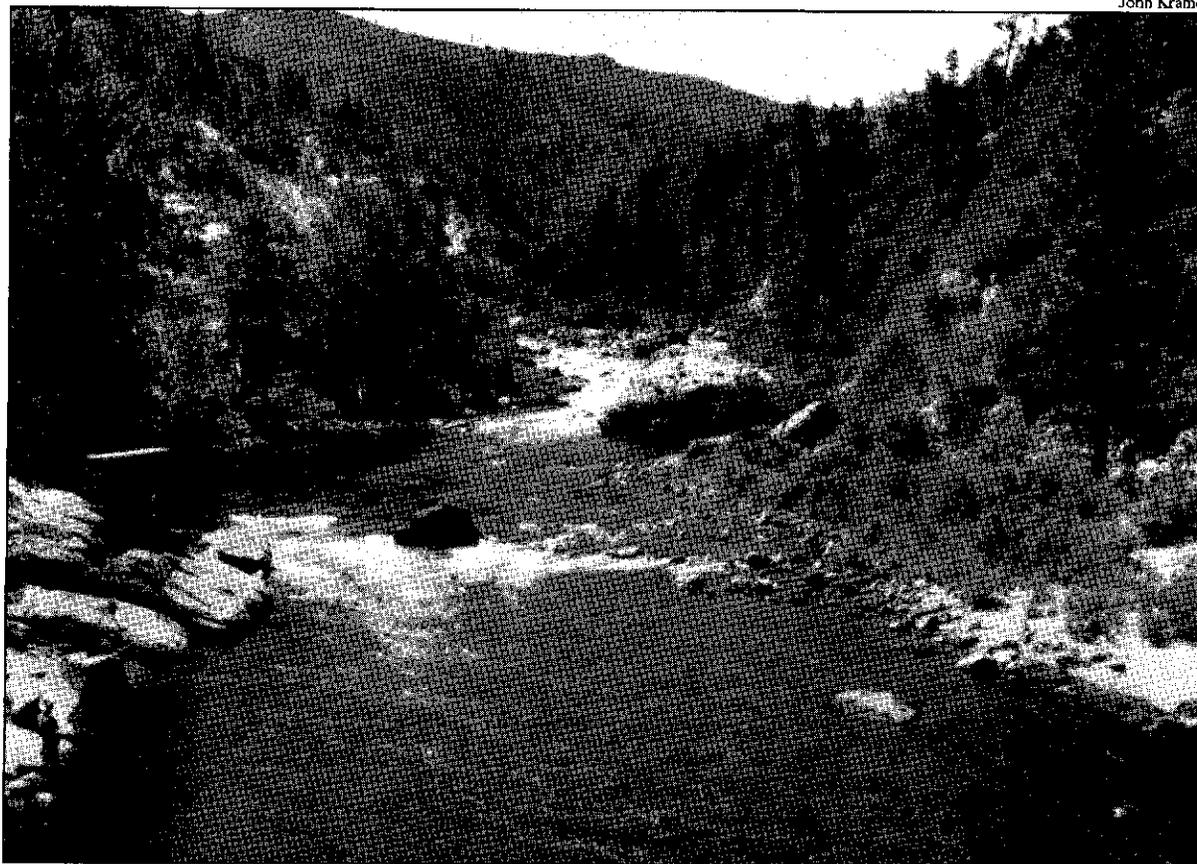
Lake Tahoe Dam operates the lake's upper 6.1 feet and regulates the amount of water

released from the lake into the Truckee River at Tahoe City. From Tahoe City, the river flows through a small canyon, surrounded by volcanic rocks and an occasional cinder cone. State Highway 89 follows the same canyon from Tahoe City toward the town of Truckee. The only tributaries of any size in this canyon reach are Bear Creek and Squaw Creek, which drain the adjacent glacial valleys where Alpine

Meadows and Squaw Valley ski resorts are located. The next significant tributary is Donner Creek, which joins the river near Donner Memorial State Park, just upstream of the town of Truckee. Flow in Donner Creek is controlled by a small dam on Donner Lake, another natural lake whose storage capacity has been enlarged by dam construction. The area around the confluence of Donner Creek and the Truckee River is characterized by numerous granitic boulders, remnants of former glacial activity in the region.

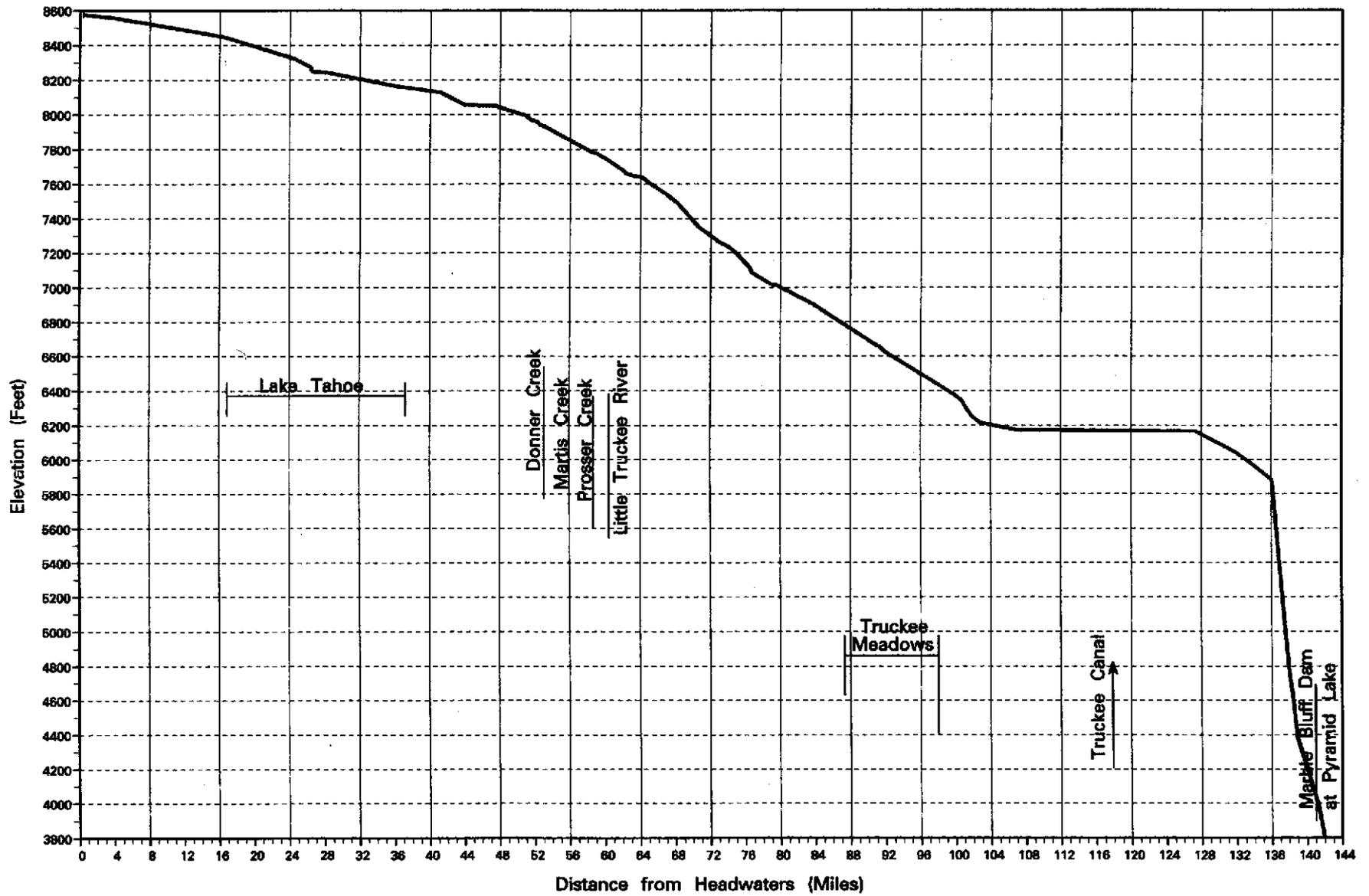
Downstream of the town of Truckee, several major tributaries join the river. All of these are controlled by federal reservoirs, reflecting the fact that most of the significant water supply development has been in California, where the topography and annual precipitation are favorable for reservoir construction. However, almost all of the water is used downstream, in arid western Nevada.

Both Prosser Creek and Martis Creek join the Truckee River near Martis Valley, a broad plain characterized by old lava flows and lake bed deposits and by chaparral vegetation. The creeks are controlled by Prosser Creek and Martis Creek Reservoirs.



The Truckee River canyon below Tahoe City, passing through volcanic terrane.

Figure 3
LONGITUDINAL PROFILE OF THE TRUCKEE RIVER



The Little Truckee River is the largest tributary in this segment of the river. The Little Truckee itself has one significant tributary, Independence Creek, which is controlled

The California/Nevada Boundary Line

Figure 1 shows that the stateline between California and Nevada has a pronounced bend in the middle of Lake Tahoe. Some people believe the boundary's location represented an effort to divide the lake between the two states (about two-thirds is in California, the other third is in Nevada). Actually the location of the stateline relative to the lake was purely accidental.

The location of California's eastern border was discussed at length during the 1848 constitutional convention in Monterey. The description eventually selected relied on intersections of lines of latitude and longitude. The bend at Lake Tahoe coincides with the intersection of 39 degrees north latitude with 120 degrees west longitude, which was one of these points. It was not until many years after the constitutional convention, however, that the boundary was finally surveyed to the satisfaction of all concerned. A historic marker near the Truckee River in Verdi shows the location of one of the early survey lines.

Legal actions over survey discrepancies continued for some time. In fact, California and Nevada participated in a U.S. Supreme Court suit over such discrepancies as recently as 1980.

by a privately owned dam on Independence Lake. There are three reservoirs on the Little Truckee — the very small privately owned Webber Lake at the extreme northwestern edge of the watershed, and the larger federal Stampede and Boca Reservoirs. Boca Reservoir is just upstream of the Little Truckee's confluence with the mainstem Truckee River and can easily be seen from Interstate Highway 80. The dam is adjacent to Boca Hill, a prominent local

landmark and old volcano, from which emerged some of the lava flows that blanketed Martis Valley. (There is also one out-of-basin agricultural water diversion on the upper Little Truckee River, discussed in Chapter 6.)

Shortly below the Little Truckee River confluence, the river enters its deepest canyon, which some early writers described as the "grand canyon of the Truckee River". The

John Kramer



Little Washoe Lake has an outlet to Steamboat Creek, downstream.

canyon cuts through intermixed volcanic flows and consolidated stream terrace deposits; hot springs along the canyon testify to relatively recent volcanic activity. Interstate Highway 80 and a railroad are carved into the canyon walls. Also, the first of four small turn-of-the-century hydroelectric plants can be seen at Farad. Historically there were five small plants along the river from Farad to Reno, but one no longer operates. The wooden flumes that supply these powerplants can be seen from Highway 80.

The river enters Nevada near Farad, the site of an old railroad siding. The stream gage at Farad is a key measuring point in allocating the river's water supply between California and Nevada. The river flows through the small town of Verdi, just downstream of the stateline, and enters the Truckee Meadows, a bowl-shaped valley and alluvial fan area bounded by mountain ranges and hills. At one time Truckee Meadows was in truth a meadow and wetland area, largely developed for agricultural uses such as livestock pasture; today it is occupied by the rapidly growing Reno/Sparks area. The Truckee River flows through the center of downtown Reno, where a number of riverside parks have been developed.



In winter, Canada Geese are frequent visitors to Reno's riverside parks.

Several small tributaries join the river in Truckee Meadows. The largest, Steamboat Creek, is regulated to a limited extent by Washoe and Little Washoe Lakes. The former townsite of Steamboat is just downstream of Little Washoe Lake, where a resort area was once developed around an extensive hot springs complex. In more recent times, this hot springs area has been explored for its geothermal power poten-

tial, and it is now the site of a geothermal powerplant.

Leaving Truckee Meadows, the river follows Interstate Highway 80 eastward through an arid basin and range terrain. A large, modern thermal powerplant adjacent to the river at Tracy uses Truckee River water for cooling purposes and provides a striking contrast to the old hydroplants upstream.

At Derby Dam, a small diversion dam, the Truckee Canal carries water from the river southeasterly into the watershed of the Carson River. The 32.5-mile-long canal was constructed by the U.S. Bureau of Rec-

lamation as part of the Newlands Project, the Nation's first project under the Reclamation Act of 1902. The canal transports Truckee River water to Lahontan Reservoir near Fallon, to supplement Carson

River water used to irrigate project lands. Truckee River water is also used for irrigation within its own watershed, in the Truckee Division of the Newlands Project, near Fernley.

Pyramid Lake Fisheries



Beyond Derby Dam, the river turns northward and enters Pyramid Lake Indian Reservation, home of the Pyramid Lake Paiute Tribe of Indians. This lower segment of the river cuts deeply into alluvial valley soils, and alternating channel erosion and sedimentation are evident. As the river enters Pyramid Lake, the sediment deposition has created a delta that now blocks upstream passage of migratory fish in dry years.

The Truckee River terminates in Pyramid Lake, a natural sink, or closed basin, from which water can leave only by evaporation. Pyramid Lake is one of several remnants of the former Lake Lahontan, which in geologic times covered a large portion of the Great Basin. Somewhat like Mono Lake in California, Pyramid is known for the tufa formations¹ around its shoreline.

John C. Fremont named Pyramid Lake after this rock formation.

¹ Thermal spring deposits of calcium carbonate.

LAKES AND RESERVOIRS

This chapter describes the more significant lakes and reservoirs along the Truckee River. Table 1 is a summary of selected features of these lakes and reservoirs. The descriptions illustrate the wide range of geomorphic conditions in the watershed — from the high alpine lakes of the Sierras to a dry desert lakebed.

Lake Tahoe

Lake Tahoe is without doubt the best known body of water in the Truckee River watershed. The lake occupies what geologists call a “graben”, a rather steeply sided valley formed when faulting caused a block-shaped area to drop relative to the surrounding terrain.

Total drainage area tributary to the lake is 506 square miles, and the lake itself occupies about 192 square miles of that area (depending on the elevation of the water surface). With an average depth of 990 feet, Lake Tahoe is believed to be the tenth deepest in the world. Its maximum depth is about 1,650 feet.

Table 1
STATISTICS FOR MAJOR RESERVOIRS

Reservoir Name	Dam Owner	Dam Operator	Usable Storage Capacity (Acre-Feet)	Dam Construction Date ¹	Dam Height (Feet)	Drainage Area (Square Miles)
Lake Tahoe	Sierra Pacific Power Company ²	Truckee-Carson Irrigation District	744,600	1913	18	506
Donner Lake	Sierra Pacific Power Company/ Truckee-Carson Irrigation Dist.	Sierra Pacific Power Company	9,500	1930s	14	14
Martis Creek	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers	20,400 ³	1971	113	40
Prosser Creek	U.S. Bureau of Reclamation	U.S. Bureau of Reclamation	29,800	1962	163	50
Independence Lake	Sierra Pacific Power Company	Sierra Pacific Power Company	17,500	1939	31	8
Stampede Reservoir	U.S. Bureau of Reclamation	U.S. Bureau of Reclamation	226,500	1970	239	136
Boca Reservoir	U.S. Bureau of Reclamation	Washoe County Water Conservation Dist.	41,100	1937	116	172

¹Date existing dam was completed.

²The U.S. Bureau of Reclamation controls the dam under easement from Sierra Pacific Power Company.

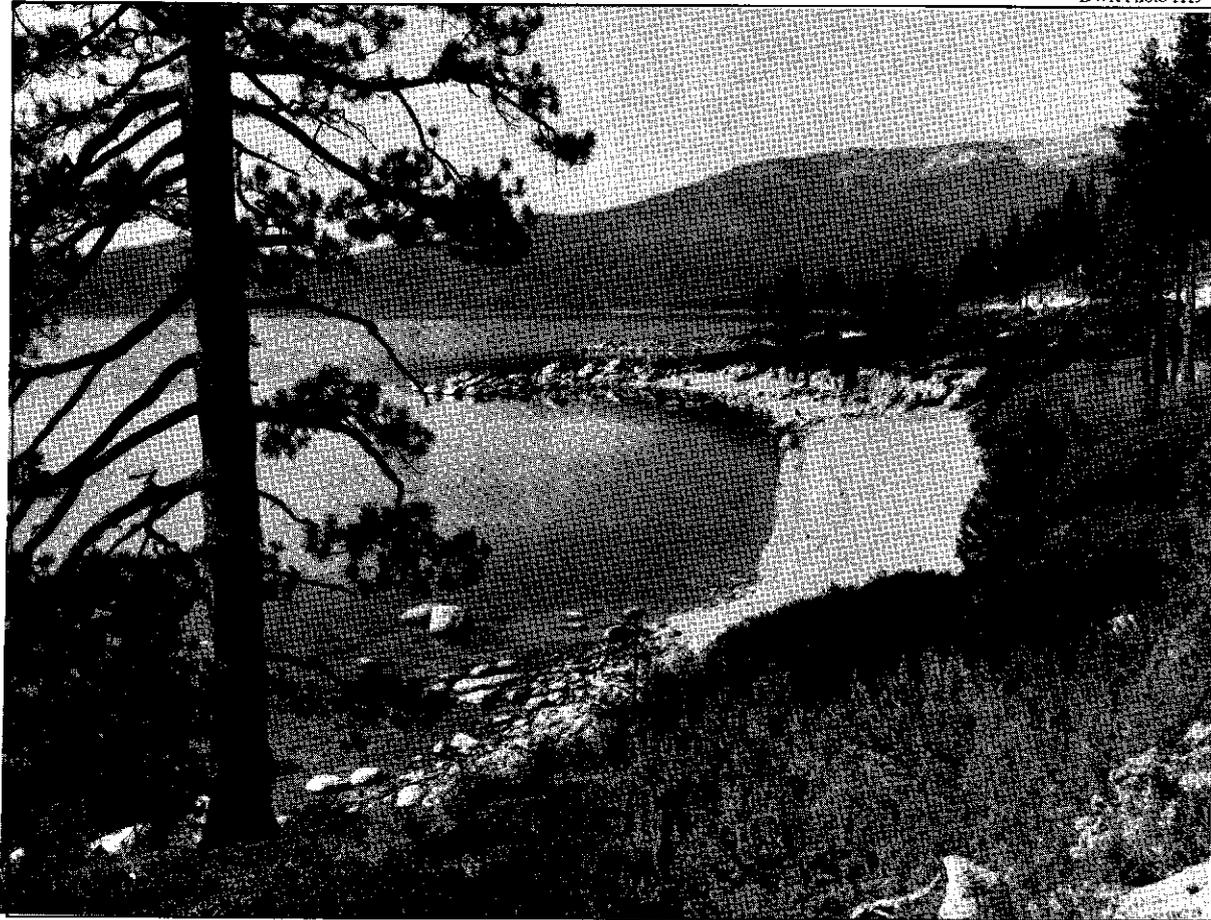
³Flood control storage only.

The lake's exceptional clarity has been noted by visitors ranging from John C. Fremont¹ to Mark Twain. Clarity of lakes is measured by the depth to which a "Secchi disk", a small plastic disk of specific size, is visible. By this standard, Lake Tahoe is almost 100 times clearer than the misnamed

Clear Lake, the largest natural lake entirely within California.

Lake Tahoe's clarity has, however, been declining, as increasing development around the shoreline increases the sediment load and nutrients reaching the lake.

DWR Photo 1119-47



Scenic Lake Tahoe beach near the mouth of Tunnel Creek.

Nutrients such as nitrogen and phosphorus used in lawn or golf course fertilizers may enter the lake in the form of storm-water runoff; these nutrients promote growth of algae, which in turn reduces clarity. In the late 1960s average annual Secchi disk visibility was on the order of 100 feet; now, some 20 years later, the figure is closer to 75 feet.

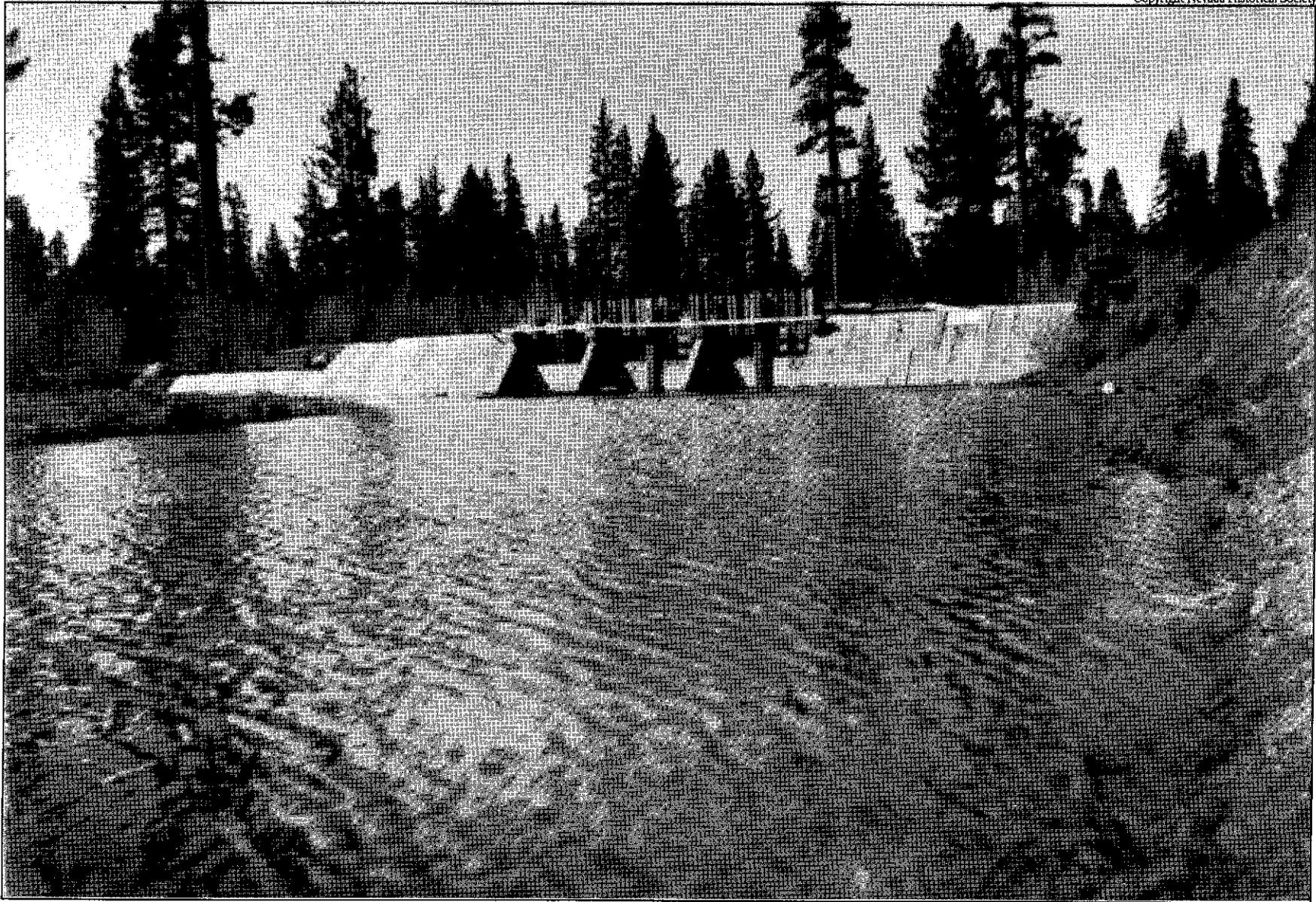
Significant development in the Lake Tahoe drainage area began in the 1860s, when the area was extensively logged to provide timber for the booming mines of the Comstock Lode in Virginia City. The first dam was variously reported to have been constructed at Lake Tahoe in 1871 or 1874.

Early pioneers constructed small dams on a number of alpine lakes in the Sierras during this period, typically to regulate streamflow for transportation of logs, power generation, or irrigation. The normal *modus operandi* was to raise the water surface elevation of a lake by constructing a small dam at the lake's natural outlet, thus gaining the ability to regulate and use the water stored between the lake's natural rim and the dam's outlet works. This technique was used, for example, at Donner, Independence, Echo, Webber, and Marlette lakes, as well as at Lake Tahoe.

¹ Until Fremont discovered Lake Tahoe in 1844, it was known only to the Indians of the region.



Controlling erosion by encouraging revegetation is one method of reducing the sediment load reaching Lake Tahoe.



The original timber crib dam constructed at Lake Tahoe. Note the individual planks used for the facing.

The small dam at Lake Tahoe was partially constructed in 1909 and completed in 1913 by the U.S. Bureau of Reclamation and the Truckee River General Electric Company, a predecessor of today's Sierra Pacific Power Company, a major supplier of municipal water for the Reno/Sparks area.

Subsequently, in a complex series of water rights litigation and negotiations (described in Chapter 6), the United States government obtained an easement to use and operate the dam in 1915. The federal government's purpose in this action was to obtain the ability to use Lake Tahoe for Newlands Project agricultural water supply. (The Newlands Project is described on page 23.) Today the lake is operated by Truckee-Carson Irrigation District for the Bureau of Reclamation; the irrigation district contracts with the Bureau of Reclamation for Newlands Project water.

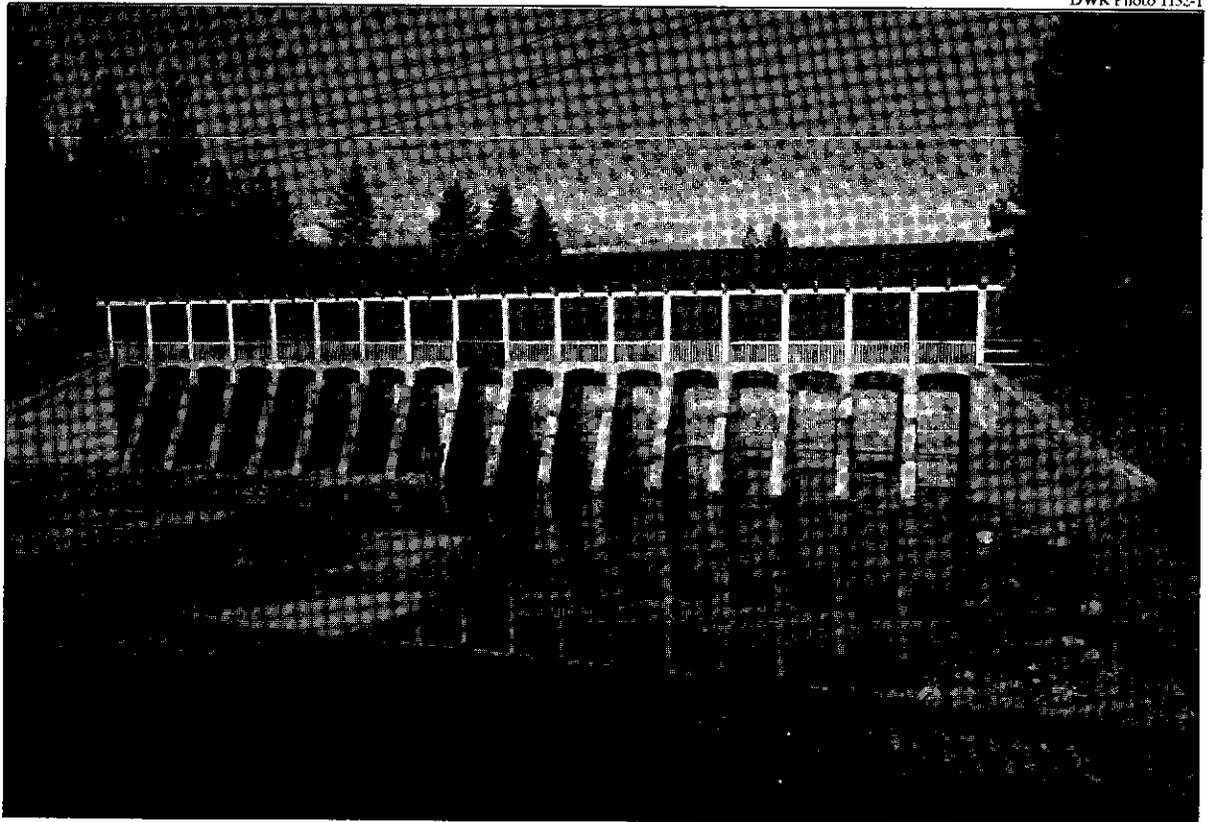
Lake Tahoe Dam is a concrete slab and buttress structure with a height of 18 feet, which controls the upper 6.1 feet of the lake. The dam is actually 400 feet downstream from the lake's natural rim, which is the point of hydraulic control under low water conditions. In years when the lake's elevation is higher than the natural rim, releases from the lake are controlled by the dam's 17 outlet gates, shown in the photograph at right. At one time a gatekeeper, or

damtender, lived at the dam and operated the gates; the adjacent Gatekeeper's Museum State Park includes the gatekeeper's reconstructed log cabin.

In the driest years, Lake Tahoe drops slightly below its natural rim, and no water reaches the gates at the dam. Even under these conditions, however, there is water in the Truckee River below the dam because of ground water underflow and seepage.

Even though the dam at Tahoe is small by modern standards, it controls a very large volume of water because the lake has such a large surface area. The upper 6.1 feet amounts to a usable storage capacity of 744,600 acre-feet. This figure does not include water below the natural rim of the lake (about 122 million acre-feet), which could be retrieved for use only by pumping it over the rim. To put Lake Tahoe's usable storage capacity of 744,600 acre-feet into

DWR Photo 1132-1



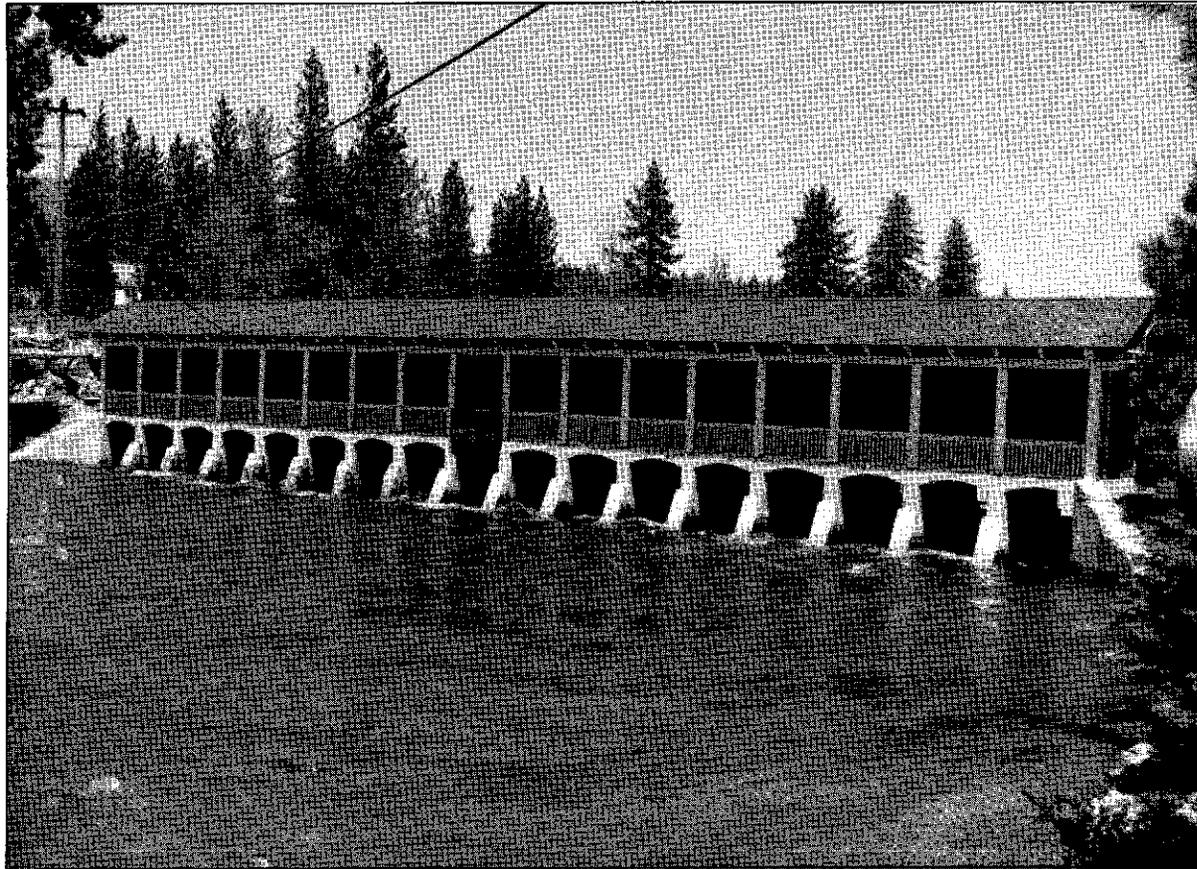
A view of the downstream side of Lake Tahoe Dam under low water conditions. Note the 17 individual gates that regulate releases.

perspective, Folsom Lake, on the American River, has a storage capacity of about 1 million acre-feet, and Oroville Reservoir, on the Feather River, has a capacity of about 3.5 million acre-feet. Lake Tahoe is the largest reservoir on the Truckee River, but the lake's large surface area also means a high evaporation loss — averaging about 375,000 acre-feet per year.

Fallen Leaf, Echo, and Marlette Lakes

These three lakes, the smallest described in this atlas, share Lake Tahoe's drainage basin. Of a number of small lakes in this drainage basin, these three have been singled out for special mention because of their historical or other significance.

DWR Photo 139-50



View of the downstream side of Lake Tahoe dam when the lake was at elevation 6228.35, less than a foot from its maximum regulated level.

Fallen Leaf Lake, located just west of the developed South Lake Tahoe area, is controlled by a small dam at its outlet to Taylor Creek; Taylor Creek flows into Lake Tahoe a little over a mile below Fallen Leaf Lake. The lake's storage capacity is 6,800 acre-feet; the U.S. Forest Service holds water rights to the lake for recreation and fish and wildlife uses. Many people are familiar with the public and private camping areas and hiking trails around the lake, which constitute the recreational use. Fish and wildlife use can be seen farther downstream on Taylor Creek at the Forest Service visitor center. Here the Forest Service has constructed a stream profile chamber on Taylor Creek to allow visitors to see the resident fish population in a simulation of its natural habitat.

Echo and Marlette Lakes are important because of their historical out-of-basin diversions, which have been recognized in the water right activities described later in this atlas.

Echo Lake, at the upstream edge of the drainage basin on the California side, has a capacity of 1,900 acre-feet. The small dam, constructed in 1876, is owned by Pacific Gas and Electric Company, which claims a pre-1914 water right to divert water from the lake out of the Lake Tahoe basin and into the American River watershed on the

west. The water is used to generate hydroelectric power through PG&E's system of powerplants on the American River.

Marlette Lake is at the upstream edge of the watershed on the Nevada side and has a storage capacity of 11,800 acre-feet. Its dam was constructed in 1873 to provide a water supply for fluming logs to Carson City and was raised in 1876 to supply water to the mining camps around Virginia City. The reservoir subsequently provided water for the state buildings in Carson City. This use has involved diverting water out of the Lake Tahoe basin into the drainage area of the Carson River on the east.

John Kramer



Boating is popular at Lake Tahoe.

Mark Twain at Lake Tahoe

Mark Twain described his travels throughout the West in his book, Roughing It. He visited the silver mining areas of the Comstock Lode, stayed in Carson City, and camped on the shores of Lake Tahoe for a time. He had this to say about his impressions of the lake:

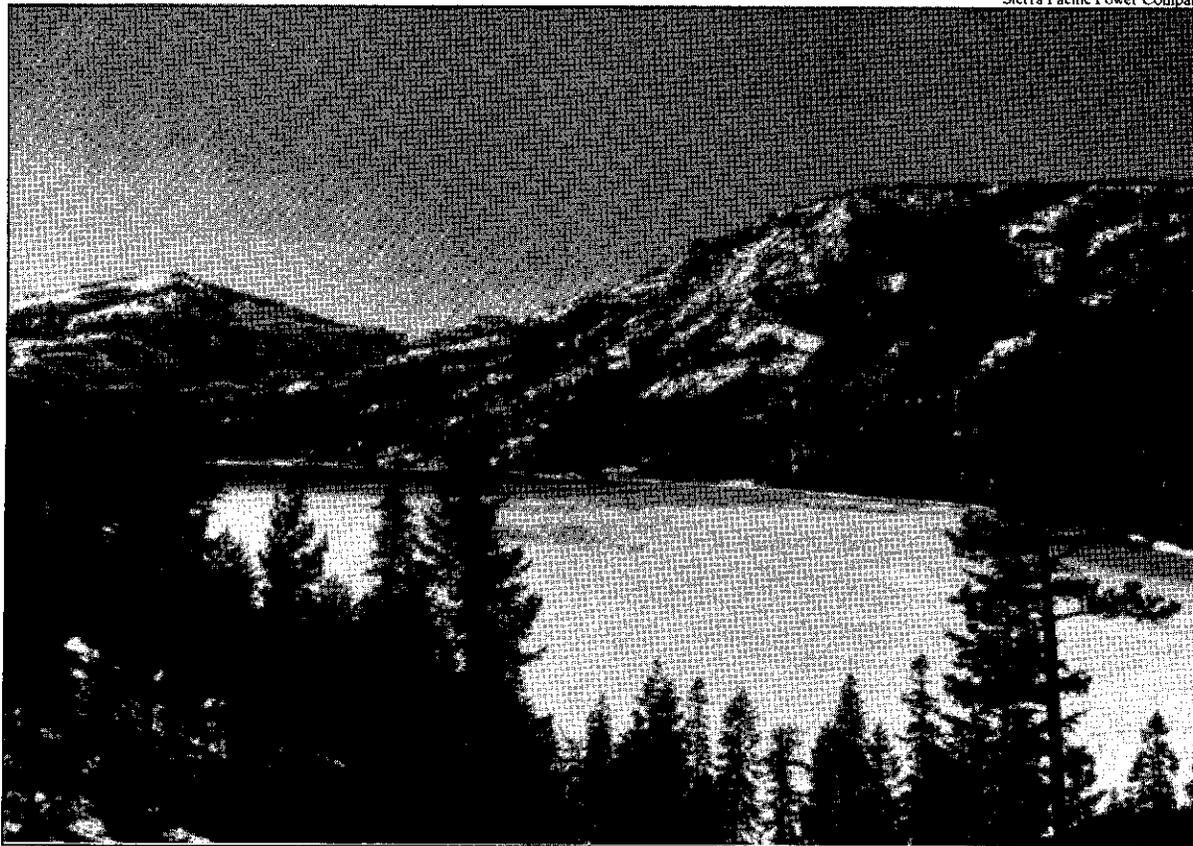
So singularly clear was the water, that where it was only twenty or thirty feet deep the bottom was so perfectly distinct that the boat seemed floating in the air! Yes, where it was even eighty feet deep. Every little pebble was distinct, every speckled trout, every hand's-breadth of sand. Often, as we lay on our faces, a granite boulder, as large as a village church, would start out of the bottom apparently, and seem climbing up rapidly to the surface, till presently it threatened to touch our faces, and we could not resist the impulse to seize an oar and avert the danger. But the boat would float on, and the boulder descend again, and then we could see that when we had been exactly above it, it must still have been twenty or thirty feet below the surface. Down through the transparency of these great depths, the water was not merely transparent, but dazzlingly, brilliantly so. All objects seen through had bright, strong vividness, not only of outline, but of every minute detail, which they would not have had when seen simply through the same depth of atmosphere. So empty and airy did all spaces seem below us, and so strong was the sense of floating high aloft in mid-nothingness, that we called these boat excursions "balloon voyages".

Donner Lake

Donner Lake is adjacent to Interstate Highway 80, just west of the town of Truckee. Visitors often associate the lake with the railroad snowsheds, which can be seen high above the water surface on the lake's southern side. A dam was originally constructed in 1877 at the lake's outlet to Donner Creek and was rebuilt in the 1930s.

Today the damsite is surrounded by Donner Memorial State Park. This small dam, a concrete slab structure with three gates, is about 14 feet high and regulates the upper 12 feet of the lake, controlling up to 9,500 acre-feet of water. Rights to this usable capacity of the lake are held jointly by Sierra Pacific Power Company and Truckee Carson Irrigation District, and the water is used for municipal supply in Reno and irrigation on the Newlands Project.

Sierra Pacific Power Company



Donner Lake with a partial cover of snow and ice.

Martis Creek Reservoir

Martis Creek Reservoir is in Martis Valley, on the south side of Interstate Highway 80 just east of Truckee. The reservoir was constructed by the U.S. Army Corps of Engineers in 1971, making it the newest of the significant reservoirs in the Truckee watershed. The reservoir is used only for flood control, protecting the Reno/Sparks area downstream. The earth dam is 113 feet high and provides 20,400 acre-feet of temporary flood control storage. Because the dam was designed as a flood control structure and because of the pervious nature of the valley soils on which it was built, it is not now physically possible to use the reservoir for long-term water storage.

It is quite possible to drive past the reservoir site and not realize a reservoir exists. Except under flood conditions, the reservoir occupies a minimum pool of 800 acre-feet, which covers only about 9 percent of the land area dedicated for flood control storage.

Historic Donner Pass

Many people are familiar with the story of the Donner Party, after whom both the lake and the pass were named. The first known group of immigrants to cross Donner Pass and find a way westward were, however, the Townsend-Stephens-Murphy group, who crossed the pass in 1844 – the same year in which John C. Fremont encountered Lake Tahoe. The Donner Party attempted a late fall crossing of the pass two years later, in 1846, but were trapped by early snowstorms. While they waited out the winter in the Truckee area, many of the party died of starvation before the spring thaw permitted them to send to Sutter's Fort in Sacramento for help. The exact location of their winter camp is not known, but it was presumed to be near the present-day state park. An archaeological investigation in the summer of 1990 uncovered another site a few miles away, which may be the actual camp.

The other major historic event associated with the Donner Pass was construction of the Central Pacific Railroad track through the mountains, an activity which had taken four years by the time it was finally completed in 1867. The winter of 1866 brought record snowfall for the pass, including one storm that deposited about 10 feet of snow in 13 days. When the crews resumed work on the tracks in the spring, they were forced to use explosives to remove the densely packed snow. The obviously severe weather conditions in the area dictated the need to construct snowsheds. The hillsides in the Lake Tahoe basin and the surrounding areas were being stripped of their trees in massive clear-cuts to supply two principal uses – mine timbers for the Virginia City area and railroad ties and snowsheds. One estimate placed the amount of timber used in snowsheds at 65 million board feet.

Prosser Creek Reservoir

Prosser Creek Reservoir is on the north side of Interstate Highway 80, north of Truckee. The U.S. Bureau of Reclamation completed the earthfill dam in 1962 as part of the Washoe Project. The 163-foot-high dam impounds up to 29,800 acre-feet of water. Primary purposes of the reservoir are flood control for the Reno/Sparks area and exchange of water under the *Agreement for Water Exchange Operations of Lake Tahoe and Prosser Creek Reservoir*, informally known as the “Tahoe-Prosser

Exchange Agreement”. This agreement is one of the complex series of water right constraints that govern operation of the Truckee River. In its simplest terms, the agreement provides for release of water from Prosser Reservoir to meet water right demands from Lake Tahoe. The agreement thus allows more water to remain in Lake Tahoe in summer months, so flows to sustain the Truckee River fishery immediately below the lake can be maintained for longer periods.

Independence Lake

Independence Lake is west of State Highway 89, in a scenic valley carved out by glacial action. A small dam was originally added to this natural lake's outlet in 1879; the present dam was constructed in 1939. This 31-foot-high earthfill dam controls the upper 28 feet of the lake, providing for usable storage of 17,500 acre-feet.

The lake and surrounding area are owned by Sierra Pacific Power Company, which uses the water for Reno/Sparks municipal

water supply. Historically the lake was once owned by lumber interests, a reflection of extensive logging activity in the area in the late 1800s. It is estimated that 25 lumber mills operated along the river near Truckee in the 1870s.

Stampede Reservoir

Stampede Reservoir was completed in 1970 by the U.S. Bureau of Reclamation as part of the Washoe Project. The zoned

earthfill dam is 239 feet high and impounds up to 226,500 acre-feet of water, making Stampede the second largest reservoir on the Truckee River.

The reservoir was originally constructed to serve a variety of purposes, including irrigation and municipal uses. The primary use to date has been to store water for fishery flows for Pyramid Lake; incidental uses include recreation and flood control. A limited amount of water for municipal use

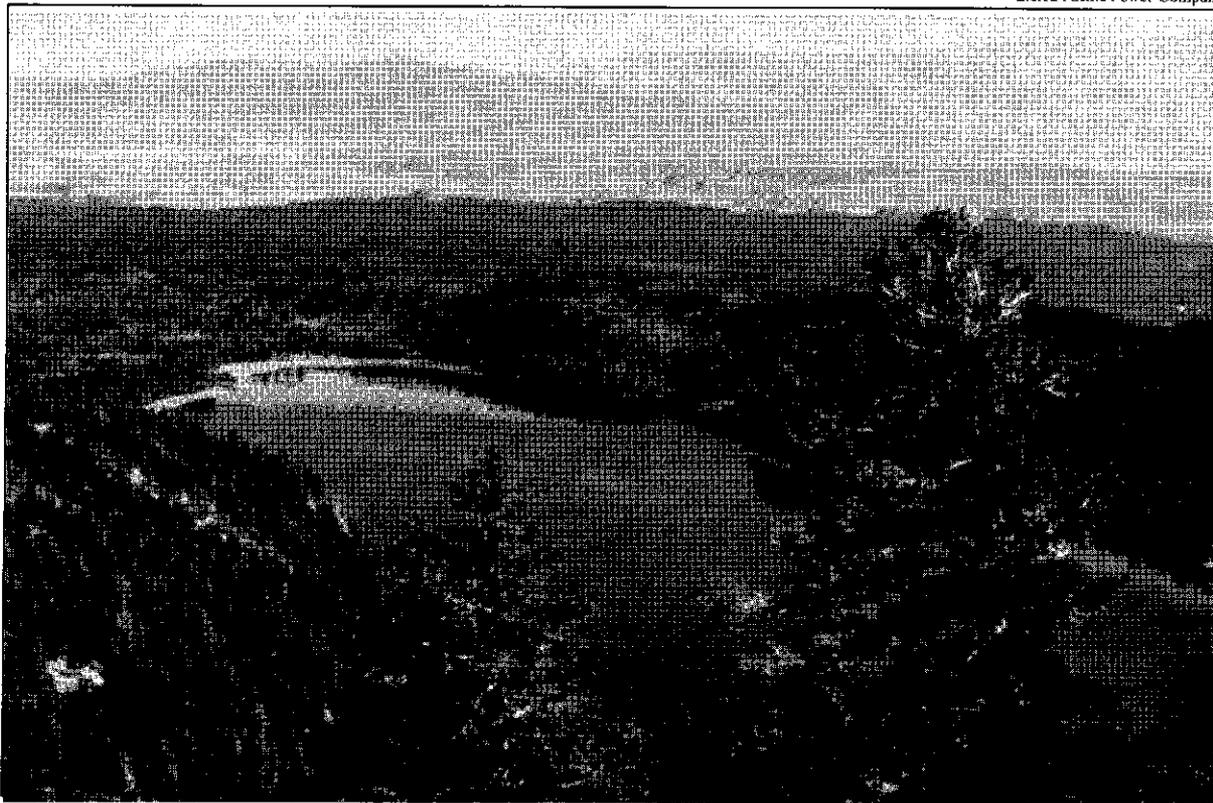
may be stored in Stampede in the future, as described in Chapter 6.

Stampede is the only reservoir in the Truckee watershed that has a hydroelectric powerplant. A small hydro plant added to the dam's outlet works in 1988 can produce up to 3.65 megawatts, depending on reservoir releases. Power production is incidental to operation of the reservoir for other purposes.

Boca Reservoir

Boca Reservoir is on the Little Truckee River, about 3 miles downstream from Stampede Reservoir and just upstream from the confluence of the Little Truckee River with the Truckee River. The U.S. Bureau of Reclamation completed Boca in 1937 as part of the Truckee Storage Project. The 116-foot-high earthfill dam impounds a reservoir of 41,100 acre-foot capacity. The dam is operated by Washoe County Water Conservation District under contract to the Bureau of Reclamation.

At the time of construction, one use of the water was irrigation in Truckee Meadows. Urbanization of this area has substantially reduced the amount of irrigated acreage, and Truckee Meadows irrigation water rights are being bought and sold to support municipal use.



Independence Lake occupies a valley carved out by glacial action.

Ice Harvesting at Boca

At one time, the area around Truckee was the center of a thriving ice harvesting industry. Small ponds were constructed and flooded so the ice could be cut and shipped by rail to customers in Virginia City and San Francisco.

As the mine workings in Virginia City were extended deeper and deeper into the ore zones, temperatures in some stopes rose rapidly, creating conditions such that a miner could work only a few hours before being overcome by the heat. (The heat resulted from the natural geothermal gradient below the earth's surface.) Ice from the Truckee area was used in conjunction with mine ventilation systems to help cool the workings.

Sale of Truckee ice to San Francisco Bay area consumers continued for a time after the turn of the century when the Comstock boom declined. The ice plant at Boca was one of the last plants operating because of its convenient access to rail transport.

Some people still remember when west-bound freight trains picked up ice at Boca to cool the fruit that would be loaded in the foothills above Sacramento.



Both Photos Copyright Nevada Historical Society



Ice harvesting at Boca, circa 1916. Horses pulled saws that cut partway through. Then workers broke the ice loose and floated it to the storage shed.

Derby Diversion Dam

Derby Diversion Dam is about 20 miles east of Reno on the Truckee River, adjacent to Interstate Highway 80. The U.S. Bureau of Reclamation completed construction in 1905 as part of the Newlands Project. The dam is a 31-foot-high concrete gate structure that diverts part of the river's flow into the Truckee Canal. This 32.5-mile-long canal has a capacity of about 900

cubic feet per second and terminates in the Bureau of Reclamation's Lahontan Reservoir near Fallon, in the Carson River watershed. Truckee-Carson Irrigation District operates both Derby and Lahontan Dams.

The Newlands Project was designed to irrigate large amounts of land in Lahontan Valley, which appeared to be arable but received very little rainfall. Since flow in the smaller Carson River alone was insuf-

ficient to irrigate this land, water from the larger Truckee River was diverted to increase the acreage irrigated. Today the single largest use of water from the Truckee River remains Newlands Project irrigation. (A small portion of the Project is in the Truckee watershed near Fernley, but most of the irrigated acreage lies in the Lahontan Valley). Continued diversion of water to the Lahontan Valley has been the subject of long-standing litigation and controversy.

Photo from DWR Files



Pyramid Lake

The Truckee River terminates in Pyramid Lake, about 40 miles northeast of Reno. The lake is surrounded by the Pyramid Lake Indian Reservation; the small towns of Wadsworth, Nixon, and Sutcliffe are on the reservation. The lake is about 30 miles long and 10 miles wide at its widest point.

A dry lake bed, known as Winnemucca Lake, adjoins Pyramid Lake on its eastern side. Both Pyramid and Winnemucca Lakes are remnants of Lake Lahontan, which once covered a vast portion of the Great Basin. Walker Lake to the south, in the Walker River basin, is another remnant of Lake Lahontan. All three are terminal lakes or "sinks", meaning they occupy a topographic low, and water leaves them only by evaporation.

Derby Diversion Dam on the Truckee River, taking water into the Truckee Canal.

The Name Behind the Newlands Project

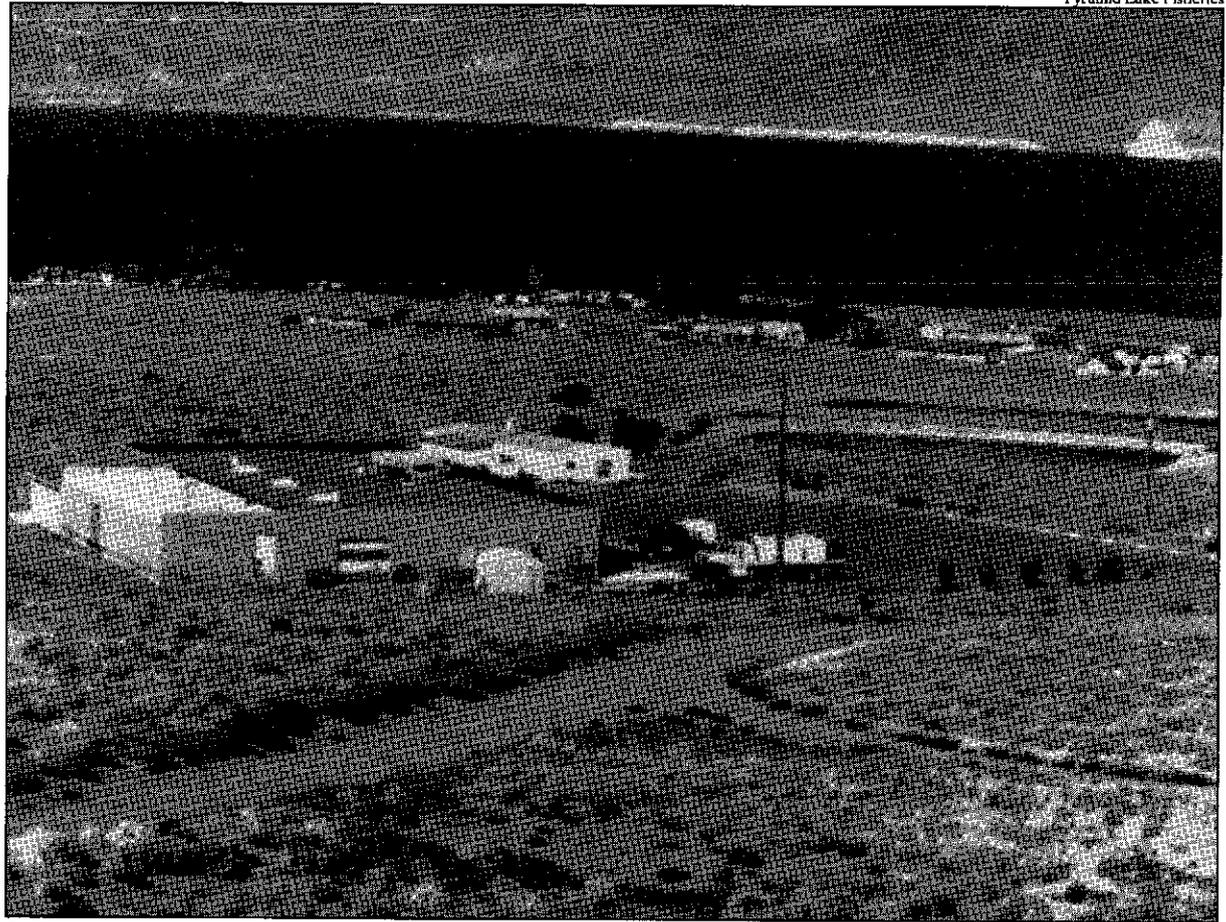
The name Newlands Project seems appropriate for the first project under the Reclamation Act of 1902, particularly considering that, at the time, the mandate of the Reclamation Service (now the Bureau of Reclamation) was to "make the desert bloom". The project was not, however, so named because it created "new lands". It was named after Nevada's U.S. Senator Francis G. Newlands.

Nevada was experiencing an economic downturn after the Comstock Lode silver boom collapsed. Newlands, believing agricultural development was the key to the state's future, began advocating irrigation projects as early as the 1880s. He purchased land near the present Lake Tahoe Dam so a new dam could be constructed there to supply water to Nevada. This effort did not come to any fruition because of conflicts with existing water users — primarily power and lumber interests. Later, as a member of Congress (first as a representative, then as a senator), Newlands support of the Reclamation Act ensured that Nevada's first such project would be named for him.

Under natural conditions, the water level of a terminal lake varies annually with inflow to the lake. In wet periods lake levels rise and in dry periods they decline. Geological and historical evidence suggests water levels in Pyramid Lake fluctuated over time. If levels were high enough, inflow to Pyramid Lake would also flow east-

ward to feed Winnemucca Lake, providing that lake's water supply. Winnemucca Lake appears to have varied from almost dry, to a marshy area, to a lake in the period spanning the mid-1800s to the end of the century. Some early writers refer to the area as Mud Slough or Mud Lake, rather than Winnemucca Lake.

Pyramid Lake Fisheries



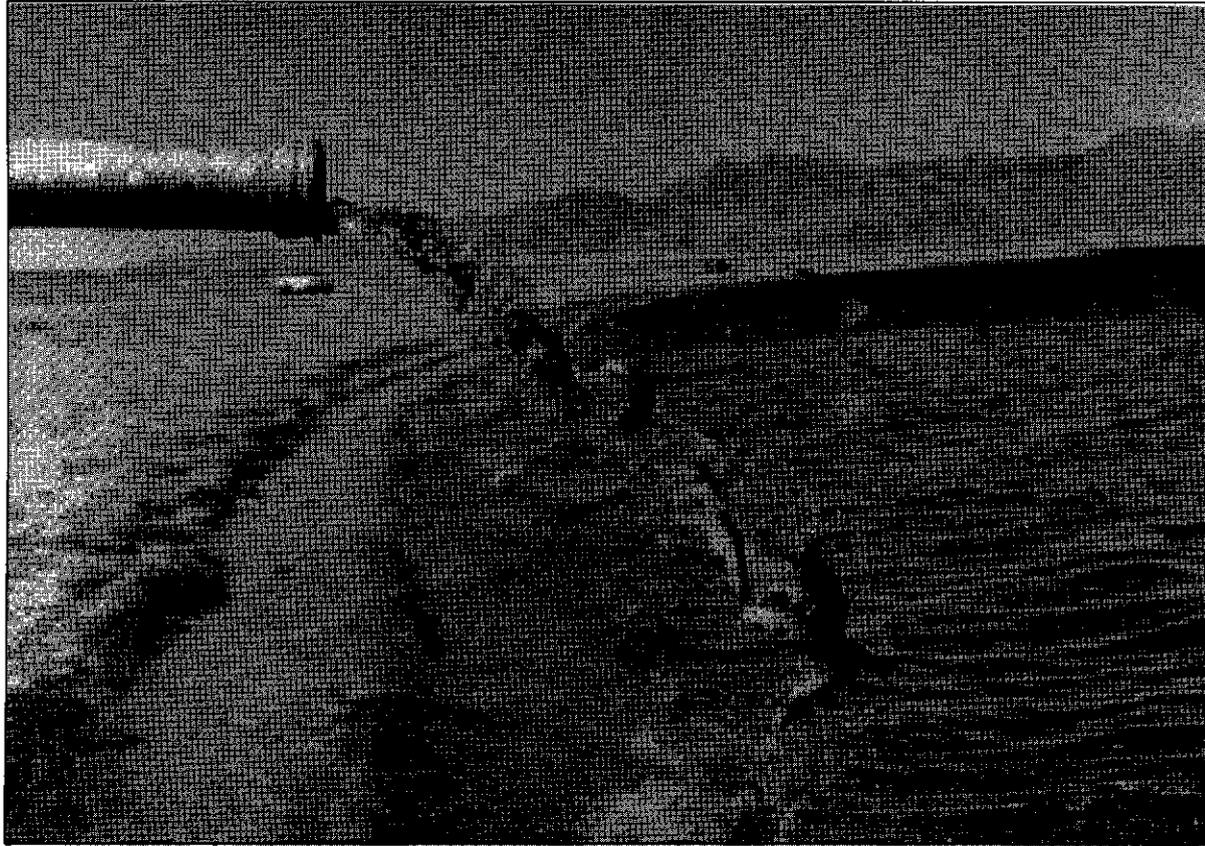
Pyramid Lake from the western shore, with Fremont's Pyramid in the background (far right) and one of the tribal fish hatcheries in the foreground.

When John C. Fremont and his guide Kit Carson encountered Pyramid Lake in 1844, the lake stood about 3 feet below its overflow elevation into Winnemucca Lake. Pyramid achieved its highest level of record in 1871, after several years of the highest flows ever on the Truckee River. In

1882, when the lake had declined to about its overflow level, corresponding to a depth of about 360 feet, Winnemucca Lake achieved its highest historical level, which corresponded to a depth of about 85 feet. At this high level, Winnemucca Lake was about 25 miles long and 3.5 miles wide and

contained about 3.6 million acre-feet of water. Pyramid's volume, for comparison, was about 26 million acre-feet. Levels of both lakes were relatively stable, meaning that inflow and evaporation were roughly in balance, from the 1880s through about the first decade of the 1900s.¹

Pyramid Lake Fisheries



As shown in Figure 4, a steep decline in the level of Pyramid Lake began around 1910. This decline reflects a decrease in inflow reaching the lake as a result of Truckee Canal diversions to the Newlands Project. The decline of Winnemucca Lake levels paralleled that of Pyramid, and by 1939 Winnemucca Lake was completely dry. Today Winnemucca is a dry alkali lake, and Pyramid's level is about 50 feet lower than when Fremont first sighted the lake.

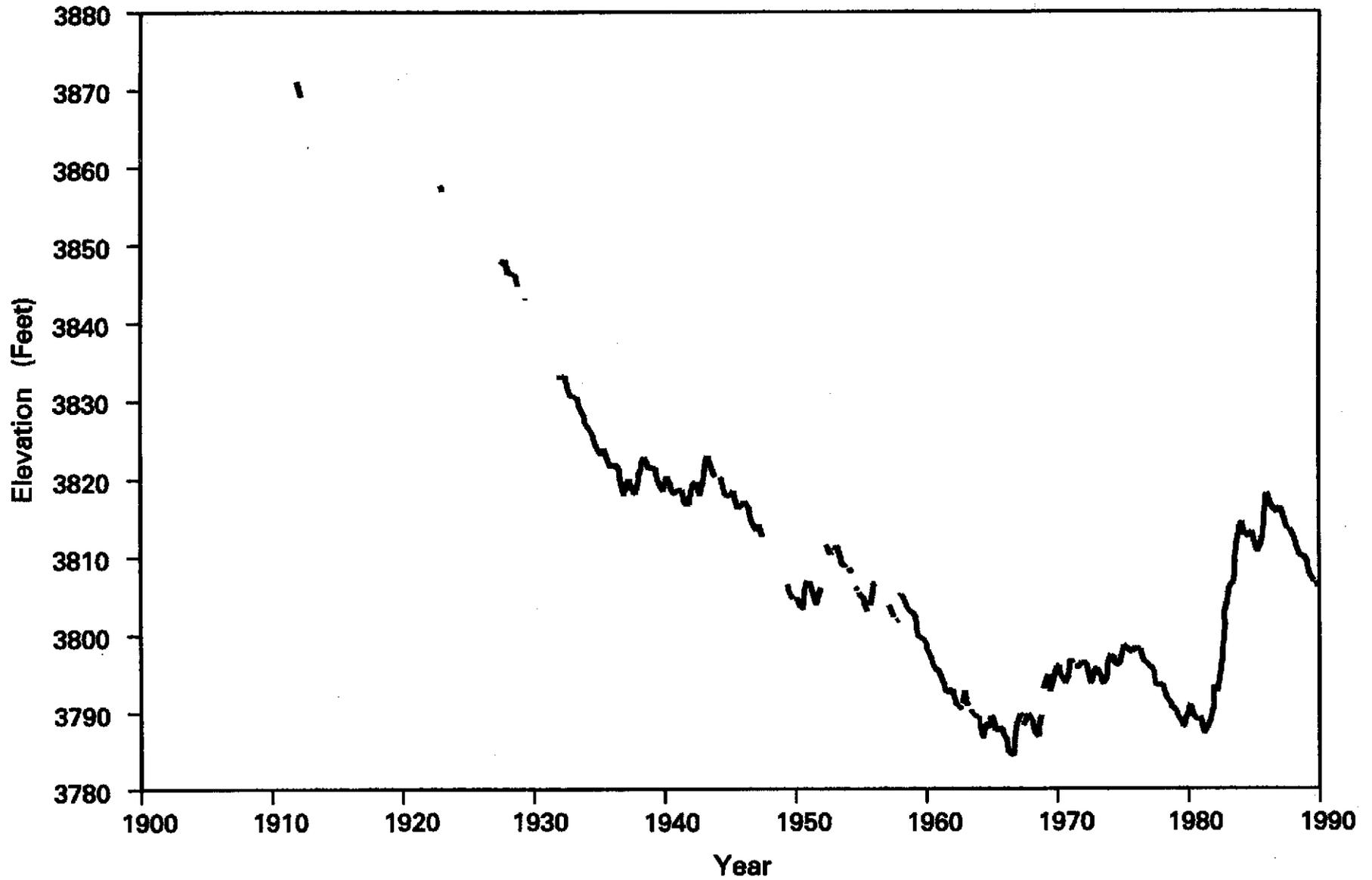
Fremont's first impressions of the lake are recorded in his journal:

A sheet of green ... The waves were curling in the breeze, and their dark green color showed it to be a body of deep water. For a long time we sat enjoying the view, for we had become fatigued with mountains, and the free expanse of moving water was very grateful. It was set like a gem in the mountains.

Hatchery Lahontan cutthroat trout being discharged into Pyramid Lake.

¹ Evaporation from a water surface in this arid desert region is about 4 feet per year, constituting a major percentage of the inflow reaching Pyramid Lake in all but the wettest years. Evaporation from Winnemucca Lake accounts for the lake's radical changes in size. Since the lake was smaller and shallower than Pyramid and received inflow less frequently, the effects of evaporation were rapidly visible.

Figure 4
HISTORICAL PYRAMID LAKE LEVELS



Fremont shortly encountered a band of Paiute Indians, who welcomed the group with a meal of fish, which the explorers described as “salmon trout”. The explorers were impressed by the copious amount of fish available, along with their culinary potential:

The flavor was excellent – superior, in fact, to that of any fish I have ever known.

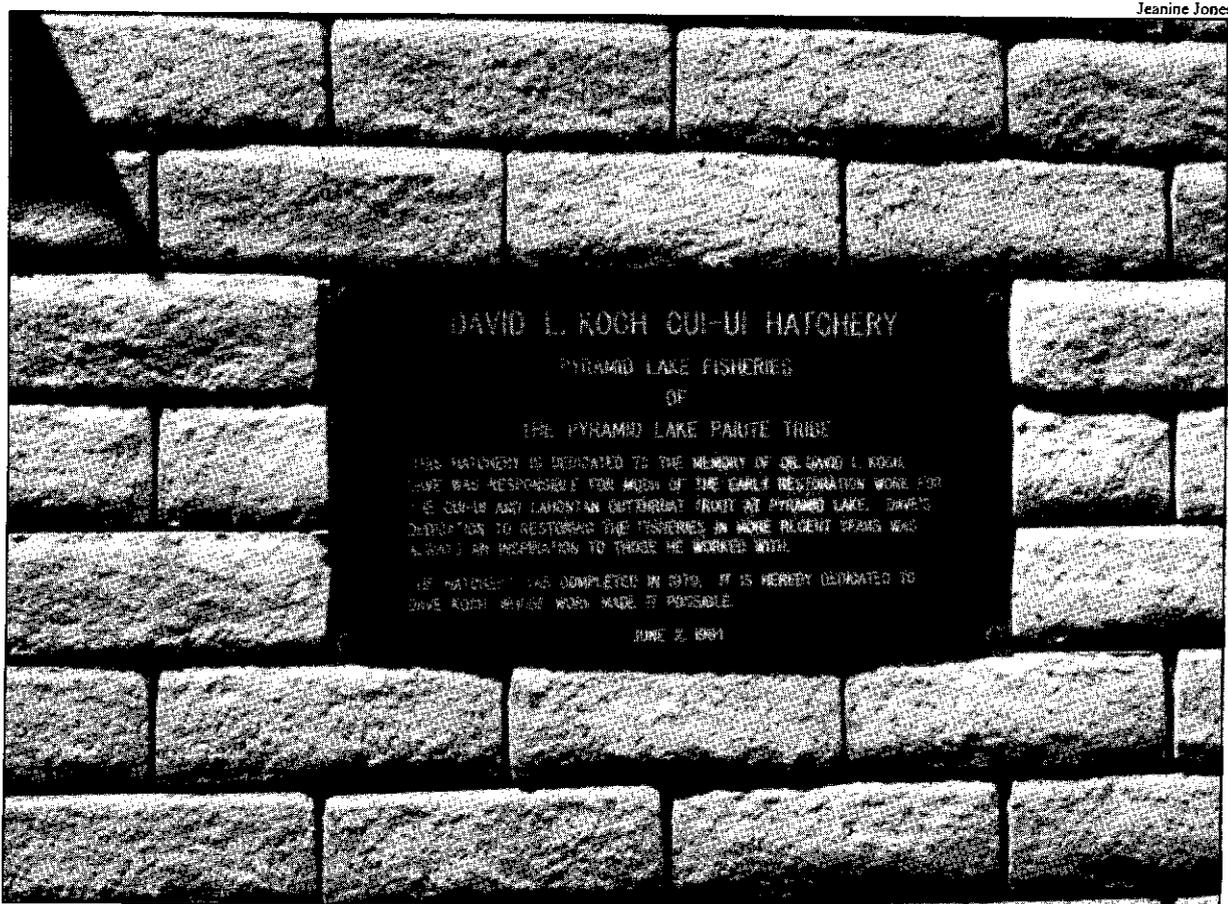
What Fremont and his group had encountered were, in fact, the Lahontan cutthroat trout, a fish native to Pyramid Lake, the

Truckee River, and other mountain lakes. Pyramid Lake had been an important source of fish for the region’s Indian inhabitants for many generations. The band of Paiutes who lived near Pyramid Lake, one of many Paiute bands in the north Lahontan region, called themselves the “kuyuidökadö” in their own language. This name roughly translates to “cui-ui eaters”, a reference to the importance of another lake-dwelling fish in their diets.

The lake also supports a colony of white pelicans who live on Anaho Island, a small island just off the eastern shore that is now a national wildlife refuge.

The Indian reservation surrounding the lake was created in 1859 by the Secretary of the Interior. The reservation includes the lake, a surrounding desert area, and a corridor along the Truckee River upstream of its entrance to the lake. It was the intent of the federal government that the Indians become farmers and, more particularly, that they cultivate this strip of land along the river bottom and the adjoining benchlands. Members of the Pyramid Lake Paiute Tribe were, however, more culturally predisposed to fishing than to farming.

The lake’s fishery was sufficient for a time to sustain heavy exploitation by commercial fishing – from the 1880s through the



Hatcheries are being evaluated as one method of recovering Pyramid Lake’s cui-ui population.

turn of the century literally tons of cutthroat trout were hauled off by wagon and railroad, some to San Francisco or Salt Lake City. The fish were so abundant in the river farther upstream that they were even used for fertilizer.

This fishery began to decline as lake levels dropped due to Newlands Project diversions. The combination of lower lake levels and formation of a delta¹ was particularly troublesome for the trout, because it limited their ability to move upstream into the Truckee River to spawn. The trout population declined until by 1941 the native strain of the Lahontan cutthroat could no longer be found in the lake.²

The State of Nevada reintroduced hatchery Lahontan cutthroat trout to the lake. The Tribe has now taken over the hatchery program, and the trout form a popular sport fishery at the lake. However, the Lahontan cutthroat trout in the lake have been listed under the federal Endangered Species Act as a threatened species.

Another Pyramid Lake fish, the cui-ui, is listed as endangered, and the Tribe also operates a hatchery program for cui-ui.

The endangered listing means fishing for cui-ui is prohibited; fishing can still be permitted for a species listed as threatened. The cui-ui, the Indian name for this fish native to the lake, is a large, omnivorous sucker. Cui-ui can grow to about 2 feet and are remarkably long-lived; females can live for up to 45 years, and males may reach their late 20s. Like the trout, the cui-ui must move upstream into the Truckee River to spawn, and the declining lake levels and delta formation prevent them from doing so in all but wet years.

In 1975, the U.S. Bureau of Reclamation constructed Marble Bluff Dam and Pyramid Lake Fishway, as a facility of the Washoe Project, in an attempt to improve spawning conditions. The 35-foot-high earth dam on the Truckee River, about 3 miles upstream from the lake, directs flow into the fishway. The fishway has a capacity of 50 cubic feet per second and is equipped with fish ladders so fish can travel upstream into the river to spawn. Only a small percentage of the fish population takes advantage of these facilities, however, and large spawns now occur only in wet years, when flows are large enough to provide temporary passage over the delta.

Lake Water Quality

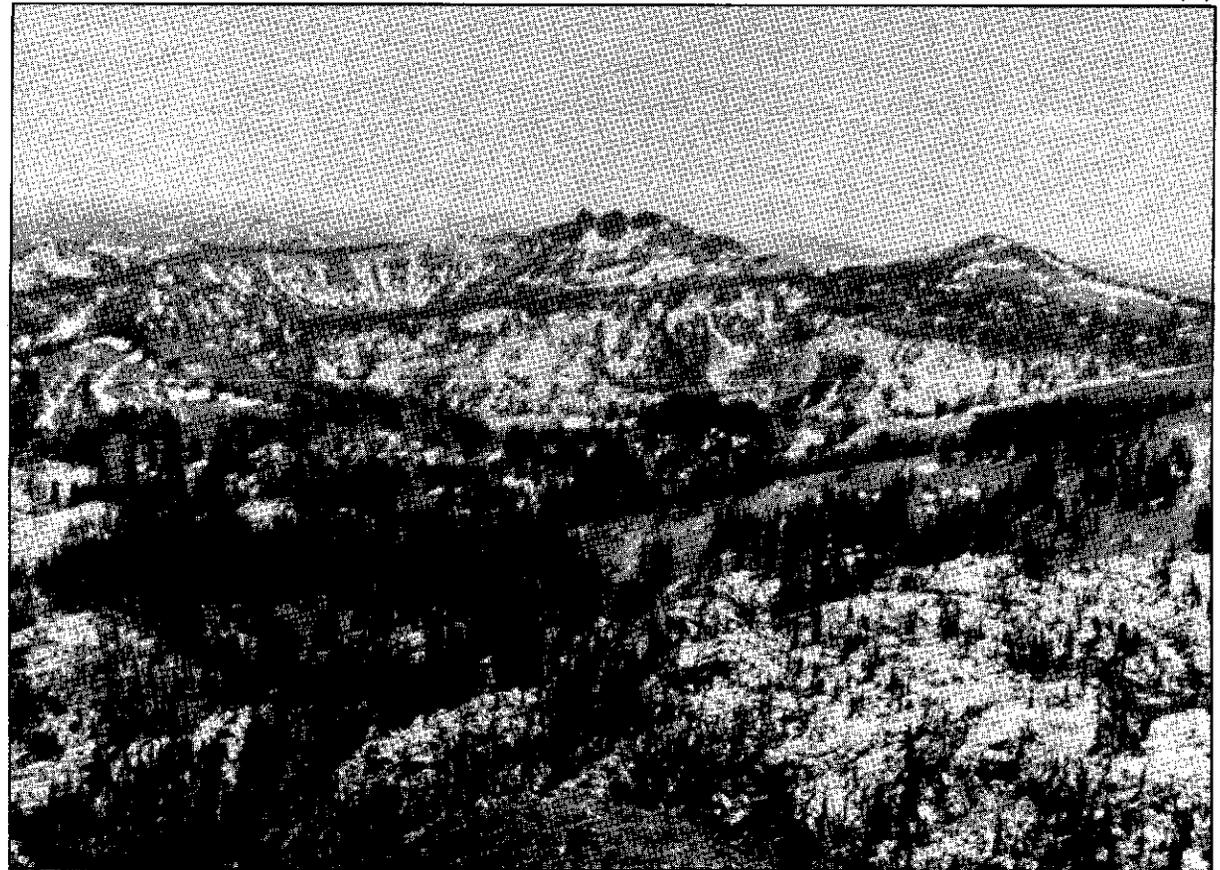
One feature common to all terminal lakes is the concentration of minerals due to evaporation. The Truckee River below Lake Tahoe has a total dissolved solids concentration on the order of 100 mg/L. TDS is one generalized measure or indicator of the amount of dissolved minerals found in water. The TDS concentration of Pyramid Lake today is on the order of 5,000 mg/L, reflecting the facts that minerals are concentrated by evaporation and that the Truckee River has the opportunity to become more mineralized as it flows through developed areas such as Truckee Meadows. One sample collected at the lake in 1882 had a TDS content of 3,500 mg/L, indicative of the larger inflows of fresh water reaching the lake at that time. For comparison, the TDS concentration of seawater is usually taken as 35,000 mg/L.

1 A pattern of sediment deposition characteristic of a stream dropping out the material it has carried as it enters a body of still water.

2 It was during this period (in 1925) that a 41-pound trout was caught in Pyramid Lake — the lake's largest recorded trout.

CLIMATE AND HYDROLOGY

Elevations in the watershed typically range from 9,000 to 10,000 feet in the Sierras, on the western edge of the basin, to 4,000 to 5,000 feet in the valleys of the basin and range terrain toward the east.¹ Figure 5 shows contours of elevation in the watershed. The high elevation areas in the Sierras are the coldest and wettest part of the region; the lower areas to the east lie in the rain shadow of the Sierras and are much more arid. The difference in precipitation levels from west to east in the watershed is graphically demonstrated by the change in vegetation – from coniferous forests around Lake Tahoe to sagebrush and rabbit brush in the desert areas. Figure 6 is an isohyetal² map of the watershed.

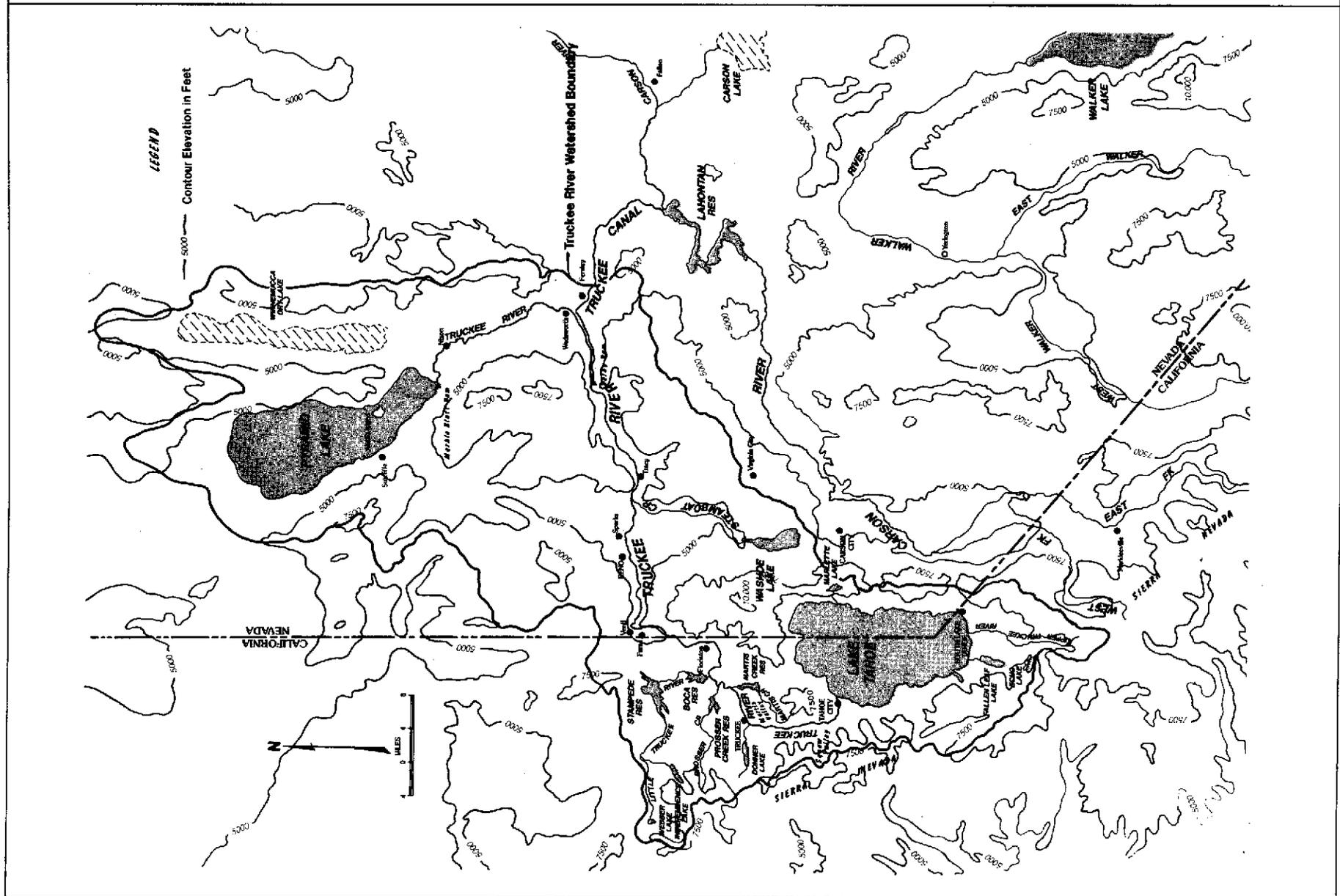


Sierra Pacific Power Company

Precipitation is greatest at the higher elevations on the western edge of the watershed.

- 1 Freel Peak, at an elevation of 10,881 feet, is the highest of the mountains surrounding Lake Tahoe.
- 2 Isohyets are contours of equal average annual precipitation.

Figure 5
 CONTOURS OF ELEVATION, TRUCKEE RIVER WATERSHED



Snow Surveys

Dr. James E. Church of the University of Nevada is credited as inventor of modern-day snow surveying techniques. Dr. Church developed sampling equipment — the Mr. Rose snow sampler and scale — that, with modifications, remain basic tools of the trade.

Fittingly enough, the first application of Dr. Church's snow surveys was in the Lake Tahoe basin. As Dr. Church worked on relating snow measurements to forecasting water conditions, he was approached by a consultant to the forerunner of Sierra Pacific Power Company, who asked if snow surveys could be used to predict the annual rise of Lake Tahoe due to snow-melt runoff. At the time, downstream water interests — especially the power company and the federal government — were operating Lake Tahoe to serve power and agricultural needs, which encouraged maximizing the amount of water stored in the lake. This operation created a long-standing dispute between the downstream water users and property owners around the lake, whose lands were flooded when lake levels rose too high in spring. Dr. Church made his first snow course measurements (a series of measurements at set points, where the water content of the snow is estimated) in the Lake Tahoe area in 1910. Ultimately snow survey informa-

tion developed by Dr. Church was used to forecast the amount the lake would rise, so water users could operate the lake to limit flooding of shoreline property.

Today snow survey techniques are widely used to forecast runoff and water supply. Some survey data are still collected with the sampling tubes invented by Dr. Church. New types of equipment, such as telemetered snow pillows, have been developed to augment manual data collection.

California and Nevada are both involved in cooperative snow survey programs, where a variety of entities — state and federal agencies, water districts, power utilities, and private organizations — jointly collect and share survey data and forecasts. In California, for example, the Department of Water Resources operates and maintains certain snow courses and telemetered installations and collects data from them during winter for use in forecasting supplies for the State Water Project. A variety of entities use snow survey information in the upper Truckee River watershed around Lake Tahoe, such as Sierra Pacific Power Company, which estimates the amount of water that will be available for municipal use in the Reno/Sparks area.



Department of Water Resources snow surveyors measure the water content of the snowpack. This information is used in forecasting spring runoff.

The basin's climate is characterized by long, very cold winters, particularly in the Sierras, and by short, moderate to warm summers. Precipitation follows a seasonal pattern, primarily occurring from late October through early May. Summer thunderstorms are common in the region, but seldom produce significant amounts of precipitation over a wide area. Winter precipitation above the 5,000-foot elevation usually takes the form of snow. The spring runoff season lasts longer than is normal for watersheds of lower elevation, extending into July, because the snowpack at the highest elevations melts late in the season.

Temperatures vary widely with location in the region. In the coldest areas, around Truckee and Lake Tahoe, extreme lows can reach from -15 to -30°F , with maximums in the 90 to 100°F range. The eastern portion of the region is warmer; temperature extremes in the Reno/Sparks area range from about -10 to about 110°F . The coldest spot in California is the townsite of Boca.

The following table, adapted from U.S. Department of Agriculture information, shows the number of frost-free days per year at selected locations. This type of information is normally used to evaluate an area's agricultural potential or suitability for certain types of crops, but it also serves to indicate relative differences in climate.

Location	Elevation (feet)	Frost-Free Season (days)
Boca	5,532	10
Truckee	5,982	30
Tahoe City	6,228	77
Reno	4,397	129
Fallon	3,965	150

Most runoff in the watershed is produced from the upper elevations in California, where precipitation is greatest. Figure 7 is

a map of the watershed showing average annual flows at selected points along the river. The river's greatest historical annual flow at the stateline (measured at the Farad gage) was 1,769,000 acre-feet in 1983, and lowest was 133,200 acre-feet in 1931. It is quite possible that larger or smaller events of record may have occurred before regular, detailed records were kept. Most of the relatively reliable hydrologic information dates from about 1900, although there were occasional scattered observations

DWR Photo Lab



Remote sensing of data is now being used to augment manual measurement of snow courses. This snow pillow, filled with an antifreeze mixture, will provide data to be telemetered to a remote computer system.

earlier. Thus, while we know that a period in the late 1800s was much wetter than normal, from inferences based on levels of Pyramid and Winnemucca Lakes, we do not have measurements of streamflow for this period.

In historical times, the most significant drought from a water supply perspective was from 1928 to 1934.¹ Lake Tahoe fell below its natural rim during this time, reviving the pumping controversy described in Chapter 6. At the opposite extreme, the greatest flood of record at Reno was in December 1955, when an instantaneous peak flow reached 20,800 cubic feet per second. Reno has had several floods with peak flows in the 18,000 to 20,000 cfs range. Today flood damage can be expected when flows exceed about 6,000 cfs in the Truckee Meadows reach of the river.

Ground water also comprises a portion of the basin's water resources. Many private wells serve individual residences throughout the watershed, both in the alluvial valley-fill deposits (thought of as aquifers²

in the conventional sense) and in fracture zones in otherwise less pervious rock. Generally such individual wells are outside the areas served by municipal water purveyors and are low-yield wells sufficient for the needs of a single dwelling.

There are few private agricultural wells large enough for commercial agriculture in the basin; most irrigated agriculture (virtually all of which is in Nevada) is supplied by surface water.

Most ground water extraction occurs in the Truckee Meadows area, where municipal water purveyors such as Sierra Pacific Power Company operate high capacity production wells. Other small valleys, such as Spanish Springs Valley, also contain conventional alluvial basin aquifers. Ground water is normally the chief source of supply for small communities, such as Fernley, outside Truckee Meadows. The only ground water basin of any size in the California portion of the basin is Martis Valley, near Truckee.

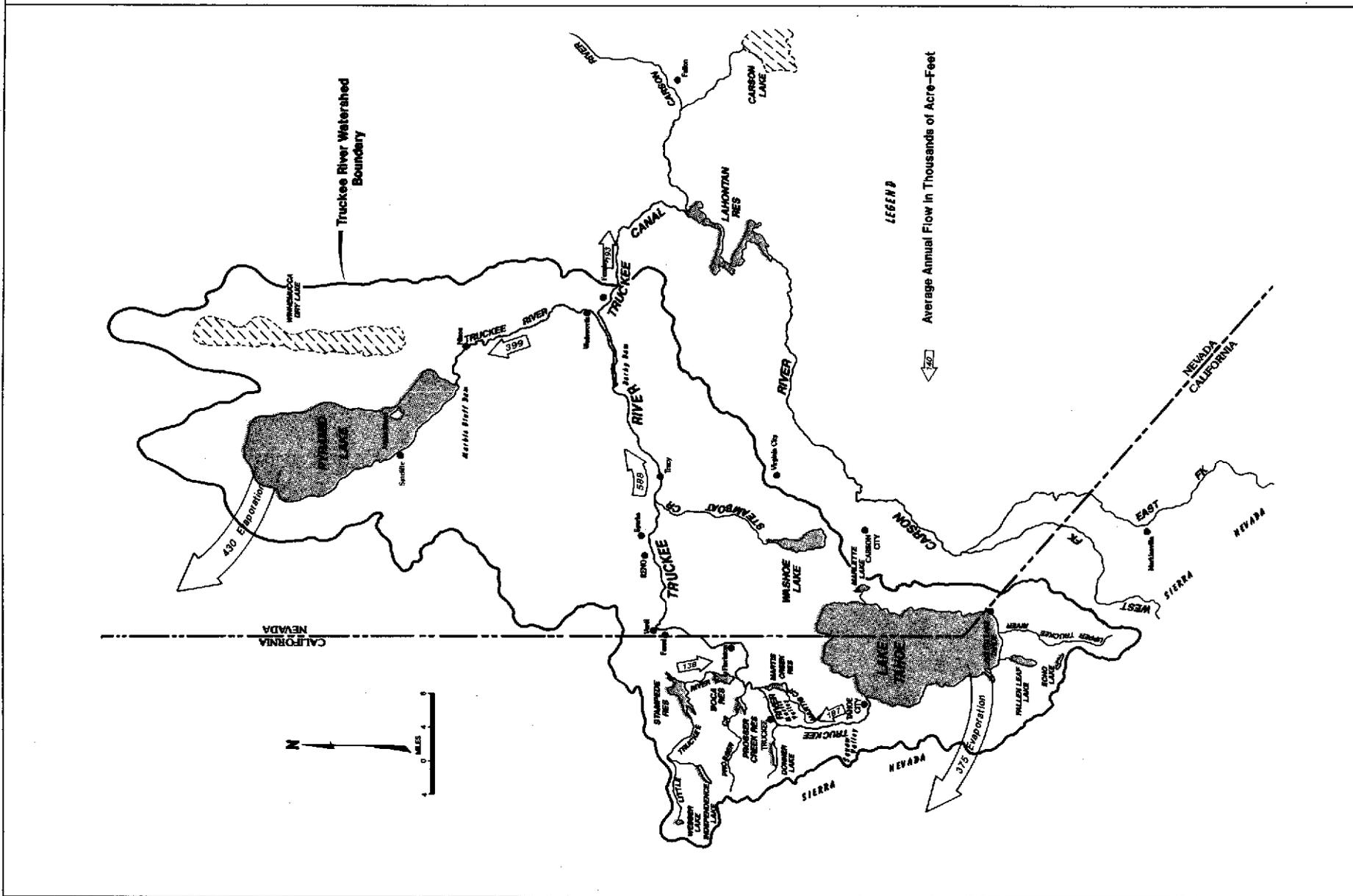
"This cold night will turn us all to fools and madmen."

This line from King Lear may reflect Shakespeare's feelings about English winters, presumably in the vicinity of London, which lies at a latitude of about 52 degrees, much farther north than Boca's 39 degrees. Boca holds the record for the coldest location in California, achieving a record low of -45°F in 1937, as compared with London's record low of 15°F. One can see why the historic ice harvesting business prospered here.

Lowest temperatures at nearby Truckee are generally 10 to 20 degrees warmer than those at Boca. Boca is at the bottom of a small depression where cold air can sink and temperatures can drop rapidly on still nights. The U.S. Weather Service station where these temperatures are recorded is near Boca Dam. Boca Reservoir is often drawn down to a relatively low elevation by the time winter arrives, and the combination of a small volume of water and cold temperatures permits winter ice fishing on the reservoir.

- ¹ The drought of the late 1980s and early 1990s may surpass the 1928-1934 period in severity. At the time of this writing in 1991, the drought remains with us, and we do not yet have the complete hydrologic data needed to make a comparison with 1928-1934.
- ² In simple terms, an aquifer is a subsurface soil deposit or rock formation that is permeable enough so that water can economically be withdrawn from it to serve some use. The valley occupied by Truckee Meadows is the largest ground water basin, or collection of aquifers, in the watershed.

Figure 7
 AVERAGE ANNUAL STREAMFLOWS AT SELECTED LOCATIONS



DEVELOPMENT AND LAND USE

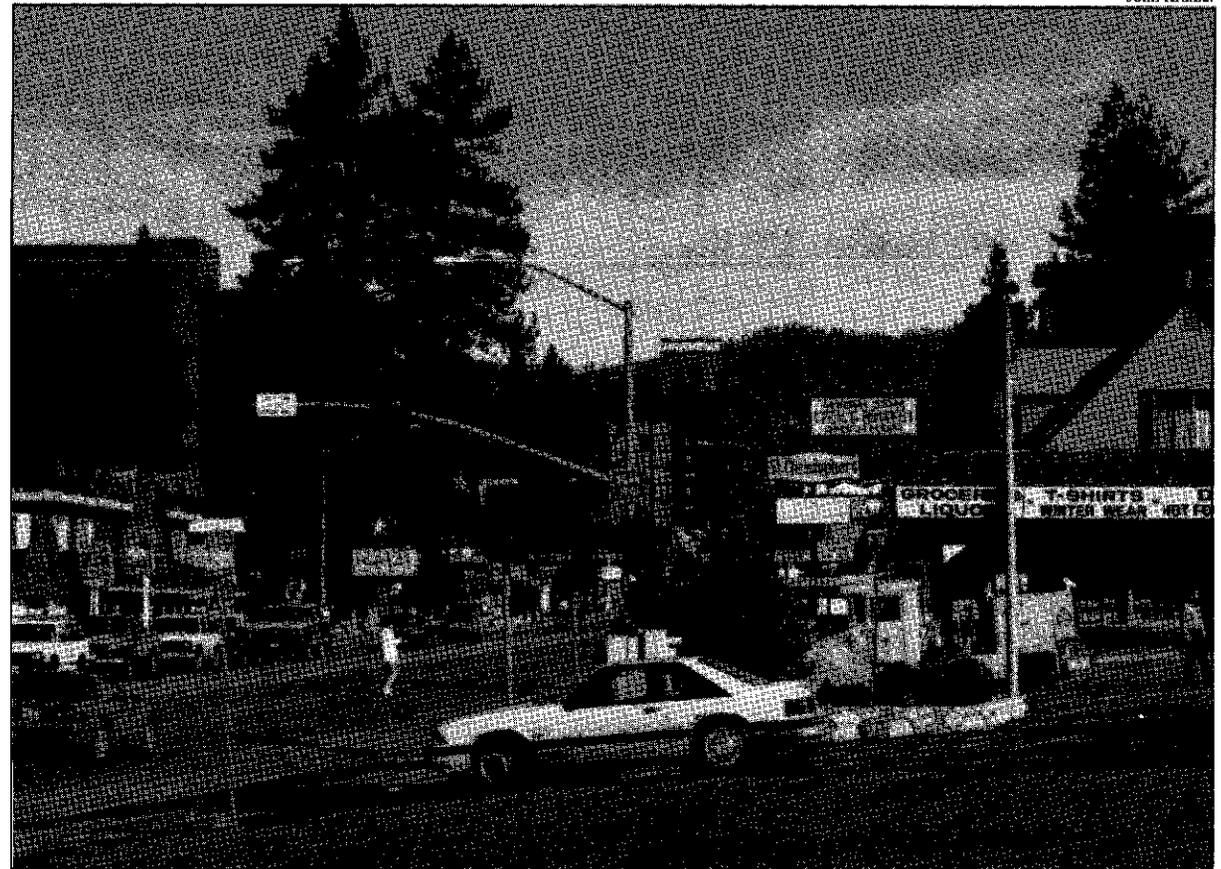
Urban development in the California portion of the watershed is not extensive. Most development is around Lake Tahoe, in the immediate vicinity of Truckee, or in several small recreational communities. South Lake Tahoe is the only incorporated city, although for some time local residents have attempted to incorporate the Truckee area, either with or without nearby communities around the northern end of Lake Tahoe and the ski resort developments of Alpine Meadows and Squaw Valley. The watershed in California includes portions of Sierra, Nevada, Placer, and El Dorado counties, and a tiny sliver of Alpine County.

Population varies widely by season, reflecting the importance of tourism to the local economy. Population at Lake Tahoe, for example, peaks in summer, when the daily population is about double the number of permanent residents, and has another, smaller upswing during the winter sports season. Many dwelling units in the Tahoe area and some of them around Truckee are vacation or second homes, with varying occupancy rates. The year-round permanent population is estimated to be about 50,000,

although the part-time residents and visitors to the area can add substantially to this figure.

One reason urban development in this portion of the watershed is not extensive is the preponderance of land ownership by the

John Kramer



Controls have been imposed on development in the Tahoe basin to help protect the lake from impacts of urbanization.

federal government. Except for a fringe of privately owned land along the shoreline of Lake Tahoe and the developed portion of South Lake Tahoe, much of the remaining land in Tahoe's drainage basin is part of either Tahoe or El Dorado National Forest. The federal government also owns a substantial amount of land downstream, particularly to the north of Truckee, in the Tahoe and Toiyabe National Forests.¹ Exact figures are not available, but it is clear that the federal government owns at least half the land in the area. Development in the Lake Tahoe basin is strictly regulated, so most of the new residential development is around Truckee.

U.S. Forest Service lands provide an important part of the recreational land use in the basin, which includes campgrounds, portions of ski areas, and hiking trails. Aside from federal land, dominant land uses include limited municipal and commercial (with some minor light industrial use), open space, and recreational (e.g., golf courses and ski resorts). Logging has greatly declined from its historical role as a major employer in the area; the last large lumber mill in Truckee was recently closed. Tourism and recreation remain the region's chief industry.

Most of the Truckee watershed in Nevada is in Washoe County, by far the most populous county in the entire watershed. In Nevada the watershed also includes small portions of Storey, Pershing, Lyon, Douglas, Churchill, and Carson City² counties. The Truckee Meadows area, including

Reno and Sparks and surrounding small valleys, constitutes the most populated and developed area in the basin. In recent years this area has had one of the highest percentage growth rates in the Nation. In round numbers, the population of Washoe County today is about 260,000.

Tahoe Regional Planning Agency

Tahoe Regional Planning Agency is a unique interstate body responsible for regulating development in both the California and Nevada portions of the Lake Tahoe basin.

There was little construction around the lake and almost no winter recreational use of the area until after World War II, when substantial growth and year-round tourism began. The booming growth around the lake prompted discussions as early as the late 1940s and early 1950s on the need to regulate land use, in part reflecting conflicts among summer cabin owners and new developers of resorts, casinos, and other commercial enterprises.

Later, recognition of the need to protect the lake itself from the impacts of urban development would be added to basic concerns such as zoning and sewage treatment. The legislatures of each state ultimately adopted an interstate compact, which was ratified by Congress. This compact created the Tahoe Regional Planning Agency.

In conjunction with other state and local agencies in the basin, Tahoe Regional Planning Agency acts to control growth and regulate land use planning and development. Examples of methods to restrict growth at the Lake Tahoe include prohibiting development of environmentally sensitive parcels adjacent to streams and limiting the number of new sewer connections. Some of the permits a developer needs are commonly awarded by lottery; the first thing a visitor to the South Lake Tahoe City Council Chambers may notice is the "bingo cage" in the antechamber.

¹ Efforts are underway now to change the national forest boundaries to create a new forest entity in the Tahoe basin.

² Local governments in Carson City and the former Ormsby County merged to create one countywide entity called Carson City. Part of the former Ormsby County is in the Truckee River watershed, but the former city of Carson City is not.

Communities outside Truckee Meadows and the surrounding area include Fernley (a small agricultural town in Lyon County) and Wadsworth, Nixon, and Sutcliffe (small communities on the Pyramid Lake Indian Reservation).

Land use in the Nevada part of the watershed is varied. Urban areas near Truckee Meadows include residential, commercial, and industrial development. There is still some irrigated agriculture in Truckee Meadows, primarily pasture and alfalfa, as well as along the river corridor downstream. The other major location of irrigated agriculture is the Truckee Division of the Newlands Project, near Fernley, where alfalfa and pasture again predominate.

Land outside these areas could be characterized as high desert open space, including land within the Pyramid Lake Indian Reservation. As with the California portion of the watershed, there is a substantial percentage of federal land (at least half of the total), particularly to the north and east of the Reno/Sparks area. Most of the federal land (excluding the Indian reservation) is administered by the U.S. Bureau of Land Management and may support localized grazing (on non-irrigated land) and mining uses. There is also a small amount of Toiyabe National Forest land within the basin.



One of the diversion structures on the Truckee River that is visible from Interstate Highway 80.

The most important components of the Nevada region's economy are the trade and service sectors.

POPULATION OF SOME SELECTED CITIES AND TOWNS

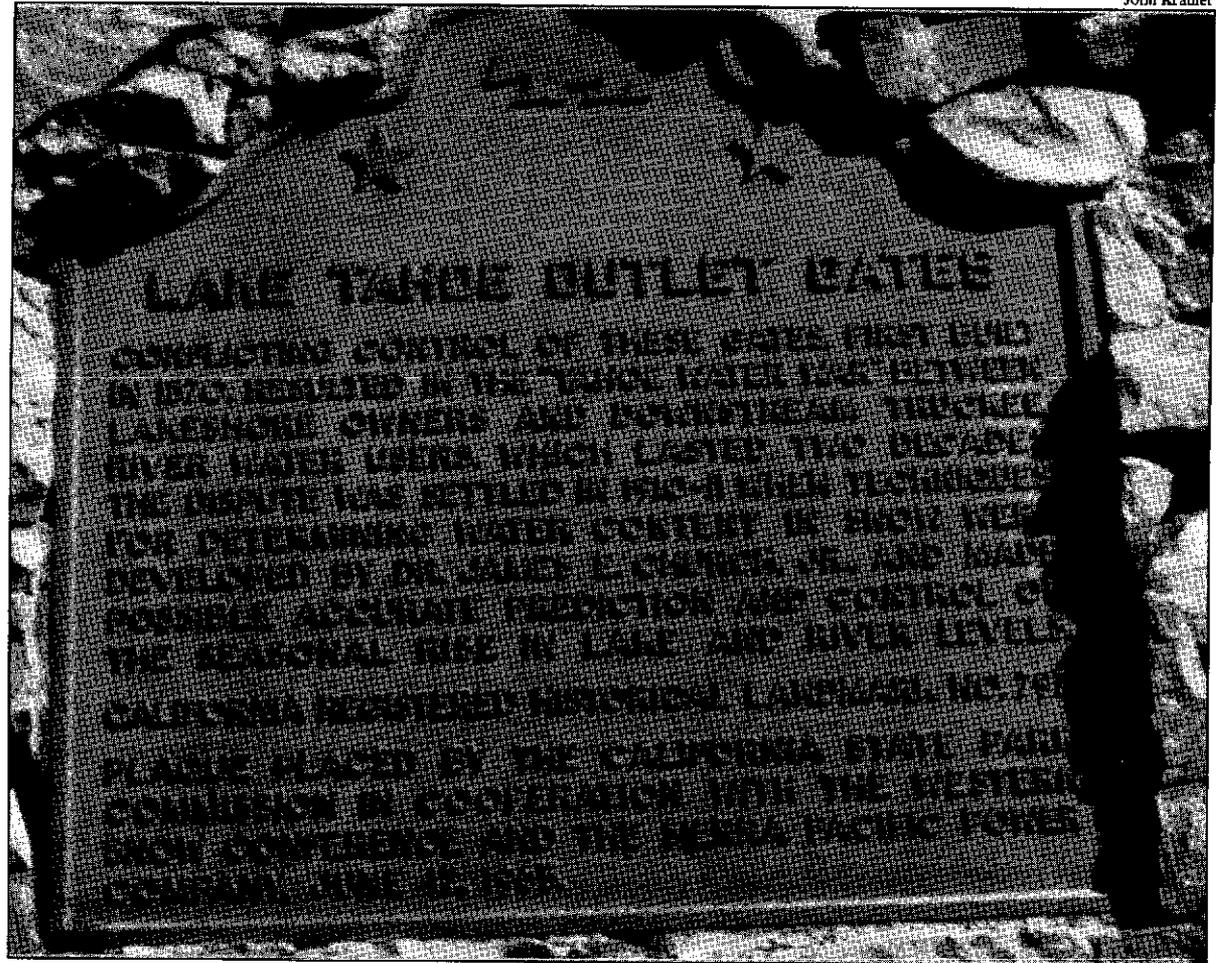
<u>City or Town</u>	<u>1980 Census</u>	<u>1990 Census</u>	<u>Percent Change</u>
<i>Carson City*</i>	32,022	40,443	+26.0
<i>Fallon*</i>	4,262	6,438	+51.1
<i>Reno</i>	100,756	133,850	+32.8
<i>Sparks</i>	40,780	53,367	+30.9
<i>South Lake Tahoe</i>	20,681	21,586	+ 4.4

*Not located in Truckee River watershed, but shown here because mentioned in this atlas.

THE WATER WARS

This chapter takes its name from the term many writers over the years have applied to the long-standing disputes over water and water rights on the Truckee River. Some of the more colorful actions that occurred before the turn of the century are briefly discussed, then the history of the more recent litigation is covered. The story of disputes over the Truckee clearly illustrates the thoughts behind Mark Twain's aphorism that:

...whiskey is for drinking and water is for fighting over.



John Kramer

This monument to the water wars is in Tahoe City, by the Lake Tahoe Dam.

A Summary of Some Water Rights Concepts

A variety of water rights concepts are mentioned in this chapter. The following information highlights a few basic concepts, particularly those that apply to the Truckee River. Readers interested in more detail on this subject are referred to publications listed in the annotated bibliography, Appendix 3.

Water rights in California and Nevada are administered by the state. Agencies performing this function are the State Water Resources Control Board in California and the State Engineer in Nevada — and in some cases the courts. California law recognizes that surface water rights may be held under a variety of doctrines — riparian or appropriative, for example. There is no statewide system for administration of ground water rights, except for ground water that is actually stream underflow or that flows in known and definite underground channels. Use of most ground water in California is unregulated, except in special circumstances where individual basins have undergone special adjudications or where a local ground water management district has been created. In contrast, Nevada has a statewide system for administration of both ground water and surface water rights. Like many other western states, Nevada's water law is based on the appropriative doctrine for both ground water and surface water.

The doctrine of riparian rights is an old one, having its origins in English common law.

Persons who own land adjacent to a stream have the right to make reasonable use of the stream's natural flow on those lands within the watershed. (The emphasis on natural flow means that riparian rights cannot be claimed for long-term storage of water in a reservoir, as for example in the federal project reservoirs). Riparian users of a stream share the stream-flow among themselves, and the concept of priority of use is not applicable. Under drought conditions, the users share shortages. Riparian rights cannot be sold or transferred for use on nonriparian land. No permit is required for riparian use in California, although such users are required to file "Statements of Water Diversion and Use" with the State Water Resources Control Board. (Riparian rights to the waters of a lake — as opposed to a flowing stream — are often called littoral rights.)

The doctrine of appropriative rights was in common use throughout the arid west as early settlers and miners began to develop the land. The appropriative doctrine is based on the concept of first in time, first in right. The first person to take a quantity of water and put it to beneficial use has a higher priority of right than a subsequent appropriative user. Under drought conditions, higher priority uses are satisfied before junior users receive water. Appropriative rights can be lost through non-use; they can also be sold or transferred apart from the land. Nevada, for example, has had a thriving market for water transfers for a num-

ber of years, due to the relative scarcity of water there and, hence, the economic competition for it. A person who claims an appropriative right must file an application with the appropriate state agency. (The permit process in California has changed over time, and appropriative rights are subdivided into pre- or post-1914 rights, because of the difference in their administration.)

Federal water rights occupy a special place in the pantheon of rights. An important 1978 U.S. Supreme Court case (California v. United States) held that the federal government must obtain water rights under state law for reclamation projects, unless state law conflicted with clear congressional directives. As a practical matter, the U.S. Bureau of Reclamation has normally participated in the state permitting process since the inception of the Reclamation Act, and the federal reclamation projects described in this atlas hold permits from California, Nevada, or both.

Federal reserved rights are a category of federal rights, created by federal law. These rights are created when the government withdraws land from the public domain to establish a federal reservation such as a national park or Indian reservation. By this action, the government is held to have reserved water rights sufficient for the primary purpose for which the land was withdrawn.

The Early Skirmishes

In the 1860s, Alexis Von Schmidt, a San Francisco engineer, created the first major controversy over Lake Tahoe when he formed a water company to supply water to San Francisco via an aqueduct from the Lake Tahoe area.¹ Several aqueduct routes were considered. The aqueduct plan included a dam on the lake's outlet and a tunnel through the Sierras to the American River watershed on the west. The aqueduct was to provide water to some mining camps in California's Mother Lode region before terminating in San Francisco. Not surprisingly, Von Schmidt's plan eventually drew heavy opposition from Nevada officials and water users who feared his scheme would deprive them of the Truckee River water they had been using or planned to use.

Von Schmidt actually constructed a small dam at Lake Tahoe and began surveys for a canal to Squaw Valley, where a tunnel was to be constructed through the Sierras to take the water to the American River. Construction of the dam immediately engendered land ownership and water right disputes between Von Schmidt and the Donner Lumber and Boom Company, a company with corporate ties to Central



This remnant of an old logging flume is on U.S. Forest Service land near the Little Truckee River. Logging was one of the first major water uses in the watershed.

Pacific Railroad. In its 1869-70 session, the California Legislature had authorized Donner Lumber and Boom Company to:

... improve at its own expense, the channel of the Truckee River from its source to the eastern boundary line of the State

of California, by removing the rocks, boulders, gravel and timber therefrom, and by erecting floodgates at the outlet of said river, not more than 5 feet in height, so as to render it practicable to float saw logs, lumber and wood down said channel to said town of Truckee.

¹ Von Schmidt's name is also associated with a number of other projects, some more successful than his Lake Tahoe aqueduct would prove to be. Another rather controversial project was an early survey of the California-Nevada border, which corresponds to the Von Schmidt Line still shown on some maps.

Ultimately the dam Von Schmidt constructed was operated by Donner Lumber and Boom Company. Von Schmidt's plans to convey Tahoe water to San Francisco became entangled in financial difficulties and died with their author in the early 1900s.¹

The Lake Tahoe Dam and the surrounding property passed through various owners. Eventually, the U.S. Bureau of Reclamation acquired part of the property and Truckee River General Electric Company obtained title to the rest, which included the dam.² The ensuing conflict among the power company, federal government, and lakeshore property owners marked the beginning of the modern era of controversy about uses of the Truckee River. The controversy focused on water rights and the special complications that occur on interstate rivers.

Lake Tahoe – Power, Irrigation, and Shoreline Property Owners

The Bureau of Reclamation had a problem. With passage of the Reclamation Act in 1902, the Bureau began rapid construction of Newlands Project facilities and began supplying water to Nevada farmers. The Bureau also, in 1903, made an initial claim for rights to water stored in Lake Tahoe. Without control of the dam at Lake Tahoe, however, reliability of the project's water supply was questionable.

The Bureau of Reclamation and the power company entered into negotiations that spanned about a decade over control and operation of the dam. Meanwhile, lakeshore property owners, representing a nascent summer resort interest, became concerned about the effect of reservoir operations on lake levels.

For a time in 1909, a second tunnel scheme involving the lake was discussed. In this case, the tunnel would take water from Lake Tahoe, through a power plant, to a

large reservoir to be constructed at Washoe Lake in Nevada, where the water would be available to sell to Newlands Project users. This proposal, supported by the power company and Bureau of Reclamation, was eventually overcome by opposition of lakeshore property owners and the State of California.

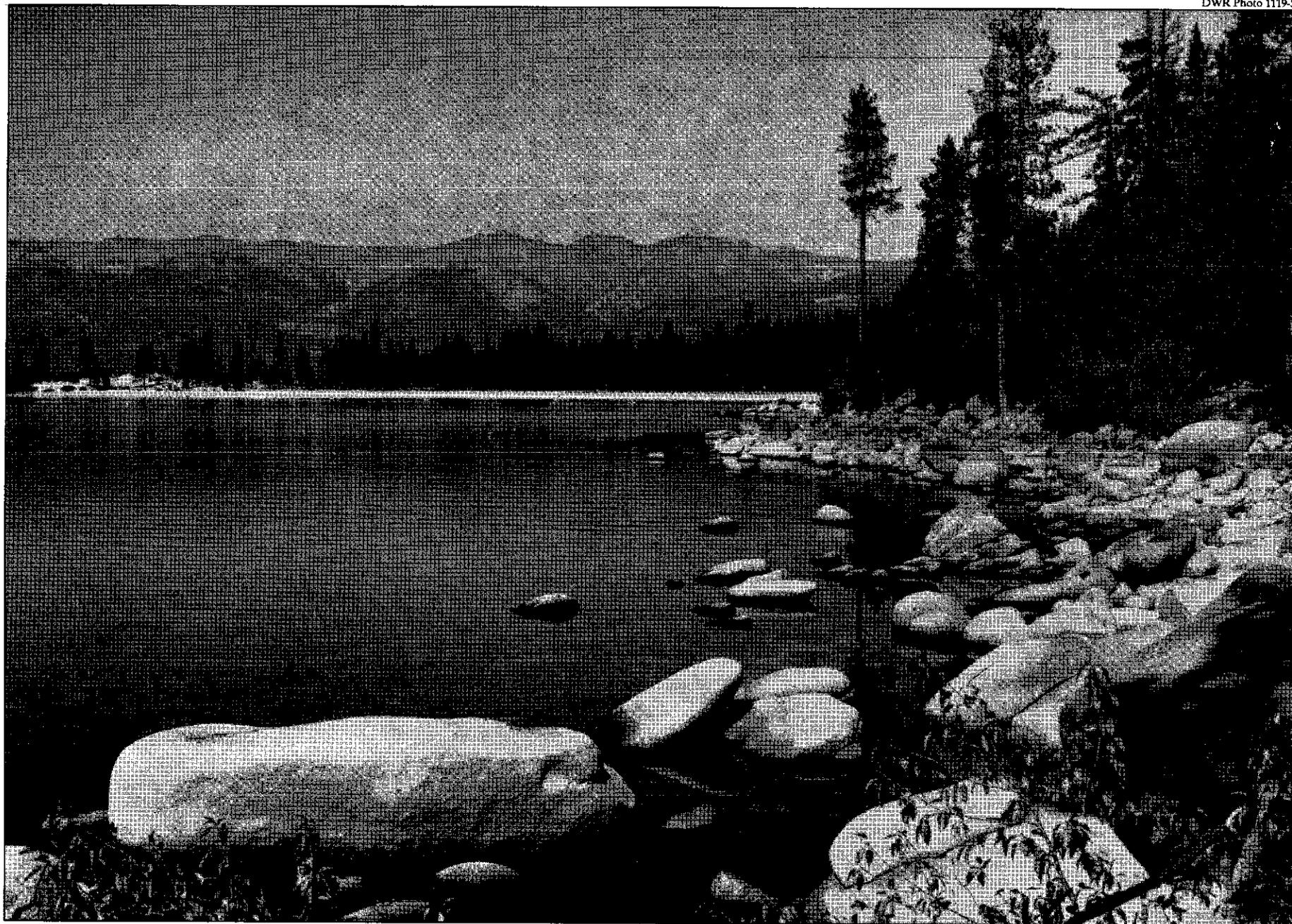
Controversy flared up again in 1912 (a dry year) when the power company and the Bureau of Reclamation sent a party of workers to Lake Tahoe to dredge the river channel and cut down the lake's rim so more water could be released. Lakeshore property owners were able to block the work by obtaining a court injunction.

During the period 1909 to 1913, the old timber crib dam, constructed at the lake by Donner Lumber and Boom Company, was being reconstructed³ by the power company and the U.S. Bureau of Reclamation, raising landowners' fears that the entities were planning another attempt at controlling the lake. It was in this climate of threatened litigation and mutual suspicion that

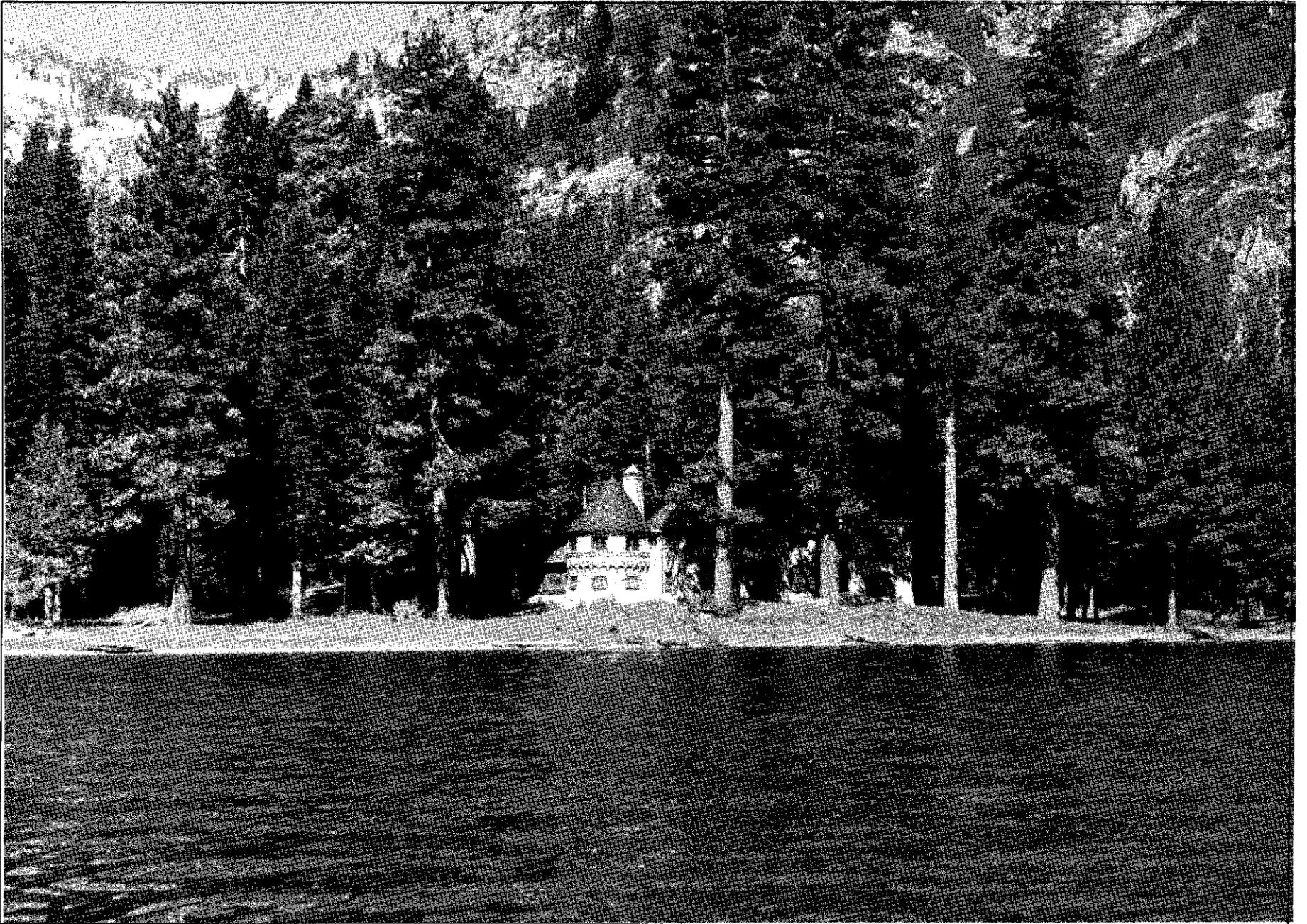
1 San Francisco did, however, turn later to the Sierras for a water supply, with completion of Hetch Hetchy Reservoir at Yosemite in 1923.

2 The decade from 1900 to 1910 saw the consolidation of many small public and private water and power companies in the Truckee River service area. In a complicated series of real estate transactions, one such interest obtained title to the dam and the hydropower plants on the Truckee River in 1902. In 1908, an eastern power syndicate acquired the assets of the Truckee River General Electric Company and continued the negotiations with the U.S. Bureau of Reclamation, which eventually led to the Truckee River General Electric Decree. Throughout this chapter, the term "power company" is used to refer to Sierra Pacific Power Company or any of its predecessors among the small power companies that held water rights that were later absorbed by Sierra Pacific. Water service in the Reno/Sparks metropolitan area today is provided by Westpac Utilities, a division of Sierra Pacific.

3 The old, rather primitive, timber crib dam was replaced by a concrete slab and buttress structure, which remains today.



Disputes over Lake Tahoe levels and their impacts on lakeshore property owners went on for years.



Historic Vikingsholm on Emerald Bay at Lake Tahoe, now a popular visitor attraction.

A Summary of Key Dates

- 1902 *Federal Reclamation Act is passed.*
- 1913 *U.S. v. Orr Ditch Water Company begins.*
- 1915 *Truckee River General Electric Decree is issued.*
- 1935 *Truckee River Agreement is signed.*
- 1944 *Orr Ditch Decree is issued.*
- 1958 *Sierra Valley Decree is issued.*
- 1970 *California Legislature approves the proposed compact.*
- 1971 *Nevada Legislature does likewise.*
- 1990 *Truckee-Carson-Pyramid Lake Water Rights Settlement Act is enacted.*



As shown on this historical marker, Derby Dam was the Bureau of Reclamation's first construction project under the Reclamation Act.

the California Conservation Commission made its prophetic remarks in 1913 that:

... the waters of Lake Tahoe are too valuable an asset, from every point of view, to permit them to be diverted, without established limit, into any other state.

For, if they are to be so diverted, it will be difficult, if not impossible for California to recover her proper share of them. The Conservation Commission, therefore, recommends as strongly as it can, that this State bring suit, before the Supreme Court of the United States, against the

State of Nevada to have the waters of Lake Tahoe equitably apportioned to and between the two states, so that, by prescription or otherwise, the people of California may not be deprived of their present, just, legal, equitable and proper share in the waters of the Lake.

Making the Desert Bloom

The U.S. Bureau of Reclamation has been the major developer of water projects on the Truckee River. As owner of the Newlands Project — the river's largest water user — the Bureau of Reclamation has been involved in almost every water right litigation or legislation described in this chapter.

The Bureau of Reclamation, earlier known as the Reclamation Service, was created by the Reclamation Act of 1902 as an entity within the U.S. Geological Survey. Its mission was to carry out the public policy of making the desert bloom or, in other words, encouraging settlement of the arid west (then comprising 13 states and 3 territories) by providing irrigation projects so the land could support settlers. The following quotations from the First Annual Report of the Reclamation Service, published in 1903, provide a flavor of the times.

To remedy this evil [meaning the earlier lack of planning for water supply and water rights when subdividing public lands for homesteading], so that the remaining public lands will furnish the greatest possible number of homes, is an object worthy of the sustained effort of enlightened and patriotic citizens... The development of water for irrigation is a matter of concern to all citizens of the United States, since they are the great landowners, and, as such, are, or should be, interested to see that their lands are put to the best uses. It is their duty also to guard these vast tracts, the heritage of their children... Unquestionably it is a duty of the highest citizenship to provide a hundred homes for independent farmers, instead of permitting the land to be occupied as one or two great stock ranches, controlled by non-residents, and furnishing employment to only a few nomadic herders.

The pioneer settlers on the arid public domain chose their homes along streams from which they could them-

selves divert the water to reclaim their holdings. Such opportunities are practically gone. There remain, however, vast areas of public land which can be made available for homestead settlement, but only by reservoirs and mainline canals impracticable for private enterprise. These irrigation works should be built by the National Government. The lands reclaimed by them should be reserved by the Government for actual settlers... The distribution of the water, the division of the streams among irrigators, should be left to the settlers themselves, in conformity with State laws and without interference with those laws or with vested rights.

The annual report goes on to describe some of the projects the Service was considering in the western states:

The situation in Nevada is further complicated by the fact that much of its water supply comes from across the State line on the west... Thus to utilize the spring floods it will be necessary to construct reservoirs in California and take the waters out upon lands in Nevada.

Potential reservoir and irrigation projects on the Truckee River system were described, including the following damsites: Lake Tahoe, Donner Lake, Independence Lake, Webber Lake, Squaw Valley on Squaw Creek, Twin Valley on Prosser Creek, Little Truckee River below Webber Lake, Henness Pass offstream of the Little Truckee River, and Dog Valley on Dog Creek. Today dams have been constructed by various owners at all of these sites except Squaw Valley, Little Truckee below Webber Lake, Henness Pass, and Dog Valley. The Twin Valley Dam contemplated by the Service was eventually built at another location on Prosser Creek, and today the Dog Valley damsite is again receiving serious study as a potential municipal water storage project.

The Truckee River General Electric Decree

The section of the decree dealing with the easement granted to the U.S. Bureau of Reclamation by the Sierra Pacific Power Company for control of Lake Tahoe's dam and outlet works is quoted below. The term plaintiff in the quotation refers to the U.S. Bureau of Reclamation; Truckee River General Electric Company is the defendant.

That plaintiff is entitled to condemn and acquire in this proceeding, and by virtue of this decree, upon making the payment therefore herein specified, an easement and right of exclusive possession and enjoyment, in, over and upon said lands hereinafter described, to hold, maintain, use and operate said lands, dam and controlling works, and any other improvements and structures which now are or may be hereafter placed upon said lands, for the purpose of controlling the level of Lake Tahoe and the storage of water therein, and all rights now held by defendant The Truckee River General Electric Company to use said lands, dam and controlling works, for said purposes; and that the plaintiff's said easement and right of possession, use and enjoyment shall be exclusive and perpetual, subject only to termination in the event of abandonment and disuse thereof by plaintiff as hereinafter provided.



Negotiations and litigation between the power company and the U.S. Bureau of Reclamation were finally resolved in a 1915 federal court consent decree known informally as the *Truckee River General Electric Decree*. This decree granted the Bureau of Reclamation an easement to operate Lake Tahoe Dam and to use surrounding property owned by the power company. It also required the Bureau to operate the dam to provide certain year-round flow rates, measured at a stream gage near the stateline, to support hydro-power generation.¹ These rates, known as Floriston rates, date back to early negotiations over releases from Lake Tahoe Dam;

Releases from upstream reservoirs are used to maintain specified flow rates, known as Floriston rates, in the Truckee River.

¹ The Floriston rates and reservoir operation are described in more detail in Chapter 7.

the power company had incorporated maintenance of flow rates in its purchase agreement for the dam. Although the decree did, in part, dictate how the dam would be operated (*i.e.*, to provide certain downstream flow rates), it did not resolve the adjoining property owners' concerns on other matters, such as lake levels.

Drought and the Truckee River Agreement

It became apparent that the decade of the 1920s would change some assumptions about Lake Tahoe and the Truckee River. The Bureau of Reclamation had designed the Newlands Project in a time of wetter-than-average hydrology and had tacitly assumed that water in Lake Tahoe would be sufficient to serve the needs of the project, which the federal government now had contractual obligations to meet. The drier years that ushered in this decade, coupled with political pressures to keep expanding the irrigated acreage served by the project, belied this assumption. The years 1928 through 1934 were, in fact, the driest years of record on the Truckee River. In addition, Lake Tahoe fell below its natural rim in

water years beginning in 1924, 1929, 1930, 1931, 1932, 1933, 1934, and 1935.

The conflict between lakeshore property owners and the agricultural interests, which had focused on too high lake levels both before and after the Truckee River General Electric Decree was issued, now became one of low lake levels and pumping the lake. A new series of sporadic negotiations among property owners' associations, Tahoe business groups, both state governments, the federal government, and the water users went on, seemingly interminably, over operation of the lake.

Property owners' fears — that the Bureau of Reclamation or the farmers (either in the Truckee Meadows or in the Newlands Project) would attempt to cut the lake's natural rim so more water could be withdrawn — were realized more than once. In 1924 a group of Truckee Meadows farmers threatened to dynamite the rim of the lake after it dropped below its natural rim.

In 1930, a more colorful incident occurred when a group of Nevada interests sent a steam shovel with a Reno police force

guard to the power company's property adjacent to the dam to start digging a diversion trench to the rim, and it was also feared they would try to dynamite the dam itself. The local sheriff's representatives formed a posse and sought to stop the digging. Ultimately, the landowners and other Tahoe preservation interests obtained a court injunction against the power company, Truckee-Carson Irrigation District,¹ and others to halt the digging, and the trench was subsequently backfilled.

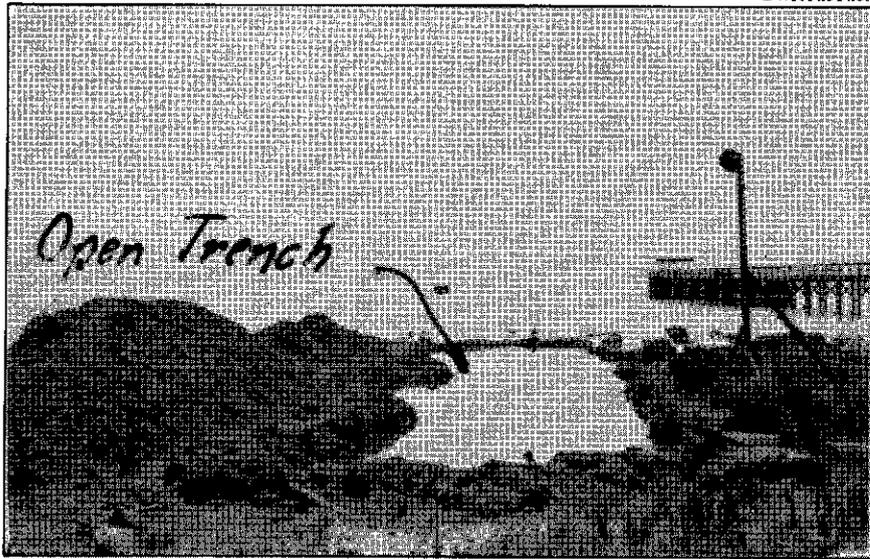
The trenching caused major consternation among California officials and sparked a flurry of correspondence and site inspections by the California State Engineer's office.² The photos on the next page, taken during these inspections, show the notorious trench before and after backfilling.

This skirmish served to illustrate the farmers' frustrations over not receiving the water they felt they had been promised. In some instances, by threatening crop damage suits, the farmers were able to coerce the shoreline property owners to acquiesce to pumping the lake when it fell below its rim (see the following table).

1 Operations and maintenance of Newlands Project facilities had been turned over to its water contractor, Truckee-Carson Irrigation District, in 1926.

2 A predecessor of the Department of Water Resources.

DWR File Photo



The infamous trench at Lake Tahoe, before (above) and after backfilling.

DWR File Photo



Pumping During the Drought¹

Year	Amount (Acre-Feet)
1924	34,000
1929	33,960
1930	25,080
1934	24,610

Farm interests were not entirely to blame. Many California newspaper accounts of the time excoriated the power company for concealing its own desire to pump the lake behind the plight of the suffering farmers.

The thicket of suits, threats of suits, and public controversy at least served to keep the various interests at the negotiating table. Negotiations among assorted interest groups had been going on for a number of years, but had been hampered by uncertainties surrounding Truckee River water rights, including complications due to the two states' different water right doctrines.² Water rights claimants on the system included:

» Tahoe lakeshore owners with littoral rights recognized by California law,

1 Various figures have been reported for the amount of water pumped from the lake. These amounts are taken from the 1952 *Preliminary Report of the Lake Tahoe Interstate Water Conference Committee*.

2 The U.S. Bureau of Reclamation had recognized some time earlier that upstream storage in California, in addition to that provided at Tahoe, would be necessary to supply the downstream Nevada irrigators and had undertaken some investigations of possible projects. Its investigations had not translated into construction of projects because of some of these same water rights uncertainties.

- » Truckee Meadows irrigators with early Nevada appropriative rights to the river's natural flow (but not to water artificially stored in Lake Tahoe),
- » Newlands Project irrigators with later appropriative rights to water stored in Tahoe, and
- » The power company with its decreed Floriston rates.

Negotiations over lake levels, pumping issues, and selected water right topics finally coalesced in 1935 in the form of the Truckee River Agreement. Some 56 years later, this Truckee River Agreement is still the basis for the river's operation. Key points of the agreement include:

- » Confirming Floriston rates and reduced Floriston rates, which vary from 300 to 500 cfs at the stateline, depending on the elevation of Lake Tahoe and the season.
- » Providing for release of water from Lake Tahoe to prevent high water damage along the shoreline. Based on forecasts made from snow surveys, the lake is to be operated to keep "... insofar [sic] as practicable, the water surface of said lake from exceeding elevation 6229.1 feet above sea level."

- » Defining the interrelationship among "privately owned stored water" (e.g., the power company's water in Donner and Independence lakes), natural flow (e.g., the unstored water in the river), and diverted flow (water allocated among Newlands Project users, the power company, and Washoe County Water Conservation District).

- » Providing for construction of a new federal reservoir (referred to as "Supplemental Reservoir" in the agreement, later to become Boca Reservoir) on the Truckee River system, and obligating Washoe County Water Conservation District to repay the cost of constructing the dam.

The Pumping Controversy

Pumping Lake Tahoe was clearly a controversial issue during the 1930s. Shown below are two accounts of the subject published in newspapers at the time.

The Sacramento Bee, May 30, 1934

Owners of homes, resorts and property surrounding this most beautiful of mountain lakes are stirred to the depths by the threat that the drought in Nevada and the greed of the power company operating on the Truckee River together may cause the withdrawal of water in sufficient quantities to lower the lake's level and damage its natural beauties. The fight to preserve the lake has gone on for more than twenty-five years. This year, however, it promises to be more bitter than ever...

The Oakland Tribune, June 12, 1934

Difficulties preventing immediate pumping of Lake Tahoe waters onto drought-stricken Nevada farms were discussed today after water-front property owners refused the plea of Acting Governor Moreley Griswold of Nevada for immediate relief. Griswold described the drought as the most critical in Nevada's history when he addressed property owners at Bijou on Lake Tahoe yesterday afternoon and asked that the landowners sanction pumping of lake water onto the arid lands... As the acting Governor was telling how cattle and sheep were dying at dried up Nevada water holes, his speech was interrupted for ten minutes by a sudden hailstorm...

» Establishing the conditions under which Lake Tahoe could be pumped to serve agricultural needs of the Newlands Project and municipal needs of the Reno/Sparks area.

Parties to the Truckee River Agreement include the federal government, Sierra Pacific Power Company, Truckee-Carson Irrigation District, and Washoe County Water Conservation District,¹ representing the largest water users on the river. The states of California and Nevada are not parties to the agreement, nor are any California water users.

The Truckee River Agreement became an important element in a 1944 federal court decree, informally known as the Orr Ditch Decree. This court decision had its genesis in a suit filed back in 1913 by the U.S. Bureau of Reclamation, when it sought to confirm water rights held for the Newlands Project. Like most litigation over the Truckee River, the Orr Ditch case lasted for years.² The decree is an adjudication of the water rights (in this case, appropriative rights) of the parties to the suit and incor-

porates the Truckee River Agreement by reference. Parties to the decree include signers of the agreement, plus many individual water right holders in Nevada, many of them agricultural water users in the Truckee Meadows. Thus, the **decree** establishes individual water rights³ – amounts, place and type of use, and priority – and the **agreement** provides a framework for operating the river to meet those rights.

Two high-priority claims recognized in the decree are:

- » Rights with an 1859 priority for irrigation of lands on the Pyramid Lake Indian Reservation.
- » A Sierra Pacific Power Company right to a continuous flow of 40 cfs for municipal use in Reno.

Newlands project water rights are much more junior, with none having a priority earlier than 1902.

The federal government represented two competing interests in this suit – the Pyramid Lake Paiute Tribe and the Newlands Project water users – a point touched on later.

The Era of Federal Reservoir Construction

As presaged in the Truckee River Agreement, the U.S. Bureau of Reclamation did proceed with construction of Boca Reservoir (completed in 1937) to serve the Truckee Meadows irrigators represented by Washoe County Water Conservation District, ushering in the era of construction of new federal reservoirs. The federal reservoirs on the Truckee River were actually constructed under three separate reclamation projects.⁴ This section briefly discusses the three projects and circumstances surrounding their authorization. (Martis Creek Reservoir is a U.S. Army Corps of Engineers flood control project, not a reclamation project, and it has no water supply function. It is, therefore, not included in the following discussion.)

-
- 1 The Conservation District is a Nevada irrigation district created to supply water to agricultural users in the Truckee Meadows. It was created to be the entity to contract with the federal government to repay the construction of Boca Reservoir.
 - 2 Actual issuance of the final decree was preceded by the court's earlier issuance of a temporary restraining order, which governed operation of the river in the interim years.
 - 3 The decree does not make an interstate allocation of the Truckee River between California and Nevada; it only quantifies individual water rights. Neither state is a party to the decree.
 - 4 In other words, congressional legislation was obtained to construct facilities under three separate acts.

Some Truckee River Agreement Details

The concept of *Floriston rates* (or *reduced rates*) is mentioned frequently in this atlas and is central to operation of the river. The rates essentially provide a minimum instream flow in the river for hydropower and other purposes, as long as water is physically available in Lake Tahoe and Boca Reservoir to support the rates. Their exact definition in the agreement is quoted below.

FLORISTON RATES means the rate of flow in the Truckee River at the head of the diversion penstock at Floriston, California (but measured at the *ICELAND GAGE*) consisting of an average flow of 500 cubic feet of water per second each day during the period commencing March 1 and ending September 30 of any *YEAR*, and an average flow of 400 cubic feet of water per second each day during the period commencing October 1 and ending the last day of the next following February of any year.

REDUCED FLORISTON RATES means rates of flow in the Truckee River, measured at the *ICELAND GAGE*, effective and in force during the period commencing November 1 and ending the next following March 31 of each *YEAR*, determined as follows, viz.:

(1) 350 cubic feet per second whenever the elevation of the water surface of Lake Tahoe is below 6226.0 feet above sea level and not below 6225.25 feet above sea level, and

(2) 300 cubic feet per second whenever the water surface elevation of Lake Tahoe is below 6225.25 feet above sea level.

The Iceland Gage is no longer in service; today the Farad gage is used instead.

The agreement also contains the following language intended to settle the disputes over pumping Lake Tahoe or cutting down its rim:

From and after the *OPERATIVE DATE OF THIS AGREEMENT*, all of the parties hereto agree as follows: (1) That the natural conditions obtaining on said date in the bed and banks of Lake Tahoe and of the Truckee River at and in the vicinity of the outlet of Lake Tahoe, above the dam that is at or near the point where said Lake empties into the Truckee River near Tahoe City, Placer County, California, shall not be disturbed or altered by any of the parties hereto without the approval of the Attorney General of the State of California; provided, however, that in the event that said conditions existing on said date shall alter or change for any cause or reason, then the parties hereto respectively shall have the right to restore said conditions; (2) that they will not create nor cause to be created any outlet of said Lake in addition to the present natural outlet thereof; and (3) that they will not remove water from Lake Tahoe for irrigation or power uses by any means other than gravity, except upon the condition that the Secretary of the Interior of the United States shall have first declared the same a necessity, and that they will not remove water for sanitary or domestic uses by any means other than gravity, except upon condition that the Departments of Health of the States of Nevada and California, or other officers exercising similar authority, shall first have made and filed with the Attorney General of the State of Nevada and the Attorney General of the State of California certificates showing that a necessity for the same exists.



Part of the historic flume system that diverts water from the Truckee River to power, municipal, and agricultural users in the Truckee Meadows.

The Newlands Project

This project and its authorization have already been covered in some detail. From the time of the signing of the Orr Ditch Decree up to the 1970s, Newlands Project issues remained relatively in the background. One point that did emerge, how-

ever, was that original estimates of the amount of land to be cultivated were quite high.

It was originally claimed at the turn of the century that the project would permit cultivation of over 200,000 acres of land, and the Bureau of Reclamation obtained water

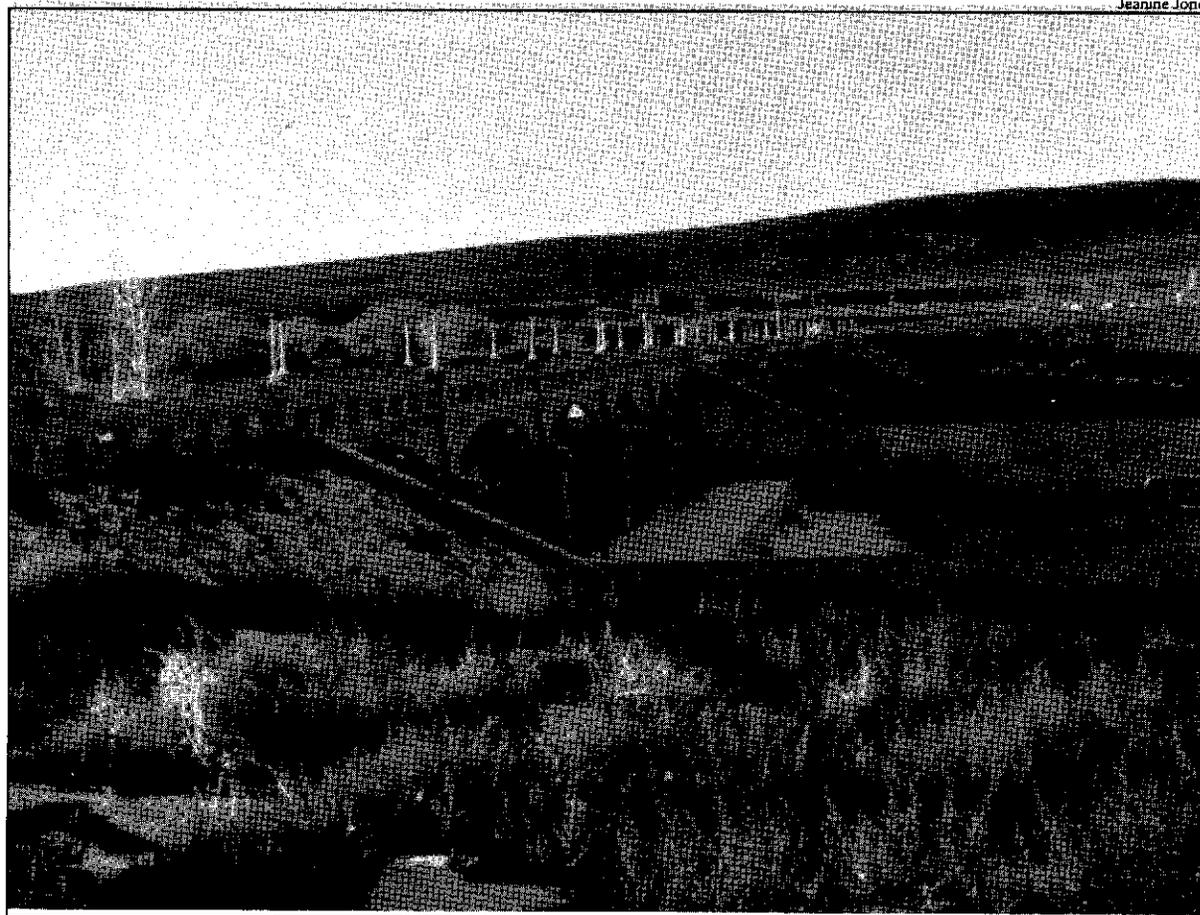
rights under the Orr Ditch Decree for irrigating 232,800 acres. In reality, the Bureau had estimated by 1926 that only about 73,000 acres would be irrigable. Lands irrigated under Newlands Project water rights have historically been about 50,000 to 60,000 acres.¹

Facilities of the Newlands Project within the Truckee River watershed include Lake Tahoe Dam, Derby Diversion Dam, and the Truckee Canal. Other project facilities such as Lahontan Dam and the irrigation canals are in the Carson River watershed. Truckee-Carson Irrigation District operates the facilities.

The Truckee Storage Project

Boca Reservoir on the Little Truckee River is the only major feature of the Truckee Storage Project. The project was authorized to irrigate about 29,000 acres in the Truckee Meadows (much of which has now been urbanized). Water in the reservoir is released to the Truckee River to support Floriston rates. Ditch companies and private individuals who comprise Washoe County Water Conservation District's membership divert a portion of the Floriston rate water into an extensive ditch

¹ Additional acreage has been irrigated in the Newlands Project area under other claims of water rights; some critics of the project have said parts of this land were irrigated with project water but not under a claim of rights.



Lahontan Dam, in the Carson River watershed, is the main storage facility of the Newlands Project.

system¹ in Truckee Meadows. The promise to construct this reservoir helped the U.S. Bureau of Reclamation reach settlement in the Truckee River Agreement negotiations by resolving some of the conflicts between

these irrigators, who had previously relied on early priority natural flow rights, and the later Newlands Project farmers, who had rights served from stored water at Lake Tahoe.

The Washoe Project

Authorization of the Washoe Project provided a forum for a series of water negotiations beginning in the late 1940s and continuing into the mid-1950s that ultimately helped bring Nevada and California together to discuss other interstate issues.

The U.S. Bureau of Reclamation had continued to investigate additional upstream reservoir sites to serve (primarily) Nevada agricultural interests and to provide hydro-power; the Bureau had also studied dam sites on the upper Truckee River and upper Carson River in California. Flood control needs were also addressed in these studies, to a greater extent than they had been in the past. The wet years of the early 1950s demonstrated how vulnerable the growing Reno area was to flood damage.

The Bureau of Reclamation's studies were formally presented in a 1954 feasibility report. The State of California objected to some elements of the report, because the proposed project would develop water and power in California for use in Nevada without providing benefits to California. The burgeoning post-war growth around Lake Tahoe was also spurring thoughts about future needs for municipal water supplies

¹ The Orr Ditch Decree is named after one of these Truckee Meadows ditches.

California's Comments on the Washoe Project

The California Department of Public Works (the Department of Water Resources was then a division within Public Works) prepared a 1955 summary of the state's views on the Washoe Project. This summary contained several pertinent recommendations:

...The amount of water which will be available to the Washoe Project be completely determined and defined at an early date through a Nevada-California Interstate Compact negotiated by commissioners appointed by the respective states; that any plan adopted for the project be subject to such modifications as may be required to conform to any compact which may be approved by the legislatures of the respective states of Nevada and California and by the Congress of the United States...

...The Stampede Reservoir be so constructed that it can be enlarged at a later date to a capacity adequate to care for future water requirements of lands in California, and sufficient land be acquired adjacent to the reservoir to permit adequate development of recreation facilities.

...The project include plans for the operation of the storage capacity of Lake Tahoe in such a manner as to solve the problems of the lake shore property owners, including the State of California, with regard to levels which would cause property damage.

in this heretofore rather sparsely populated region. Another one of California's main objections was that no storage space was reserved in the proposed Stampede Reservoir for future California municipal use in the area. The objections were sufficiently resolved, after the exchange of voluminous correspondence, such that California did not oppose the project's

eventual congressional authorization in 1956.

All of the Washoe Project reservoirs described below are operated by the U.S. Bureau of Reclamation; there are no water supply contracts with local agencies for any of the facilities.

Prosser Creek Dam, completed in 1962, was the first facility of the Washoe Project to be constructed. A substantial portion of the reservoir's storage (20,000 acre-feet out of the reservoir's nominal 29,800 acre-foot capacity) is dedicated to flood control during winter, recognizing the need to provide more flood protection for the Reno area.

Most of the reservoir's capacity under non-flood control operations is dedicated to support the Tahoe-Prosser Exchange Agreement. This agreement among the Bureau of Reclamation, Truckee-Carson Irrigation District, Sierra Pacific Power Company, and Washoe County Water Conservation District is essentially a supplement to the Truckee River Agreement. The Tahoe-Prosser Exchange Agreement provides that water stored by the federal government in Prosser Creek Reservoir can be released to meet Floriston rates in lieu of making such releases from Lake Tahoe (under certain constraints). The purpose of the exchange water is to provide for a minimum fishery flow below the Lake Tahoe Dam that would not otherwise be possible under then-existing water rights without exchange water. This concept is described in more detail in Chapter 7.

Stampede Dam was the next project facility to be completed, in 1970. This reservoir was initially authorized for a number of purposes, including agricultural and municipal uses, and was the subject of extensive discussion in the interstate compact negotiations covered in the next section. Stampede has, instead, been used to provide spawning flows for Pyramid Lake fish, as described later in this chapter.

The most recent facilities of the project, Marble Bluff Dam and the Pyramid Lake Fishway, were completed in 1975 in an attempt to increase the number of fish reaching the river to spawn. The Bureau of Reclamation operates the dam, and the U.S. Fish and Wildlife Service operates the fishway.

Other Reservoir Activity

During this period of construction of the federal project reservoirs, ownership of the operable portion of Donner Lake changed hands. Sierra Pacific Power Company and Truckee-Carson Irrigation District signed an indenture (agreement) in 1943 with the Donner Lake Company to purchase, for the sum of \$10, the rights which it held to the lake, subject to a number of conditions. These conditions still govern the operation of Donner Lake. One of the most significant conditions is quoted below:

The right to use said Donner Lake perpetually as a reservoir for the storage of water and to release water therefrom, including such easements of overflow and otherwise as may be necessary or proper to the exercise of such rights, provided that the parties of the second part [SPPCo and TCID], their successors and assigns, shall so operate said dam and controlling works as to prevent, so far as reasonably practicable, the water surface of said Lake from exceeding the elevation of 5935.80 feet above sea level; and provided further that the parties of the second part, their successors and assigns, shall not release any water from said Lake which they control, during the months of June, July and August of any year, if the water surface of said Lake at the time of the proposed release thereof, is less than 5932.0 feet above sea level...

The Interstate Compact Years

It was the best of times, it was the worst of times, ... we had everything before us, we had nothing before us...

Perhaps these lines from Dickens' *Tale of Two Cities* sum up the feelings of the newly appointed members of the California-Nevada Interstate Compact Commission in 1955. Each state had appointed its own

Jeanine Jones



This diversion structure takes water out of the Little Truckee River for export to the Sierra Valley, in the Feather River watershed.

commission with this same name¹ in response to the interstate issues raised in the Washoe Project discussions, the perennial Lake Tahoe water level disputes, and the noticeable population growth around Lake Tahoe. A congressional statute authorized the states to negotiate a compact and called for appointment of a federal representative to the negotiations.

The two commissions worked for about 10 years, together with federal government representatives, to develop a draft version of an interstate compact for three eastern Sierra rivers – the Truckee, Carson, and Walker. The purpose of the compact was to allocate the use of the waters of these rivers between the two states.

In the Truckee River watershed, an allocation was made to California in each of the Tahoe and Truckee sub-basins,² with the remainder of the water allocated to Nevada. The proposed compact also called for establishment of a permanent commission to administer the compact once it was approved; this body was seen as a way to resolve some of the on-going disputes over operation of the river system, including, for example, the Lake Tahoe water level and pumping issues.

1 When the two commissions met as one body, they were referred to as the Joint California-Nevada Interstate Compact Commission.

2 The Truckee sub-basin included all of the watershed in California outside of the Lake Tahoe drainage area.

The two commissions devoted the decade to work such as forecasting the ultimate needs for water in the region and performing river operation studies to see if such needs could actually be met within existing water rights constraints. Much time was spent estimating what the ultimate level of population growth and development might be in the Tahoe basin, and a variety of studies were performed to determine visitor and recreational water uses there. The Department of Water Resources provided extensive staff support to the California commission.

The federal role in the negotiations was at times confusing. The President had appointed a federal participant to the compact negotiations, but the government was a relatively inactive participant in this formal role. On the other hand, the Bureau of Reclamation was active in its development of Washoe Project facilities, and issues relating to Stampede and Prosser Creek reservoirs were frequently discussed in the negotiations.

Another federal action during this time was the on-going federal district court suit brought by the Bureau of Reclamation against Sierra Valley Water Company in the late 1940s as part of the Bureau's attempt to firm up its water rights. The water company had historically diverted water out of

the Little Truckee River in California into Sierra Valley in the Feather River basin, to the north, for irrigation purposes. This water right was ultimately adjudicated and related to Orr Ditch Decree priorities in a decree issued in 1958, commonly known as the Sierra Valley Decree.

Ultimately, the state legislatures of California (in 1970) and Nevada (in 1971) passed legislation adopting the commission's California-Nevada Interstate Compact. Thereafter, several bills were introduced in Congress seeking ratification of the compact, but none achieved passage.

One compact provision particularly troubling to federal agencies was the statement that,

The use of water by the United States of America or any of its agencies, instrumentalities, or wards shall be charged as a use by the state in which the use is made.

This provision, common to earlier interstate compacts, was seen by the states as necessary in recognition of the major federal water use on the river and the federal ownership or control of all the largest reservoirs.

What Is an Interstate Compact?

States administer water rights within their own political boundaries, but the process becomes more complicated when an interstate body of water is involved. An allocation of such a body of water can be made between the two states, acting on behalf of their residents, and then each state can issue water rights to its share of the water using its normal administrative process.

There are three possible ways to achieve an interstate allocation:

» *A suit for equitable apportionment brought by the states in the U.S. Supreme Court,*

» *An interstate compact, or*

» *A congressional act.*

An interstate compact is an agreement negotiated by the two states, adopted by the state legislatures, and then approved by Congress. Interstate compacts have traditionally been a common method of making water allocations in the western states. California examples include the Klamath River Compact and the Goose Lake Compact with Oregon.

A Sample of Compact Issues

In a 1961 resume of the problems and progress of interstate compact negotiations, the chairman of California's commission had the following to say about one of the Lake Tahoe issues under discussion:

Present operation under Federal Court decree to meet these downstream demands has resulted in the lake's being held at its highest levels during the summer and fall of each year and then being drawn down to its lower levels in late fall and early winter. This results in the highest lake stage occurring during the summer months at the time of its maximum use as a recreation area, causing the inundation of limited beach areas, flooding of septic tanks, and damaging of boat houses, docks and other shoreline installations. To remedy this situation, the joint commission has agreed to the construction of an overflow weir and outlet improvement works that will result in allowing a narrower range in the fluctuation of lake levels. It is also agreed that other reservoirs in the area, both existing and planned, shall be operated in conjunction with Lake Tahoe in such a manner as to minimize the period and duration of high and low water elevations in the lake.

The compact was also caught in the midst of changing directions in water right laws and policies. The doctrine of federal reserved water rights was evolving in the courts, and the passage of the federal Endangered Species Act gave the federal government additional responsibilities with regard to the Pyramid Lake fish.

The last of the bills seeking the approval of Congress to the compact was introduced by former Nevada Senator Laxalt in 1986 after failure of his attempts in 1985 to negotiate a settlement of the outstanding issues. With defeat of the 1986 attempt, the parties tacitly agreed that pursuing compact ratification was fruitless.

An Assortment of Litigation

Some of these same federal reserved rights and environmental issues were being addressed in litigation that was proceeding concurrently with the compact negotiation and attempts at ratification. A number of suits were filed by the United States and the Pyramid Lake Paiute Tribe seeking more water for the lake under various claims of rights. The background of the evolving nature of Indian water rights settlements is beyond the scope of this atlas, but it could be said that the Tribe's actions were consistent with a trend of Indian tribes' claims for federal reserved water rights for their reservations.

The purpose of this section is not to go into great detail on theories behind these suits, but simply to illustrate the uncertain nature of water rights on the Truckee River.

One of the major disputes is known as the OCAP litigation, named after the *Operating Criteria and Procedures* for the Newlands Project. The OCAP itself arose from the efforts of the Bureau of Reclamation to develop a method of Newlands Project operation that would maximize the use of Carson River water in the project and minimize the diversion of Truckee River water via the Truckee Canal into Lahontan Reservoir. The concept was a response to

the 1967 listing of the Pyramid Lake cui-ui as an endangered species under the federal Endangered Species Act.

The parties in the OCAP disputes have been the Pyramid Lake Paiute Tribe, the Bureau of Reclamation, and Truckee-Carson Irrigation District. The Tribe sued the Secretary of the Interior¹ on the grounds that the OCAP provided the farmers with more water than they were entitled to. The resulting 1973 decision held that water was being wasted in the Newlands Project and that the Bureau of Reclamation was required to deliver to Pyramid Lake the water in excess of valid Newlands Project rights.

The Bureau of Reclamation subsequently began to issue an interim OCAP each year, followed by a proposed final OCAP. The goal was to cut Truckee Canal diversions to 320,000 acre-feet of water per year,² still a substantial portion of the river's annual flow.

Meanwhile, the OCAP litigation continues. Questions that have been or are being argued include:

- » The definition of bench and bottom lands on the project (relative to the quantities of water they are allotted),
- » Irrigation efficiencies, and
- » Alleged lack of compliance by Truckee-Carson Irrigation District with various interim OCAPs.

A variety of OCAP-related issues remain in dispute today.

The OCAP disputes have created a classic conflict in natural resources management. Prior to Newlands Project construction, floodwaters of the Carson River would seasonally cover a lowland marsh and shallow lake area northeast of Fallon known as the Carson Sink. The sink covered a number of square miles and supported many species of migratory birds. Major wetlands habitat, although lessened in extent, remained after construction of the Newlands Project. These wetlands received their water from several sources:

- » Carson River floodwaters in wet years,
- » Excess water used on the Newlands Project,

- » Agricultural tailwater from the Newlands Project, and
- » Water from the Newlands Project's drain system.

Attempts to impose OCAP limitations and make the Newlands Project operate more efficiently,³ coupled with several dry years, combined to cause substantial reduction in wetlands acreage. The desire to provide more water for endangered fish at Pyramid Lake had to be weighed against the desire to maintain wetlands habitat in the Lahontan Valley for waterfowl and migratory shorebirds. The wetlands issues were to become intertwined with those of Newlands Project water management and the outcome of the OCAP litigation.

Another major dispute has been one of the federal reserved water rights for the Pyramid Lake Indian Reservation. The Orr Ditch Decree granted the Tribe two early priority⁴ claims on the river for irrigation purposes. Both the Tribe and the federal government, in its trustee role on the behalf of the Tribe, subsequently sought to obtain water rights to arrest the decline in

1 The Bureau of Reclamation is an entity within the U.S. Department of Interior.

2 A reduction of 40,000 to 50,000 acre-feet per year from historical levels.

3 Water management on the Newlands Project is inefficient by modern standards, reflecting the project's age and its lack of modernization and major maintenance since its construction in the early part of this century.

4 The date of creation of the reservation, 1859.

Pyramid Lake elevations and to protect the endangered cui-ui.

The Tribe also claimed that the government had erred in its handling of tribal water rights in the Orr Ditch case – first because the government had represented both the Tribe and Newlands Project farmers (two conflicting interests) in the case, and second because agriculture should not

have been the purpose for which federal lands had been withdrawn for the reservation. The Tribe contended that its cultural heritage was clearly one of fishing rather than farming. Hence, the tribal reserved rights should have been based on the water needed to sustain the lake's fishery, rather than a lesser amount of water to use for irrigation.

Pyramid Lake Fisheries



The cui-ui, an endangered fish native to Pyramid Lake.

The United States, on behalf of the Pyramid Lake Paiute Tribe, filed suit against the Nevada parties (*Nevada v. United States*) involved in the Orr Ditch case seeking to reopen the decree to obtain a reserved right to maintain lake levels. When the U.S. Supreme Court eventually decided the case, it found in favor of the water right holders that the decree was final and that it should not be reopened on the reserved rights issue.

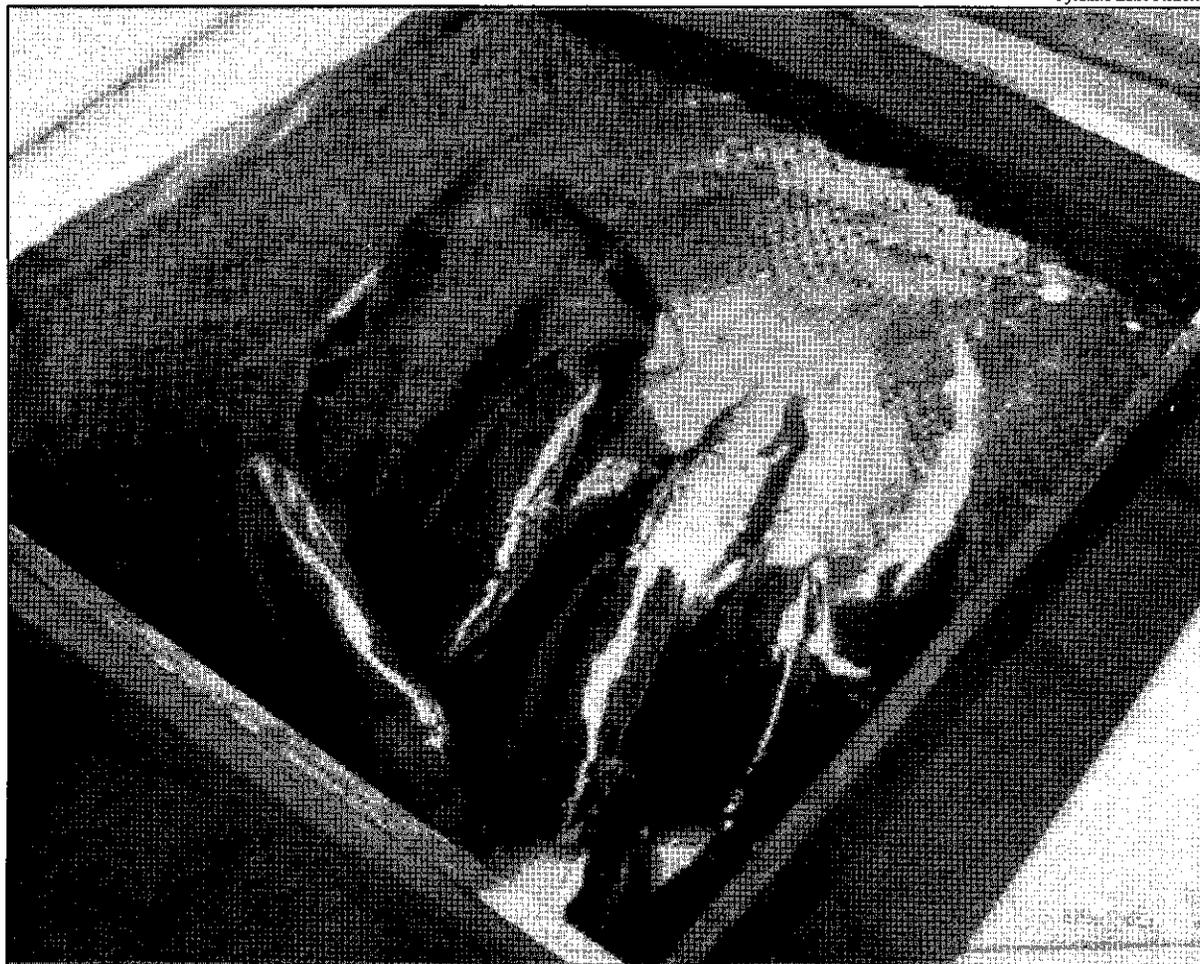
The Tribe filed suit (*Paiutes v. California*) against the State of California and water users in California who were not parties to the Orr Ditch Decree, making the same claim of reserved rights against them. This litigation has been put on hold pending the outcome of negotiations described in the next section.

Yet another set of disputes could be termed the “reservoir cases”. Use of Stampede Reservoir was the first of these. The reservoir was originally designed to serve chiefly municipal and agricultural water uses. A Nevada agency – the Carson-Truckee Water Conservancy District – was created to contract with the Bureau of Reclamation for the water from this Washoe Project facility. The Secretary of the Interior instead determined that his obligations under the Endangered Species Act took precedence

over his authority to contract for yield from Stampede.

Carson-Truckee Water Conservancy District and Sierra Pacific Power Company brought suit against the government for the water they had expected to receive. The court ruled for the fish, saying the Secretary had a duty to provide water for the fish until such time as they were no longer a listed species. Thus, the use of the reservoir for other consumptive purposes was precluded, although it could still serve coordinated nonconsumptive purposes such as flood control and recreation.

The other major reservoir case is the 1987 Lake Tahoe Dam suit. This case originated when the Bureau of Reclamation circulated environmental documentation for repairing the dam to improve its seismic resistance. The Tribe used this occasion to file suit against the government over operation of the dam and its impact on the cui-ui. Both states and the usual complement of water users intervened in the action. This case has also been placed on hold pending the outcome of negotiations described below.



Cui-ui in a holding tray at the hatchery.

Congressional Settlement Legislation

The latest effort to resolve the water wars has been the enactment of congressional settlement legislation for the Truckee and Carson rivers. Negotiation of this legislation was begun by Nevada Senator Reid in 1988. The scope of these new negotiations included:

- » Interstate allocations of the old compact,
- » Settlement of some of the litigation described above,
- » Settlement of other Indian water rights issues,
- » Reoperation of the Truckee River to provide drought period water supply for the Reno/Sparks area,
- » Water rights purchases for the Lahontan Valley wetlands,
- » Recovery plans for the Pyramid Lake fish, and
- » Newlands Project issues.

Many parties were involved in the negotiations — public agencies, water users, and environmental groups. The primary players in the interstate allocation negotiations, however, were the two states, the federal government, the Pyramid Lake Paiute



Workers inside one of the tribal fish hatcheries.

Tribe, and Sierra Pacific Power Company. The Department of Water Resources represented California, with assistance from the State Water Resources Control Board and in close consultation with local governments and water agencies.

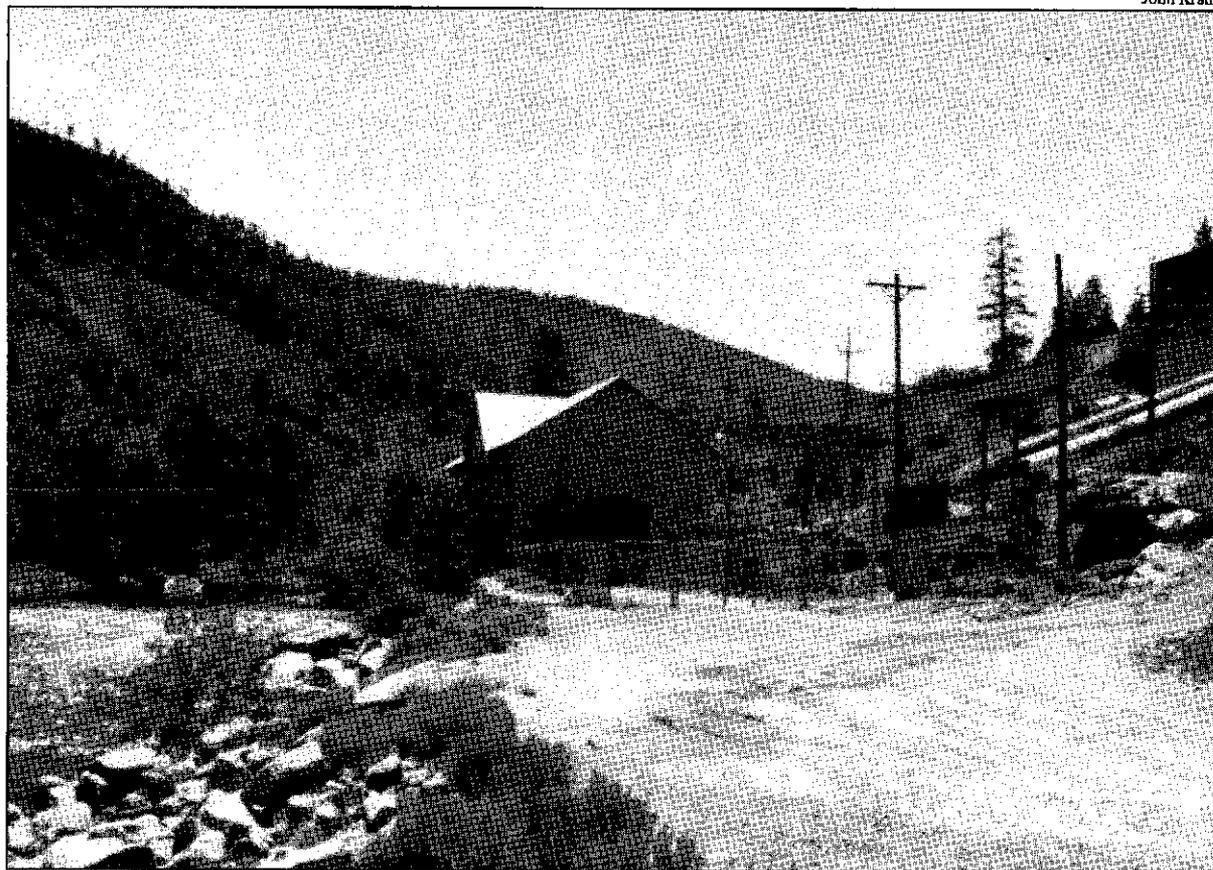
The legislation, known as Public Law 101-618 or the Fallon Paiute Shoshone Tribal

Settlement Act¹ and the Truckee-Carson-Pyramid Lake Water Rights Settlement Act, was approved by the 101st Congress at the end of its 1990 session. Appendix 1 contains a copy of the act. Provisions of the legislation are outlined below. Provisions relating to Truckee River water issues are then covered in more detail.

¹ The Fallon Paiute Shoshone Tribe has a reservation near Fallon and has been involved with water issues on the Carson River. Farming is one of the Fallon Tribe's sources of income, and the Tribe receives its water from the Newlands Project.

Main topics covered by the legislation are:

- » The Fallon Paiute Shoshone Tribal Settlement Act establishes a settlement fund for this Tribe totaling \$43 million. The Tribe is authorized to purchase land and water rights to consolidate tribal holdings within the reservation. Specified litigation involving the Tribe must be dismissed.
- » An interstate allocation is made of the use of waters of the Truckee and Carson rivers. Provisions are made for transfer of water or water rights.
- » A new operating agreement is to be negotiated for the Truckee River. The agreement will include a water rights agreement negotiated by Sierra Pacific Power Company and the Pyramid Lake Tribe and ratified by the federal government. (A copy of this latter document, titled "Preliminary Settlement Agreement", is contained in Appendix 2.)
- » A water rights purchase program is authorized for the Lahontan Valley wetlands, in the Carson watershed, with the intent of sustaining an average of about 25,000 acres of wetlands.



One of Sierra Pacific Power Company's turn-of-the-century hydroplants located in the Truckee River canyon upstream of Reno. Water is brought into the plant by the penstocks on the right edge of the photo.

» A recovery program is to be developed for the Pyramid Lake cui-ui and Lahontan cutthroat trout. Water right acquisitions are authorized. Provisions are made for a study on improving stream channel conditions in the lower Truckee River above the lake. A tribal economic development fund of \$40 million is

established for the Pyramid Lake Tribe. Another fund of \$25 million is established for the lake's fishery.

» The Newlands Project is reauthorized to serve additional purposes, including recreation, fish and wildlife, and municipal water supply for the Fallon area. A

project efficiency study is required. The Morton decision and final OCAP are recognized, and the Secretary is directed to enforce compliance with the OCAP.

- » A number of contingencies are placed on the effective date of the legislation, and the various parties are required to dismiss assorted litigation.

Truckee River interstate allocations made by the legislation follow the format of the old compact, where water is allocated on a geographical basis. In the Lake Tahoe basin, California is allocated 23,000 acre-feet per year and Nevada is allocated 11,000 acre-feet per year. California is allocated 32,000 acre-feet per year in the Truckee basin between Lake Tahoe and the stateline; the remainder of the water supply is allocated to Nevada.

The legislation contains a number of provisions regarding how the allocations will be measured and conditions on implementing the allocation that must be negotiated in the operating agreement. The allocations, together with many other portions of the bill, will not take effect until the

operating agreement is negotiated and a number of other conditions are satisfied.

The legislation states that the Truckee River Operating Agreement must be signed by at least the two states and the federal government; other affected parties may be offered the opportunity to participate in the negotiations and to become signatories.

Goals of the agreement include providing for better coordination of operation of the existing reservoirs so a variety of objectives can be achieved – such as meeting existing water rights, improving instream flow conditions in the river, and enhancing spawning flows for cui-ui. Existing water rights are not to be affected by the agreement unless they are voluntarily modified by their holders.

The operating agreement must carry out the elements of the Preliminary Settlement Agreement. This agreement is described in more detail in Chapter 7. Simply put, in this agreement, the power company waived certain of its hydropower rights to allow that water to be stored to support cui-ui

spawning flows. In exchange, the Tribe will consent to the power company storing a limited amount of municipal water in Stampede or other reservoirs.

Portions of the legislation dealing directly with Pyramid Lake represent both new programs and a continuation of some existing ones. For example, the Endangered Species Act already requires that recovery plans be prepared for listed species. The fishery fund¹ created in the legislation will be used by the Tribe to finance operation and maintenance of hatcheries it already operates. The U.S. Army Corps of Engineers' study of the lower Truckee River will be a new effort and will examine improvements to the channel such as reestablishing riparian vegetation, controlling erosion, and reconstructing fish access across the delta at Pyramid Lake.

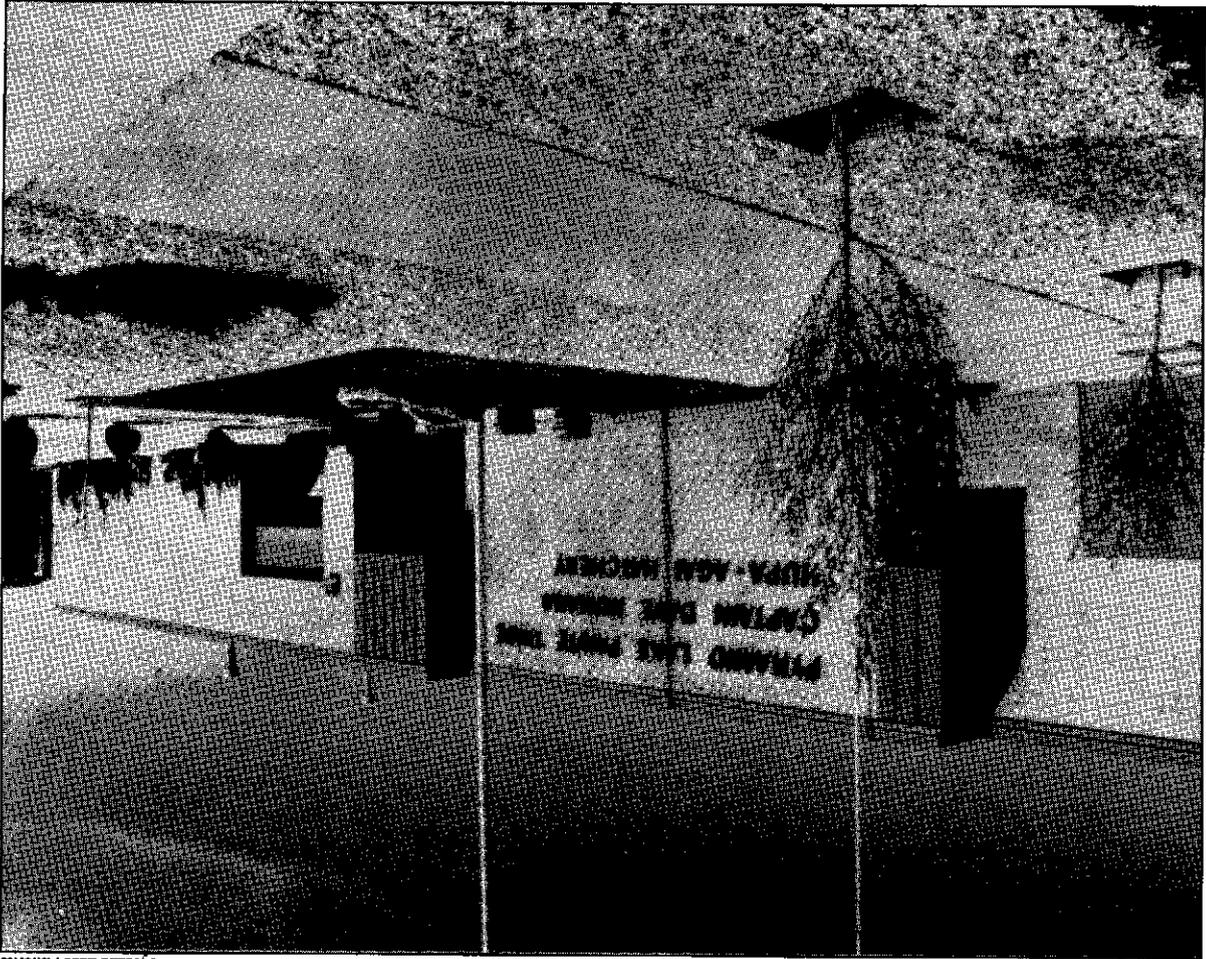
The legislation also formally dedicates the project water in Stampede Reservoir for the Pyramid Lake fishery, together with a portion of the water in Prosser Creek Reservoir.

1 Only the interest earned on the fund can be spent; the principal may not be spent.

Negotiation of the operating agreement promises to be at least as complicated as the history of water negotiations on the Truckee River would presage. The agreement will have to cover in considerable technical detail the hydrologic workings of the river, together with the legal complications presented by past water rights decisions. It will also have to establish the entity to oversee operation of the river and a method to administer the allocations. Competing environmental goals must be balanced, and potential environmental impacts must be studied. Better methods of water measurement and control will need to be developed, and court approval of the agreement will ultimately be necessary.

The earliest date by which key provisions of the settlement act can take effect is 1997, because of the act's many contingencies. The interstate allocations, for example, cannot take effect until the operating agreement is signed, the last federal payment is made to the Pyramid Tribe's development fund, and specified litigation is dismissed.

Looking Toward the Future



Pyramid Lake Fisheries

One of the fish hatcheries operated by the tribe at Pyramid Lake.

USES OF THE TRUCKEE RIVER

This chapter highlights some uses of the Truckee River and describes how the river is operated to meet these uses. Both consumptive uses (*e.g.*, municipal and agricultural) and nonconsumptive uses (*e.g.*, hydropower and recreation) are covered.

The terms “consumptive use” and “non-consumptive use” are traditionally associated with water rights and water use studies, but they are not completely definitive. No typical consumptive use is 100 percent efficient; there is always a return flow associated with such use. In the case of water diverted for municipal use, most of the water used inside a residence ultimately reaches a septic tank or sewer system, and this water returns to the environment in the form of ground water recharge or direct discharge from a waste water treatment plant into a river. Some of the water applied for irrigation is used by the plants, some is evaporated, some returns to surface streams, and some recharges ground water. Nor are many nonconsumptive uses entirely nonconsumptive. There are evaporation losses, for instance, associated with maintaining a reservoir at a specified eleva-



A wetlands environment along a Truckee River tributary.

tion to support fish or recreation, and there are evaporation and conveyance losses in maintaining a minimum streamflow in a

river. Such losses are sometimes quantified in water right permits or agreements, as discussed later in this chapter.

Sierra Pacific Power Company

Water for the Mines

There was a historical diversion from Marlette Lake (named after Seneca Hunt Marlette, first Surveyor-General of Nevada) in the Tahoe basin out of the Truckee River's watershed to the silver mines surrounding Virginia City. Many technological advances were developed during the quest for ore from the Comstock Lode, including square set mine timbering, improvements in mine drainage, and use of the V-flume for transporting lumber. Another innovation was the piping system used to transport water from Marlette to the Comstock. The mining towns of the Virginia Range were chronically short of water — the meager springs available coupled with ground water from some of the mining tunnels were not sufficient to supply domestic uses. In his comments about the water supply available to the residents, chronicler Dan De Quille had this to say:

...but in the summer, when water was most needed, the tunnels furnished but feeble streams and these were much impregnated with minerals, one of the least feared of which was arsenic. The ladies rather liked arsenic, as it improved their complexion; made them fair and rosy-cheeked — almost young again, some of them. The miners did not object to arsenic, as, while it did not injure their complexion, it strengthened their lungs — made them strong-winded and able to scale mountains.

Although this writer is correct in his observation that water draining from highly mineralized ore deposits often contains undesirable constituents, his statements about the health benefits of arsenic are obviously hyperbole. This same writer also described the efforts of the local water company to seek more water by tunneling into promising hillsides:

These tunnels were run for no other purpose than to find water. A hill was examined with a view to its water-producing capacity. It was found that those that

rose up in a single sharp or rounded peak were not rich in water. The best water-producers were hills on the tops of which there were large areas of flat ground.

The difficulty in conveying water to the Comstock was not the distance, but the difference in elevation. The pipe would have to withstand a head of about 1,800 feet (meaning the pressure exerted by a column of water this high) as it left the Sierras, dropped down into and crossed Washoe Valley, and turned again uphill to the summit of the Virginia Range. The pipe would be an inverted siphon, at the time no such water pipe had been constructed for such high pressures. One backer of the project, James Flood, gave an often-quoted reply when asked if the pipeline was possible: "Everything can be done nowadays; the only question is — will it pay?"

A wrought-iron pipe 11.5 inches in diameter was selected for the critical high-pressure section. It was fabricated in San Francisco out of steel plates rolled into a cylinder and connected with rivets. Then came the day when the finished pipeline was to be tested (remember that this was before the days of the telephone). De Quille says:

As the pipe filled, the progress of the water in it could be traced by the blowing off of the air [from specially designed air vents in the pipe] on the tops of the ridges through the valley, and at last, to the great joy of the engineer and all concerned in the success of the enterprise, the signal fire at the outlet, on the summit of the Virginia Range, was for the first time lighted, showing that the water was flowing through the whole length of the pipe. When the water reached Virginia there was great rejoicing. Cannon were fired, bands of music paraded the streets, and rockets were sent up all over the city. Many persons went out and filled bottles with this first water from the Sierras...

Although most of this chapter is directed toward surface water use, the use of surface and ground water resources is inextricably intertwined; river water may recharge the ground water basin, or ground water may contribute to flow in the river.

Changing Times, Changing Uses

As with many western rivers, the history of the Truckee includes a period of early exploitation of natural resources – lumbering, mining, and commercial fishing – before extensive settlement, a time of homesteading and agricultural development, and a modern era of increasing urbanization and sensitivity to environmental needs.

Some of the earliest large diversions in the watershed were connected with lumbering and mining – water exported from the Truckee basin to use in the Comstock mines, river regulation to permit logs to be floated down the river to a mill or into a flume, and water to power generators at the mills.

Later agricultural uses included the Nevada reclamation projects mentioned in Chapter 3, as well as limited agriculture in California. Today there are almost no uses of water for commercial agriculture in the

California portion of the basin – the area's cold climate and short growing season would preclude most agriculture other than seasonal pasture for livestock or Christmas tree farms. In the past there was some irrigation of pasture lands in the larger valleys – Stampede Valley (now occupied by Stampede Reservoir) and Martis Valley (much of which is now within the

area reserved for flood control at Martis Creek Reservoir). There had historically been some irrigation of seasonal pasture at scattered locations around Lake Tahoe, but the area's urbanization has discouraged such uses.

Present-day water uses in the basin are described in the following sections.



One of the remaining areas of agricultural land in the Truckee Meadows.

John Kramer

Agricultural Water Use

Newlands Project agriculture in the Carson basin is the Truckee River's largest water user. The OCAP presently calls for a limit on Truckee Canal diversions of 320,000 acre-feet per year, corresponding to just over half of the river's average annual flow at the stateline. In its Environmental Impact Statement for the OCAP, the Bureau of Reclamation estimated that there were about 68,000 acres with Newlands Project water rights in the Carson Division below Lahontan. The Newlands Project also supplies irrigation water to about 6,000 acres in the Truckee Division (in the Truckee River watershed) near Fernley. Principal crops in the area are alfalfa, irrigated pasture, and grains. Continued diversion of Truckee River water for this purpose has been controversial and is the subject of on-going litigation (refer to Chapter 6).

Truckee Meadows and vicinity is the other area with significant agricultural use of water. The irrigation water supply comes in part from Floriston rate water and from unstored water diverted directly from the river. The extensive ditch system which can still be seen in some parts of the Truckee Meadows is part of the diversion and distribution system serving the irrigators.

Agricultural Water Conservation

One of the myriad of issues addressed in negotiation of the recent water rights settlement act was use of irrigation water at Fallon Naval Air Station, which is served by the Newlands Project. Navy lands around the base's perimeter have been leased to local farmers, primarily for alfalfa cultivation. These leased lands are intended to provide a buffer zone around the active portion of the base for fire protection, dust control, and control of wind-blown debris that could damage jet engines. The Pyramid Tribe had for some time advocated that the alfalfa should be replaced with a lower water use ground cover, so the water saved could be dedicated to Pyramid Lake. Ultimately, the water rights settlement act directed the Secretary of Interior to examine land management and water conservation plans, with the goal of redirecting any water that could be conserved to Pyramid Lake (primarily) or to the Lahontan Valley wetlands. One provision of note in the act states:

The Secretary of the Navy, in consultation with the Secretary of Agriculture and other interested parties, shall fund and implement a demonstration project and test site for the cultivation and development of low-precipitation grasses, shrubs, and other native or appropriate high-desert plant species, including the development of appropriate soil stabilization and land management techniques, with the goal of restoring previously irrigated farmland in the Newlands Project area to a stable and ecologically appropriate dryland condition.

This policy direction is in marked contrast to the turn-of-the-century drive to "make the desert bloom" in the Newlands Project area.

The Orr Ditch Decree allowed irrigation of about 32,000 acres from the stateline through the Truckee Meadows. The Truckee Storage Project was designed to provide supplemental irrigation water to about 29,000 acres of this area; today per-

haps some 10,000 acres are irrigated in the Truckee Meadows, reflecting the urbanization of the area. There is additional irrigated acreage along the river's benchlands downstream from Truckee Meadows.

OCAP Review Comments

The OCAP and related disputes are some of the most sensitive Nevada water issues on the Truckee River today. The three quotations below, taken from the Bureau of Reclamation's 1987 *Final Environmental Impact Statement for the Operating Criteria and Procedures*, are provided to emphasize some of the diverse views on how the river's resources should be used. The quotations are excerpted from comments submitted by interested parties on the draft EIS.

The Environmental Defense Fund

...the OCAP should be designed to limit water diversions only to amounts necessary to meet actual and reasonable demands, and should incorporate an equitable approach to sharing water shortages. Required delivery efficiencies should also be established and enforced. In determining project demands, the EIS should fully address factors which influence both present and potential future demand, such as water prices, the potential for water markets, and future farm commodity markets. A realistic analysis of such factors — and the creation of incentives to encourage more efficient use of water — would demonstrate the extent to which sufficient water can be saved to assure the necessary flows to Pyramid Lake, while still providing clean water to preserve the existing Lahontan Valley wetlands.

Because of its dominant role in the Newlands crop mix (some 70 percent of Newlands acreage), alfalfa serves as a notable example of the potential impact of even moderate changes in pricing mechanism. Relative to a wide range of alternate crops, alfalfa exhibits high water use per acre, high diversion requirements (i.e., low efficiencies), comparatively low dollar yields per AF of water consumed, and secondary markets which are either deteriorating (e.g., declining per-capita beef consumption) or already glutted (e.g., dairy subsidies). Because of these factors it is evident that even minor pricing reforms could have major impacts on overall crop mix, crop acreage, and efficiency of water use, resulting in significant reductions in actual project demands and diversion requirements.

The Pyramid Lake Tribe's Legal Counsel

The proposed action and the Draft EIS are deficient because they are based entirely on the maximum decreed water duties rather than actual, reasonable and economical beneficial use. There is no attempt to limit the use of water to the amount actually required for reasonable and economical beneficial use. The Secretary's responsibility and obligation to limit use of water to reasonable and economical beneficial use are established by the attached ...

In 1973, Secretary Morton specifically notified TCID that every acre foot of illegally diverted water would have to be returned to Pyramid Lake... Knowing the risks and consequences, TCID nevertheless deliberately violated the OCAP for 10 years — illegally diverting approximately 1,000,000 acre feet.

Truckee-Carson Irrigation District

The Newlands Project was constructed during the early part of this century and was never designed or constructed for maximum efficiency. There are many miles of earthen canals which support not only the irrigation district water users but which support an ecosystem within the Lahontan Valley. There are many homes and other domestic uses that are dependent on the ground water recharged by the water in the canals as well as wildlife that has developed a dependence on the water system.

There are very few, if any, occasions where project water is delivered to non-water righted ground. Most instances are where the individual water user has leveled portions of his ground and incorporated them into his irrigated fields. These areas were previously classified as non-water righted because they were sand hills and couldn't be irrigated. Today's technology and machinery make it easy to remove the sand hill and to irrigate them [sic] along with the remainder of a water user's field.

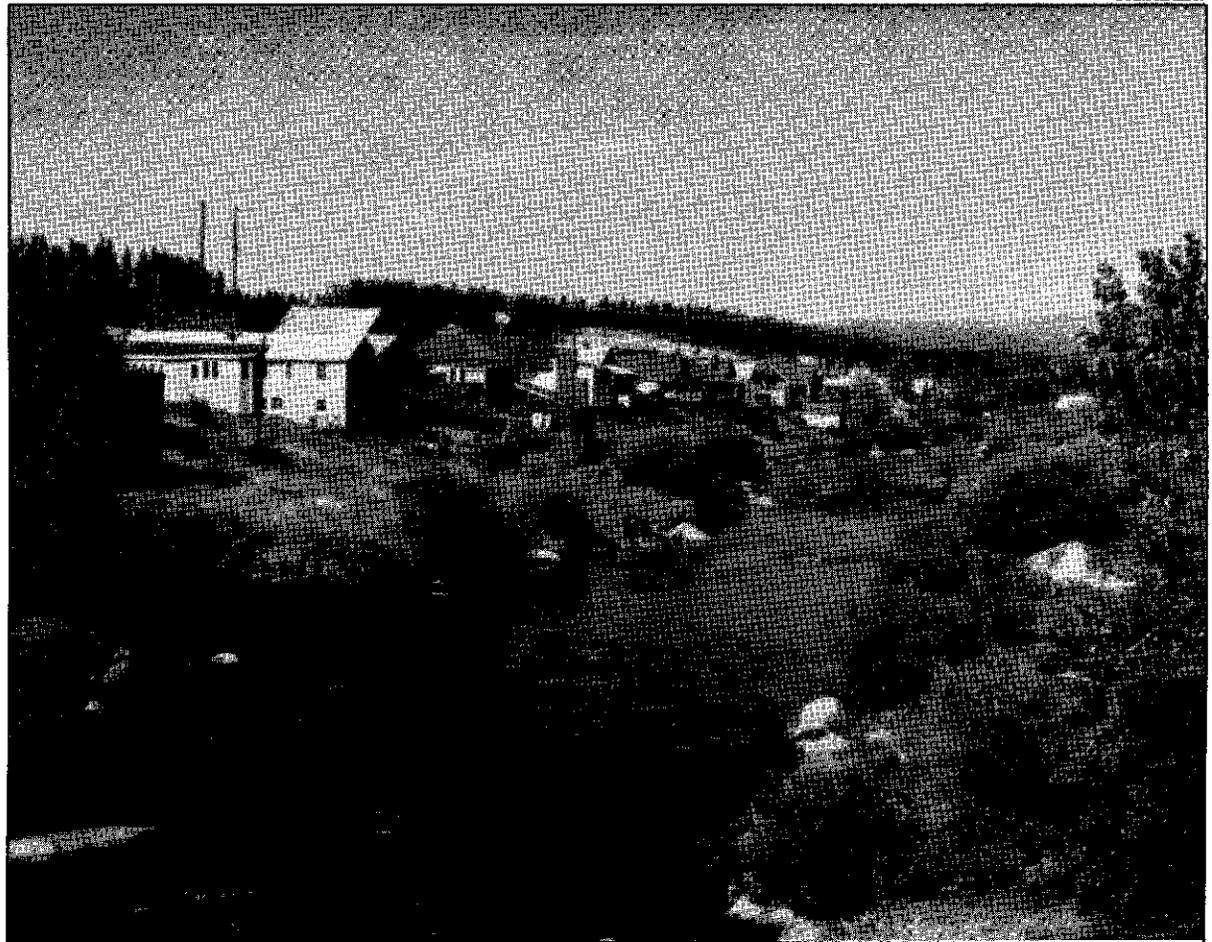
Total irrigation water use from the western outskirts of the Truckee Meadows downstream to Pyramid Lake (excluding Truckee Canal diversions) in the last few years has ranged from about 64,000 to 77,000 acre-feet.¹ Principal crops are alfalfa, irrigated pasture, and grain. There is a well developed market for Truckee Meadows former irrigation water rights. As agricultural lands are converted to urban use, their water rights are acquired by developers, who ultimately transfer the rights to local government agencies.² Depending on a right's amount and priority, it could sell for \$2,000 to \$3,000 per acre-foot of water right.

Although the Orr Ditch Decree provided for irrigation of just under 6,000 acres on the Pyramid Lake Indian Reservation, corresponding to a diversion of up to about 30,000 acre-feet per year, the actual acreage irrigated has historically been minimal. Currently, perhaps 10 percent of the decreed lands are being irrigated.

As noted earlier, agricultural water use in California is negligible. There is, however, the out-of-basin diversion, with a priority of 1870, from the Little Truckee River into Sierra Valley, in the Feather River water-

shed. The diversion is used as supplemental irrigation supply on lands devoted largely to pasture and alfalfa. The amount of the diversion is fixed by the Sierra Valley

Decree and varies with the rate of flow in Weber (now Bonta) Creek in Sierra Valley. The diversion averages about 6,000 acre-feet per year.



The Truckee River flows through the historic section of downtown Truckee.

1 These recent figures reflect two notable circumstances: water supply constrained by a drought period, and continuing urbanization of former agricultural land.
2 As an example of the commonplace nature of these water transfers, the *Reno Gazette* has a routine heading in its classified advertisements section for water rights sales.

Municipal and Industrial Water Use

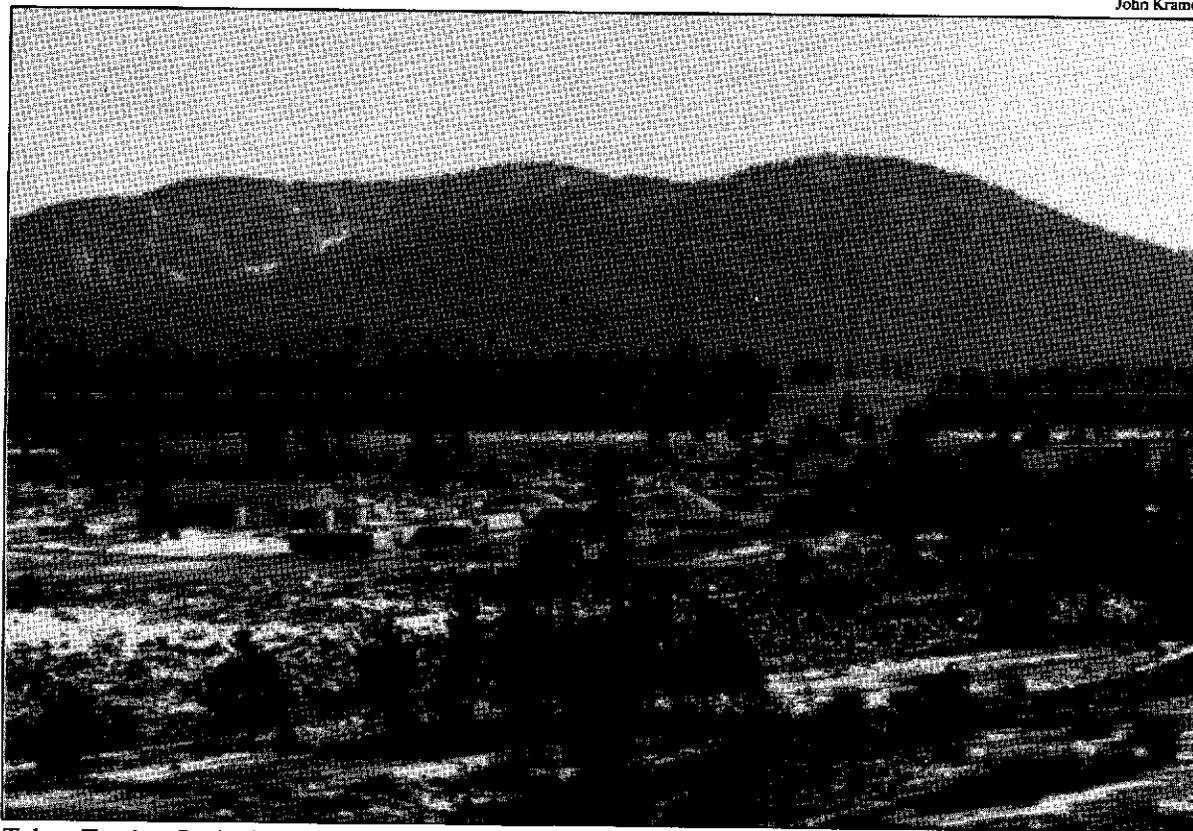
Municipal water supply in the Lake Tahoe basin is provided by a number of purveyors, most of which are small, private water companies. Early residential development in the basin was characterized by construction of scattered subdivisions and resorts, most served from a water supply system constructed by the developer and often based on water supplied from one or two wells. Many of these individual subdivision systems still remain, although there is a gradual trend toward sale or consolidation of the small, private companies.

Stricter water monitoring and treatment requirements of the 1986 amendments to the federal Safe Drinking Water Act are, in general, encouraging small water companies to merge with larger water purveyors, particularly with public systems that might be eligible for low-interest-rate improvement loans or grants. On the California side of the basin, for example, much of the water service is provided by three public utility districts – North Tahoe, Tahoe City, and South Tahoe Public Utility Districts – that have, over time, assumed operation of some of the small systems.

Municipal water supply in the basin is derived from a mix of surface and ground water; some systems divert directly from Lake Tahoe, some divert from tributary streams or springs, and some use wells.

The interstate allocations in the water rights settlement act will, when the provisions take effect, limit Tahoe basin diversions from both surface and ground water sources to a total of 34,000 acre-feet per

John Kramer



Tahoe-Truckee Sanitation Agency's waste water treatment plant, adjacent to the Truckee River east of Truckee. This plant, recognized by the Environmental Protection Agency as a leader in the industry, collects and treats waste water from as far south as Tahoe City.

year (23,000 to California¹ and 11,000 to Nevada) for all uses of water. Today's uses are primarily municipal (including commercial), with some recreational (e.g., golf course irrigation). These figures, also used in the former compact, were developed from estimates of the ultimate growth that would be permitted in the basin.²

The Nevada State Engineer and the California State Water Resources Control Board have cooperated for years to limit issuance of water right permits while the interstate allocation negotiations were pending. A number of applications were filed during this time, but they were placed on inactive status. When the agreements that trigger the legislation's effectiveness are successfully negotiated, the water rights agencies will be faced with the task of acting on applications for the remaining water.

The interstate allocations also recognize four small existing out-of-basin diversions from the Lake Tahoe basin and do not count them against these existing uses in

the basin. The larger two of these water supply diversions are: a California diversion at Echo Lake (discussed in the hydro-power section of this chapter) and a Nevada diversion at Marlette Lake (historically a maximum of 3,000 acre-feet per year), discussed in Chapter 3.

In addition to the out-of-basin water supply diversions, waste water is also diverted out of the basin. These diversions arose from efforts to protect Lake Tahoe's water quality³ by banning disposal of treated waste water within its watershed. Some waste water is treated in the basin, and the effluent is exported. Some raw waste water is exported for treatment elsewhere — to the Carson River watershed east of Lake Tahoe or to the Truckee watershed downstream of the lake.

Municipal water use in California downstream of Lake Tahoe is about 5,000 to 6,000 acre-feet per year and is served almost entirely from ground water. There is one larger public water purveyor — Truckee-Donner Public Utility District —

and several smaller systems serving individual developments. The Squaw Valley ski resort area, for example, is served by two systems — Squaw Valley Mutual Water Company and Squaw Valley County Water District.

The interstate allocation provides a maximum of 32,000 acre-feet per year to this area, reflecting the expectation that more development will take place here in the future as permissible build-out occurs around Lake Tahoe.⁴ The settlement act provides that no more than 10,000 acre-feet of the 32,000 can be taken from surface water and also places other conditions on the allocation. New wells, for example, must be constructed so they minimize interference with streamflows in the Truckee River and its tributaries. Special provisions are also made for disposal of treated waste water, so that expected direct return flows to the Truckee River are not diminished.

The Reno/Sparks area is the largest municipal water user on the Truckee River. The two cities and some unincorporated areas

1 For comparison, municipal use today on California's side of the basin is about 17,000 acre-feet per year.

2 Growth control in the basin is strict; building permits for new construction can take years to obtain. Developers of new hotels are required to buy existing older units and to demolish them in return for the development rights.

3 Sewage effluent provides a source of nutrients to the lake, stimulating the production of algae and reducing the lake's clarity.

4 The interstate allocations are intended to be permanent, so that eventually growth here will be constrained to that which can be supported by the 32,000 acre-feet. Future uses are expected to be similar to those in the Tahoe basin, emphasizing municipal and recreational uses.

are served by Sierra Pacific Power Company; the remaining unincorporated area in Truckee Meadows is served by Washoe County and a number of small purveyors, most of them private water companies.

Sierra Pacific Power Company is both a water retailer and a water wholesaler — it supplies water directly to most users but also wholesales water to several of the small purveyors. Sierra Pacific meets most of its needs from surface water — direct diversion of unstored water from the Truckee River and its tributaries (e.g., Hunter Creek in Nevada) and use of stored water from Donner and Independence lakes. Sierra Pacific also owns a minor amount (800 acre-feet) of storage capacity in Boca Reservoir.

Sierra Pacific Power Company holds one of the most senior direct diversion rights on the river, a right to divert 40 cubic feet per second throughout the year, subject to the Tribe's 1859 rights for its reservation. The relative seniority of this direct diversion right means water is physically available for diversion in all but the driest years.

Over time, Sierra Pacific Power Company has also acquired former Truckee Meadows irrigation water rights having a face value of about 35,000 acre-feet. The actual

The Return Flow Concept

Understanding the concept of return flows is important in the context of water rights. Downstream water users may derive most or only a portion of their entitlement from return flows of upstream users.

For example, consider water originally diverted in the northern part of the Tahoe basin for municipal use. A portion of this water will be used inside homes, and most of that water will enter the sewer system. The sewage is pumped to a waste water treatment plant near Truckee, where it is treated and returned to the Truckee River. Some of this water will then be diverted for use by irrigators in the Truckee Meadows, and some of that water will again return to the river in the form of tailwater and agricultural drainage. This water, then, will again be available for diversion into the Truckee Canal to serve Newlands Project irrigators or for use in supporting Pyramid Lake levels.

In this hypothetical example, the amount of "recycled" water actually reaching the Newlands Project or Pyramid Lake would be small, simply because the amount of water diverted from the northern portion of Lake Tahoe is small relative to downstream use.

Return flows from the Reno/Sparks Joint Water Pollution Control Plant would provide a larger example. This existing waste water treatment plant presently discharges treated effluent to the Truckee River. It was proposed to obtain additional treatment capacity using a wetlands treatment alternative where effluent would not be discharged directly to the river but would, instead, be transported to an artificial wetlands some distance away for final treatment. This proposal was protested by downstream water rights holders, among them the Pyramid Tribe, who would no longer be receiving the return flow. The expansion proposal went to litigation.

dry period yield of these rights is much less, since their priorities are generally more junior than that of the 40 cfs right. In the last few years, Truckee River municipal diversions below the stateline have ranged from about 49,000 to 63,000 acre-feet per

year. (Sierra Pacific serves about 65,000 acre-feet per year from its combined sources of supply to its retail customers.)

Sierra Pacific Power Company serves a portion of its demand from ground water;

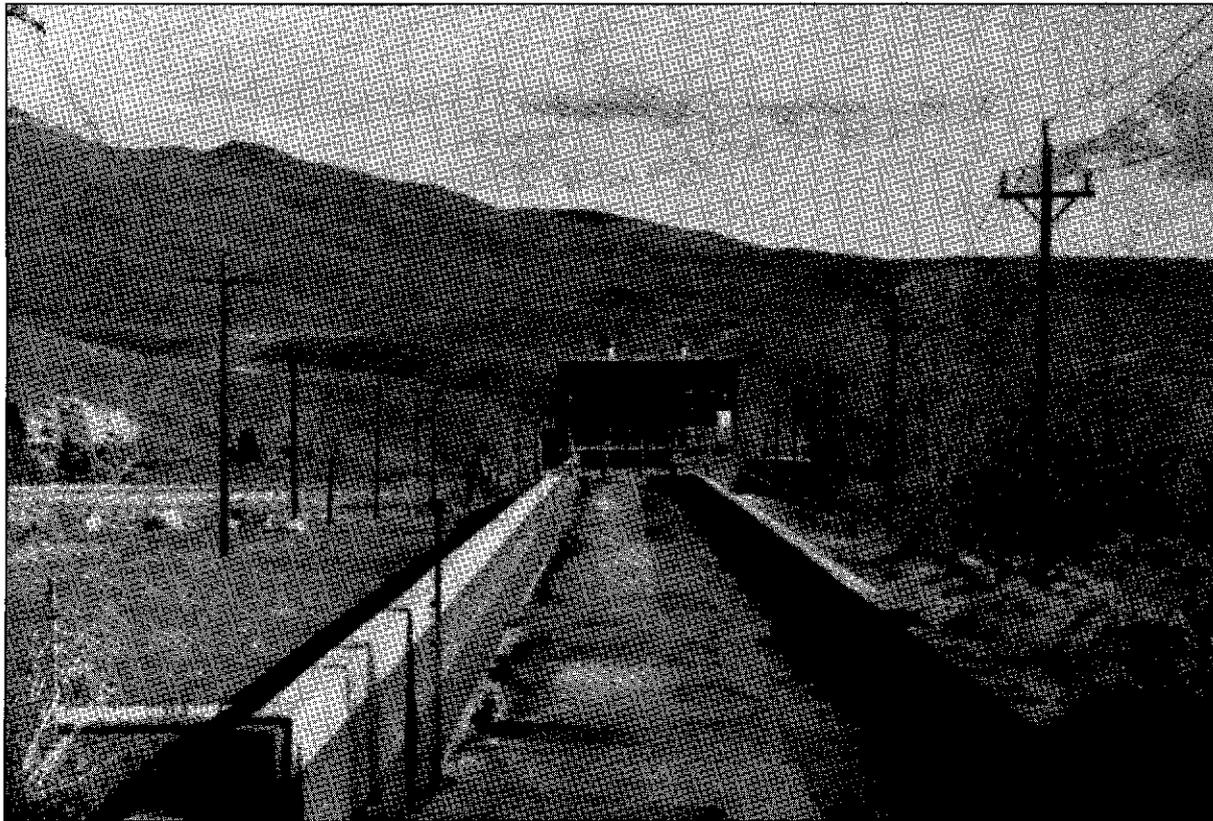
it holds rights to about 48,000 acre-feet of Truckee Meadows ground water, although the Nevada State Engineer has restricted extractions to about 15,000 acre-feet per year. Most of the small water purveyors in the area rely entirely on ground water. The State Engineer has restricted pumpage to avoid overstressing the aquifer system. Concerns have been expressed in the past

that urbanization of the valley will reduce the amount of water going to ground water recharge, as irrigation canals that once provided recharge water are eliminated and more land is covered with impervious paving. Pumpage and water levels in the aquifer system are being monitored to evaluate its response to development.

The Reno/Sparks area has been growing very rapidly, making it necessary for the cities and Sierra Pacific Power Company to seek additional sources of water supply. Both cities as well as the county have enacted ordinances requiring developers to acquire water rights for their projects and to turn them over to the local governments before a building permit is issued. These rights can then be relied upon by Sierra Pacific, which will then issue a "will serve" letter to the developer.

One of the region's main water supply problems, however, is not so much the quantity of water needed but rather its management. Most of the upstream storage in the Truckee River basin is presently dedicated to agricultural or fisheries use. It is difficult to meet the needs of a large urban area without enough regulatory and long-term carry-over storage, particularly when that area is relying chiefly on direct diversion from one source of supply. Peak municipal demands, for example, occur in summer when irrigation demands are also high, meaning the total municipal demand, especially in drier years, cannot be met from direct diversion rights.

John Kramer



Part of the Sierra Pacific Power Company ditch system.

Sierra Pacific Power Company has recognized for some time the need to seek additional upstream storage, either by construction of new storage or by acquiring the right to store in an existing reservoir.¹

This search for upstream storage capacity was occurring simultaneously with the discussions surrounding various water rights settlement negotiations that finally coalesced as federal legislation. Sierra Pacific Power Company and the Pyramid Tribe ultimately negotiated and signed the Preliminary Settlement Agreement, which, because the federally owned reservoirs are involved, was subsequently ratified by the federal government in 1990 via its incorporation by reference in the settlement legislation.

In the agreement, Sierra Pacific Power Company waived its rights to its single-purpose hydropower rights and allowed that water to be used for tribal fishery credit water. In exchange, the Tribe will allow Sierra Pacific to enter into contracts with the Bureau of Reclamation to store municipal credit water in the federal reservoirs. The concept of credit storage and the



Rapid urbanization in the Truckee Meadows is prompting local governments to plan for future water supply needs.

constraints on its use are covered in more detail later in the section on future river operations. Credit water in this context can be thought of as water that the parties agree

has special conditions attached to its use. Its establishment and use must also be tracked by a special accounting system.

¹ It has often been claimed, particularly in the various legal actions here, that the Truckee River is already over-appropriated, meaning there are more water rights than can physically be met with the water available. For this reason, reservoir construction to develop new water on the river could affect existing water rights and would probably face legal challenges. Sierra Pacific Power Company has proceeded with studies on construction of new reservoirs to store existing water rights – for example, the Dog Valley reservoir site to be used for storing the former irrigation rights.

The amount of municipal storage obtained varies with several factors, including whether or not a drought condition exists. The agreement covers Sierra Pacific's future water supply development up to a normal year demand of 119,000 acre-feet and also obligates Sierra Pacific to seek additional sources of supply (primarily local ground water extraction) to meet that demand.

Implementation of the agreement is contingent upon several factors, some of which have already occurred — passage of the settlement legislation and repeal of a Nevada law prohibiting water meters in the Reno/Sparks area. Other requirements include preparation of a mandatory water conservation plan.

The last few years have seen a variety of efforts by local governments in the Truckee Meadows to plan for their future water supplies. The Nevada Legislature created an advisory group, the Regional Water Planning and Advisory Board of Reno-

Sparks and Washoe County, to focus attention on the regional nature of the water resources and to coordinate planning for the future. The Board prepared a regional plan, which highlighted a variety of issues, including the role Washoe County might play in future water development. The Board's plan touched on one issue that has been sporadically mentioned in the Truckee Meadows — that the county might take over all or some of Sierra Pacific's water service territory, or that all new growth might be served only by the county.¹

The principal issue, however, is a ground water importation project, which the county has been pursuing for several years. A report prepared for the county in the mid-1980s proposed what became known as the Silver State Project, a scheme to construct a pipeline as far north as the Oregon border and to extract ground water from valleys along the pipeline route for use in the Reno/Sparks area. Some of the ground water basins involved were interstate basins or bordered on the stateline,

arousing opposition among residents in several northeastern California counties. The Department of Water Resources has been assisting these counties with formation of ground water management districts to provide a framework for possible joint interstate regulation of certain ground water basins.

Although that project did not go forward, Washoe County is proceeding with one of its elements — importing ground water from the Honey Lake basin north of Reno (not within the Truckee River watershed). The county was not involved in the interstate allocation negotiations for the Truckee River; thus, these issues of importing ground water from other basins are not covered in the water rights settlement act.

Other small communities in the Truckee basin to the east of the Truckee Meadows area, such as Fernley, rely on ground water for their municipal supply.

¹ The county presently operates several small subdivision water systems in scattered areas in the Truckee Meadows, all served by ground water.

Hydroelectric Power Generation

The picturesque wooden flumes that can be seen from Interstate Highway 80 west of Reno convey water to Sierra Pacific Power Company's small turn-of-the-century hydropower plants along the river. This table lists the plants in upstream-to-downstream order and summarizes their features.

Plant Name	Construction Date	Capacity (megawatts)	Number of Units
Farad	1901	2.6	2
Fleish	1905	2.5	1
Verdi	1911	2.5	1
Washoe ¹	1904	2.5	2

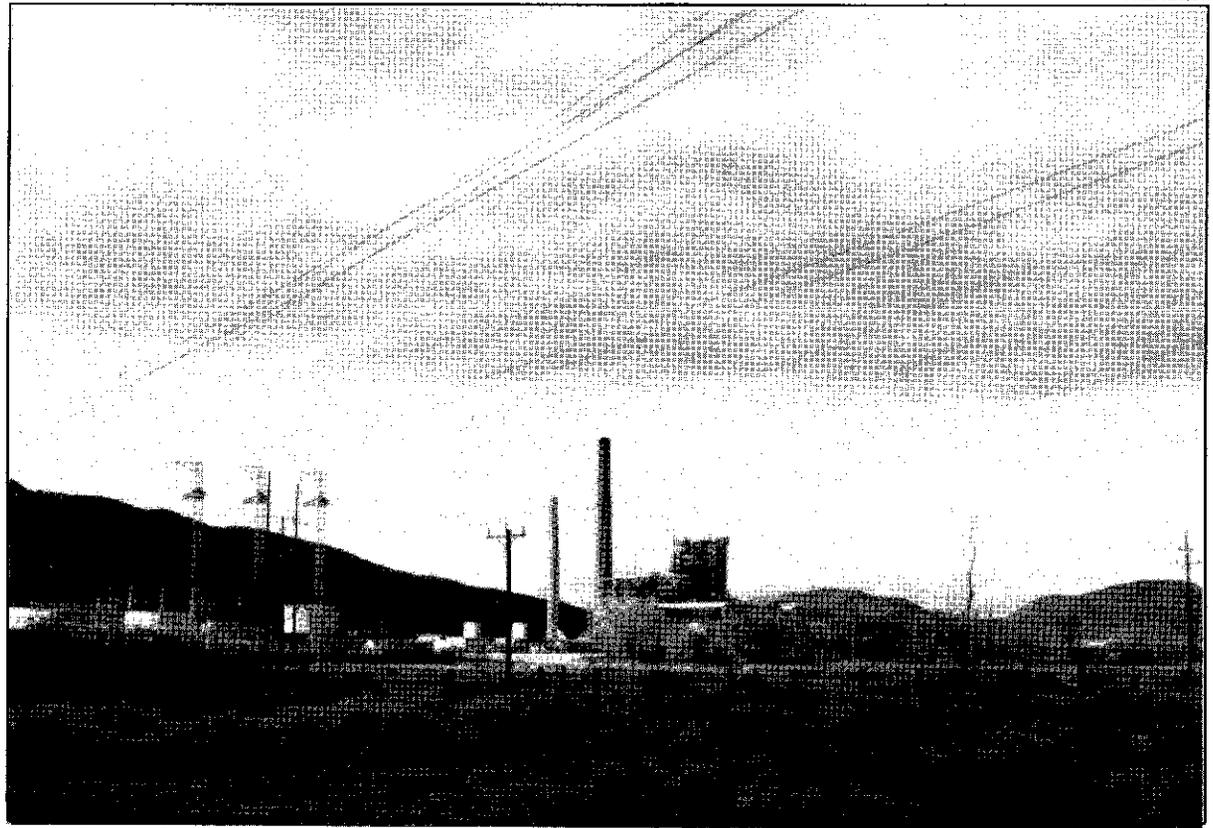
The only other hydropower plant in the watershed is the one constructed at Stamped Dam in 1988 by the U.S. Bureau of Reclamation (described in Chapter 6). This plant has two units (*i.e.*, turbine generators) and has a maximum capacity of 3.65 megawatts.

Truckee River water diverted out of the watershed is also used for power generation. Pacific Gas and Electric Company claims pre-1914 rights to water diverted

from Echo Lake, in the Tahoe basin, into the South Fork American River. This diversion, initiated in 1876, amounts to up to 2,000 acre-feet per year. Water diverted to the Newlands Project via the Truckee Canal can be used for power generation incidental to operation of the project. The

first hydroplant adjacent to Lahontan Dam, installed in 1915, had a capacity of 1.92 megawatts. The plant provided early electric power to the surrounding rural area. Truckee-Carson Irrigation District later constructed another small plant on one of the project's canals.

John Kramer



Sierra Pacific Power Company's thermal power plant at Tracy, downstream from Sparks, provides a major contrast to the turn-of-the-century hydroplants upstream. This plant uses river water for cooling purposes.

¹ The Washoe Plant is not presently operational. Its capacity has been estimated based on its possible rehabilitation.

Recreational Water Use

The Truckee River region is well known for its water-based recreation and for its scenic values. Numerous small alpine lakes on U.S. Forest Service land surrounding Lake Tahoe provide destinations for day hikes or back-packing trips. One popular destina-

tion, for example, is the trail leading from Fallen Leaf Lake to Glen Alpine Falls, which also provides access to the eastern edge of Desolation Wilderness. The Pacific Crest Trail passes through the Sierras on the west side of Lake Tahoe. Pyramid Lake, at the other end of the Truckee River, offers scenic beaches in a desert environ-

ment, with a striking assortment of tufa formations surrounding the lake. Recreational opportunities between these two points include a riverside bicycle path in the canyon below Tahoe City and a series of municipal parks along the river in Reno and Sparks.

Lake Tahoe, easily the most popular recreational destination in the watershed, provides amenities ranging from marinas to historic lakeside mansions to lake cruises to miles of beaches. All of the federal reservoirs provide facilities such as campgrounds, day use areas, and boat ramps. Fishing is popular at the lakes and reservoirs and along the river. Favorite fly fishing locations include the Little Truckee River and the mainstem Truckee in Martis Valley. Fishing for Lahontan cutthroat trout is a major activity at Pyramid Lake.¹ Rafting is possible on a short stretch of the river below Lake Tahoe Dam, when flows permit. Washoe Lake is a popular destination for boaters.



John Kramer

The Truckee River offers a variety of recreational opportunities.

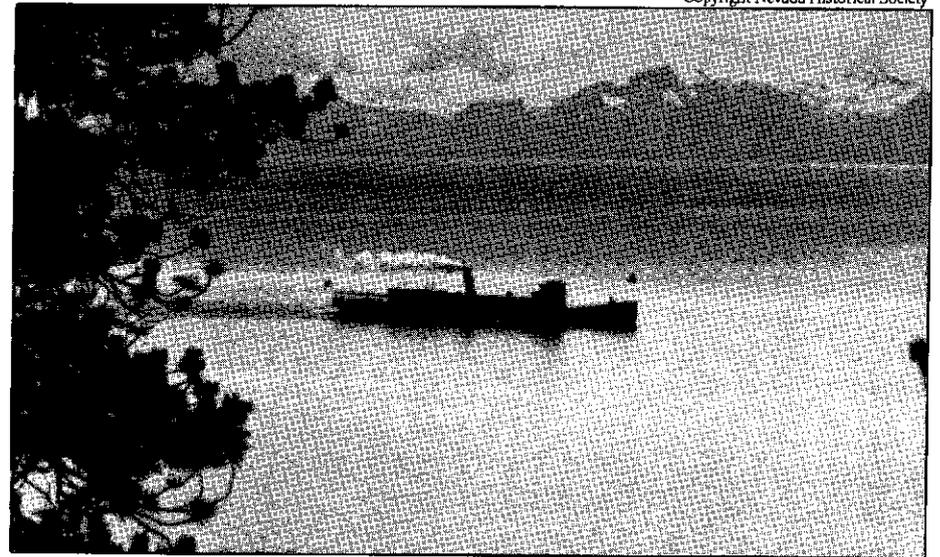
¹ Fishing at the lake requires a tribal permit, which can be obtained at the small communities around the lake.

Early Sierran Recreation

Webber and Independence lakes were once on a stagecoach route that traversed part of the Little Truckee River's drainage area. (Hennes Pass, just west of Webber Lake, was an important, heavily traveled passageway through the Sierras, as would-be miners and settlers moved westward toward California's goldfields and the Central Valley.) Both lakes were, at one time, resorts with hotels; hunting and fishing figured prominently in their use. Dan De Quille has provided the following early description of the charms of Independence Lake.

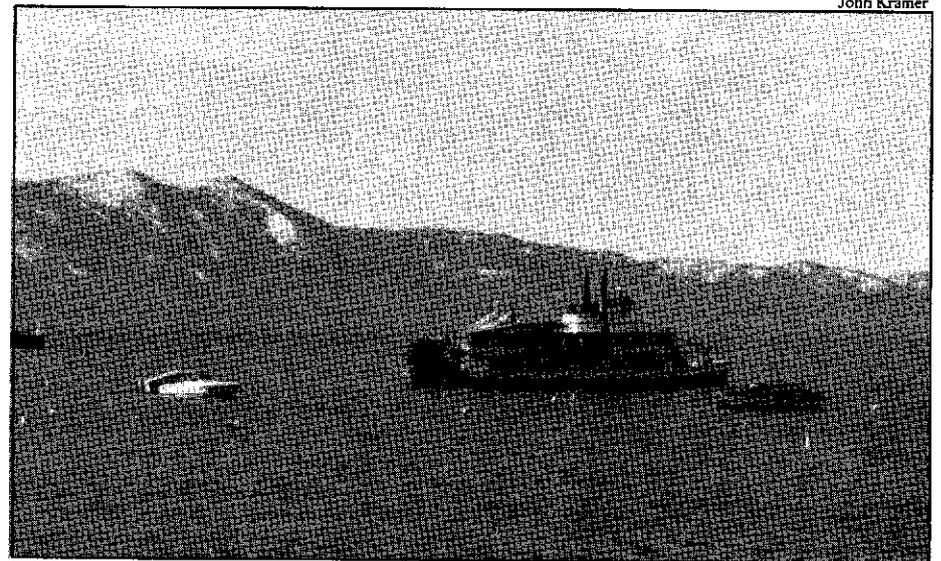
This beautiful lake is nineteen miles distant from Truckee, and is reached by stage or carriage. It is three miles long and three-quarters of a mile wide. The lake was named by Lola Montez (when a resident of Grass Valley, California) on the occasion of a visit to it on a picnic excursion, July 4, 1853. It is held up toward the heavens to a height of 7,000 feet by a circle of grand old peaks. It is very deep, and in places has never been fathomed. Owing to its great depth, the lake is supposed to occupy an extinct volcanic crater, whereas Donner Lake was formed by a moraine deposited across the valley by a glacier. The lake is alive with trout of a peculiar species, a good deal resembling brook trout, and for which they are often sold. The surrounding scenery is as wildly beautiful as the imagination can picture....

There is a hotel at the lake and good accommodations of all kinds. Bear, deer, and grouse are to be found in the chaparral, mountain glades, and pine forests.



The Tahoe Steamer crossing Lake Tahoe. Steamships such as this one carried summer visitors to the lakeshore resorts.

John Kramer



This modern version of a paddle-wheel steamer carries tourists on cruises of Lake Tahoe.

Snowmaking, although not a common recreational water use in other areas, is important to the winter sports industry in this region. The ski resorts pump water, often from a ground water source, through a specially designed nozzle to make artificial snow. Artificial snow supplements natural snowfall to enhance coverage on ski

runs, especially at the beginning and ending of the season. Snowmaking equipment allows the resorts to provide skiers with a longer recreational season.

Use of water for snowmaking on the California side of the watershed, where most of the larger alpine ski resorts make snow, has

been on the order of 1,000 acre-feet per year. This amount is expected to increase in the future; several of the resorts are enlarging their snowmaking capacity. Special provisions on the use of water for snowmaking in the settlement act attest to the local importance of this recreational use.

Fish and Wildlife Water Use

Water is a component of the region's ecosystem and supports habitat used by a variety of species. The habitat provided can take the form of wetlands and riparian areas or stream and lake environments.

The major upstream storage reservoirs in the watershed are operated to provide specified minimum releases for instream flow purposes, which include support of fish life. Some reservoirs, such as Prosser Creek and Stampede, are operated wholly or in substantial part to provide water for fishery needs.

Most of the attention on quantifying fishery water needs in the basin has focused on the Lahontan cutthroat trout and cui-ui in Pyramid Lake because of their listing under the Endangered Species Act.¹ The settlement act mandates continued effort by the U.S. Fish and Wildlife Service on the recovery plans for these species. Pyramid



Sierra Pacific Power Company

Habitat along the edge of two contrasting plant communities — in this case, forest and riparian meadow — supports a great diversity of wildlife.

¹ Lahontan cutthroat trout are also found in Independence Lake in California.

Lake is also the site of the only national wildlife refuge in the basin — Anaho Island National Wildlife Refuge, home to a colony of American white pelicans. The issue of lake levels is important to the pelicans because a land bridge to the shore would be formed at very low lake levels, allowing predators access to the nesting area.

Studies of instream flow needs for a fishery normally include factors in addition to quantities of water, such as timing of flows or minimum temperatures. The Preliminary Settlement Agreement is an example of flow timing, with water that otherwise could have reached Pyramid Lake throughout the year being, instead, stored upstream to provide high flows during the spawning season. The subject of studies to revegetate the lower river above Pyramid is an example of temperature concerns; shading the riverbed could help reduce temperatures in the spawning area and improve the spawning habitat.

Instream needs can also be met by exploring other methods to manage the resources. Tahoe Regional Planning Agency has proposed, for example, that municipal water users who divert surface water from the small tributaries to Lake Tahoe instead divert directly from the lake, where impacts would be negligible. Thus, more water would remain to support fish life in

the small tributaries, which are more sensitive to these impacts, especially in low-flow summer months.

Negotiation of the Truckee River operating agreement will be accompanied by additional studies on instream flow needs and changing river operations to seek the best balance in the use of the resource.

Sierra Pacific Power Company



Meadow environments provide habitat used by the region's deer population.



The American white pelicans that live on Anaho Island, in Pyramid Lake.

River Operations

The uses described in this chapter cannot be met unless the river and reservoirs are controlled and operated to ensure that water rights and regulatory requirements are satisfied. A complex mixture of regulations, agreements, and other requirements govern the day-to-day manner in which the river is operated. Each reservoir owner/

operator and each diverter of surface water covered in the decrees must comply with their provisions, as well as with the provisions of water rights issued by the states. To help assure compliance with the federal court decrees, the court has appointed a watermaster to monitor the diversions made by the decrees' water right holders and to administer the reservoir operations aspects of the Truckee River Agreement.

The following list summarizes the purposes of some key requirements for river operation.

- » The Truckee River General Electric Decree contains constraints on operation of Lake Tahoe.
- » The Truckee River Agreement covers operation of upstream reservoirs (other

than Martis Creek Reservoir) to meet water rights covered in the Orr Ditch Decree.

- » The Tahoe-Prosser Exchange Agreement supplements the Truckee River Agreement with regard to these two reservoirs.
- » California water right permits or licenses specify amounts of water that may be stored in the reservoirs and may specify minimum instream flow releases below reservoirs.
- » The OCAP prescribes the timing and amount of Truckee Canal diversions at Derby Dam.
- » The agreement among Truckee-Carson Irrigation District, Sierra Pacific Power Company, and the Donner Lake Company limits the times when water can be withdrawn from the lake.
- » U.S. Army Corps of Engineers flood control criteria govern operation of the federal reservoirs, except Lake Tahoe, for flood control during winter months.

» California dam safety requirements regulate maximum storage levels in the privately owned Donner and Independence lakes.

These upstream reservoirs are operated to serve only Nevada water users;¹ hence, the demands on the river system begin at the western edge of the Truckee Meadows area and extend downstream to Pyramid Lake.

In general, the concept of river operations is based on estimating the timing and amounts of downstream demands over some period (*e.g.*, annually), forecasting the water supply expected to be available, and then proposing a schedule of water deliveries to meet the demands. This scheduling process begins early in the water year;² schedules are revised and updated as the year progresses and better



Sierra Pacific Power Company

Instream flow requirements in California are set by the State Water Resources Control Board as part of the water right application process.

- 1 Lake Tahoe is the only reservoir from which California water users make diversions. The lake has historically been operated on the basis of net outflow, ignoring both states' diversions in its drainage area, because these diversions are so small in comparison to lake outflow.
- 2 The term "water year" used in this atlas means the period from October 1 through September 30, commonly used to characterize the precipitation and water supply in one hydrologic cycle.

estimates of runoff can be made. Peak water demands occur in the summer, when higher municipal use is combined with irrigation needs.

Considerations that go into the scheduling process vary with the water user. A municipal water purveyor requires a high reliability in its water supply and must balance the amount of water it can deliver in the current year against the need to carry over adequate water in storage for the next year, particularly under drought conditions. An agricultural water user can tolerate a more variable supply by adjusting acreage irrigated and cropping patterns.

Truckee River water users downstream of Lake Tahoe in Nevada obtain their water from direct diversion of unstored water, from releases from the upstream reservoirs, or from a combination of the two. Sierra Pacific Power Company's early priority right of 40 cfs is an example of a right met from direct diversion. Lake Tahoe also provides water for Newlands Project users, whose rights are met primarily from stored water.

Floriston rates, in contrast, are met by a combination of natural flow and releases from storage. These rates originated as a

turn-of-the-century flow requirement for run-of-the-river users — hydropower and a pulp and paper mill. Meeting Floriston rates remains the chief operational objective on the Truckee River today. Stored water in Lake Tahoe and Boca Reservoir is

used to “make rates”, as specified in the Truckee River Agreement, when the river's natural flow alone does not suffice.¹

The following sections highlight some key operational aspects for each reservoir.

DWR Photo 1132-5



Low water conditions at Lake Tahoe. This photo was taken from near the dam, looking upstream at the trickle of water that constitutes the lake's outflow.

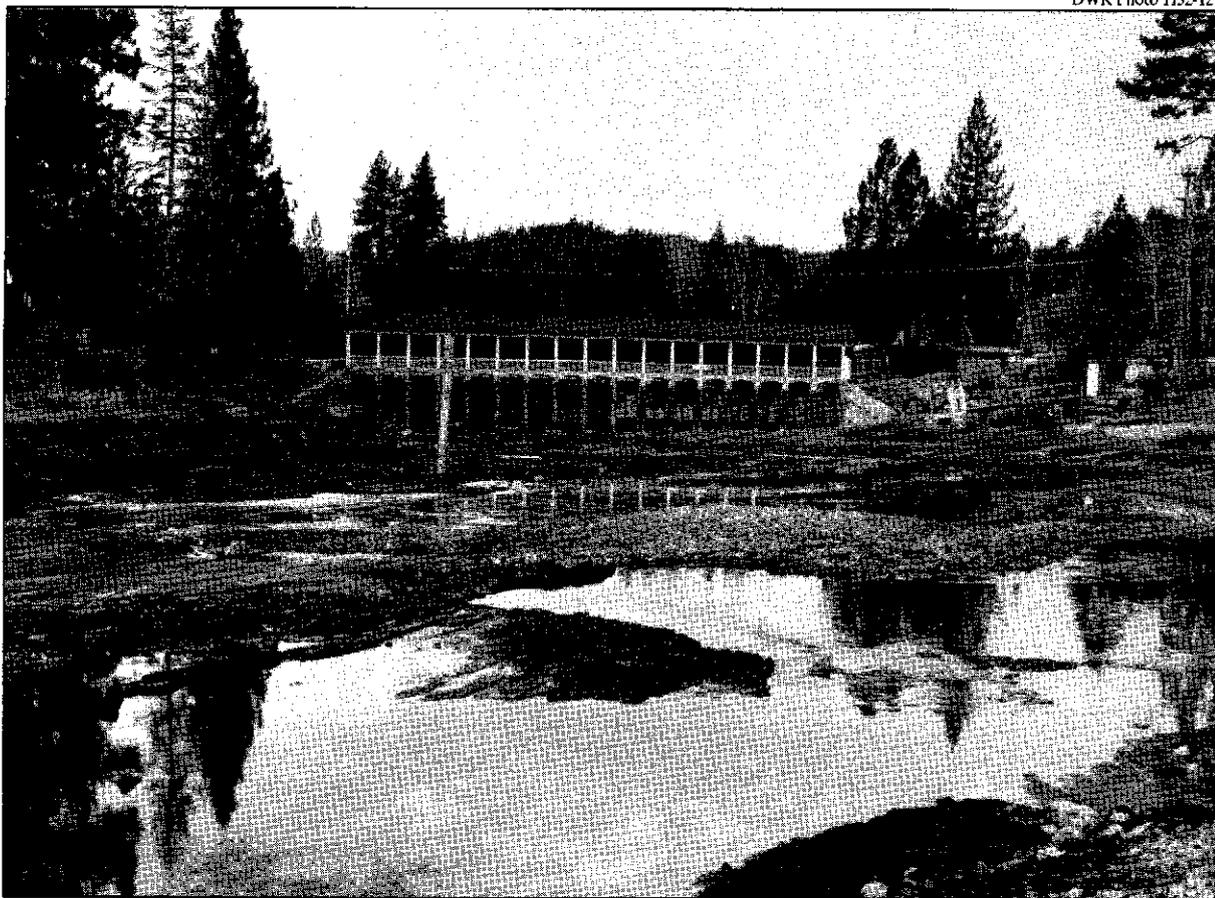
¹ Water released to meet Floriston rates actually satisfies other uses besides hydropower — agricultural users are a prime beneficiary — under a complicated set of provisions contained in the Agreement.

Lake Tahoe

As snowmelt runoff begins to enter Lake Tahoe in the spring, forecasts are made to estimate the amount the water surface elevation is expected to rise. Water is stored only in the top 6.1 feet, from elevation

6,223 (natural rim) to elevation 6,229.1,¹ in accordance with procedures negotiated in the Truckee River Agreement to specify the extent of lake level fluctuations. If factors such as snowpack water content and precipitation suggest that lake levels would

DWR Photo 1132-12



An upstream view of Lake Tahoe Dam under low water conditions.

rise above the maximum permitted storage elevation, water is released from the lake so storage will not exceed elevation 6,229.1. In a dry year, of course, these precautionary drawdowns are not necessary, and as much water as possible is retained in the lake. This operation is intended to limit high-water damage to shoreline property. As a practical matter, releases from Lake Tahoe during a flood must be monitored to ensure that damage downstream of the reservoir is minimized. At this time, releases of at least 2,200 cubic feet per second can be made without causing downstream flooding.

Releases to meet downstream demands generally begin later in the year, when the river's natural flow is no longer enough to meet Floriston rates and when the irrigation season begins. Floriston rates vary with the lake's elevation; in drier years, the rates are lower so a release from the lake can be maintained for a longer period than it would otherwise.

In normal water years, there is enough water in the lake to meet typical downstream demands throughout the year, including a minimum instream flow for the fishery of 50 or 70 cubic feet per second, depending on the time of year. In extended

¹ Operating elevations shown here are based on a local datum specified in the agreement, not the U.S. Geological Survey datum.

dry periods, such as the late 1980s and early 1990s, there is not enough water in the lake to satisfy downstream users, and the lake drops below its natural rim beginning in the fall.

Under the Floriston rate method of operation, rates are maintained until water is physically no longer available; there is no requirement to conserve water in the upstream reservoirs (although rates may be waived if the affected water rights holders all agree).

In this century, Lake Tahoe has fallen below its rim several times — including a little over a foot¹ below the rim during the drought in the 1930s and slightly lower in early 1991. The lake was last pumped to supply downstream users during the drought of the 1920s and early 1930s.

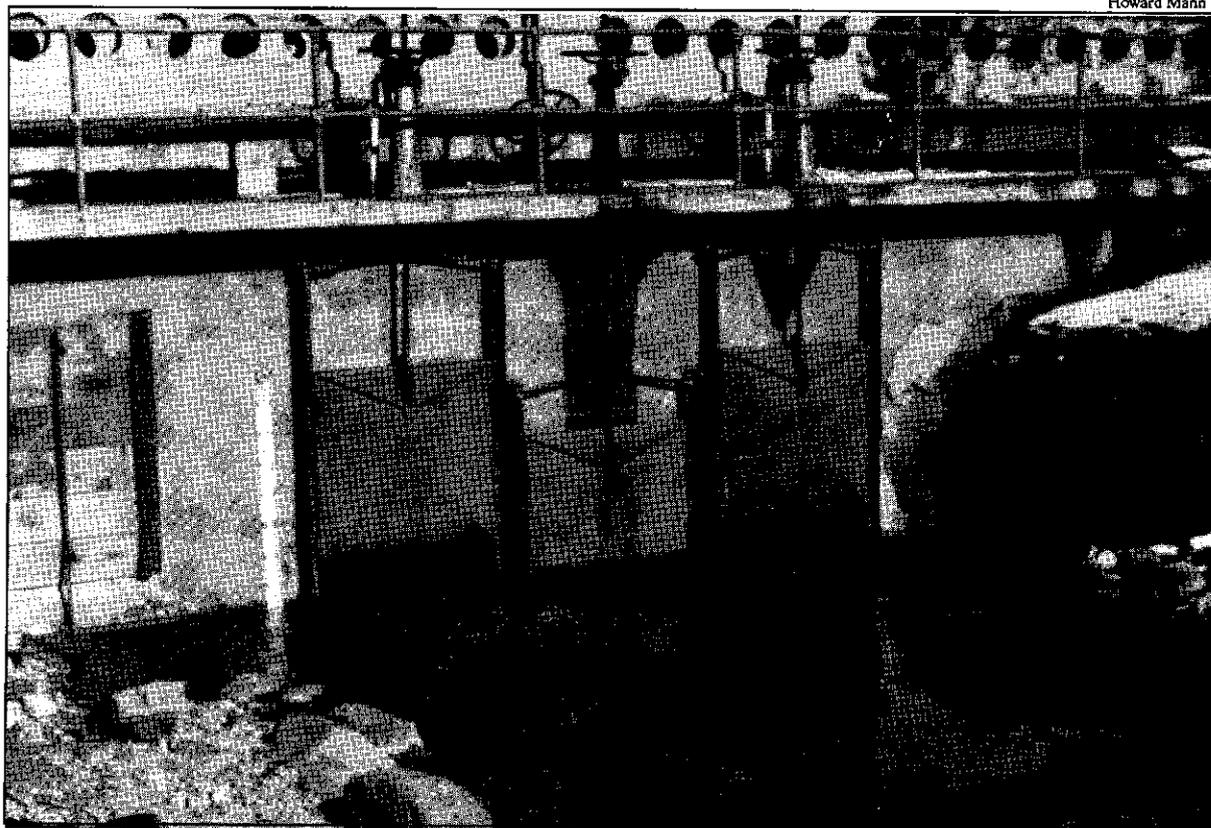
The subject of pumping the lake for downstream water supply is expected to be revisited in negotiations for the Truckee River operating agreement, with full consideration of today's environmental requirements that were not in force at the time the Truckee River Agreement was signed.

Donner and Independence Lakes

Water in both of these reservoirs is considered privately owned stored water under terms of the Truckee River Agreement,

meaning (among other things) its release is not required to meet Floriston rates. There are no federal flood control requirements for either reservoir.

Howard Mann



A close-up of the outlet works on Donner Lake Dam. Note the three control valves used to operate the gates. Similar valves are used to operate the 17 gates on Lake Tahoe Dam, but those valves cannot be seen in the photos on pages 15 and 89 because the wooden structure has been constructed to protect the valves from vandalism and from the weather.

¹ One foot of elevation in the lake is usually taken as equivalent to 120,000 acre-feet of storage.

Operation of Donner Lake is constrained by two factors in addition to its water rights:

- » California dam safety provisions requiring that the lake be drawn down to a specified elevation during the flood season.
- » Terms of the purchase agreement with the Donner Lake Company limiting withdrawals from the reservoir during the summer recreation season.

A minimum instream flow release of 2 cubic feet per second is required.

Water rights are the chief constraint on operation of Independence Lake. The first 3,000 acre-feet of storage rights in the reservoir have an early priority, allowing them to be satisfied in most years. The rest of the reservoir's 17,500-acre-foot storage capacity has more junior rights, and diversions to storage can be made only when senior rights have been met. An instream flow release of at least 2 cubic feet per second is required from Independence.

Flooding in Reno

The Truckee River runs through the heart of downtown Reno, providing a riparian setting for a series of municipal parks. Visitors may notice the numerous bridges spanning this stretch of the river. Efforts to improve flood protection were underway as early as the 1930s, when Depression-era Works Project Administration funding was used to construct some of the concrete floodwalls in the downtown area.

The primary type of floods, aside from local cloudbursts, occur either from spring snowmelt or from winter rains. The snowmelt floods, characterized by large volumes of water spread over a relatively long period, can normally be controlled by the upstream reservoirs so that channel capacities in the Reno area are not exceeded. The rain floods produce high peak flows over a few days time, and have a greater damage potential. The decade of the 1950s saw a number of memorable floods in Reno, including a 1955 rain flood with a peak flow of 20,800 cfs, the largest of record to date.

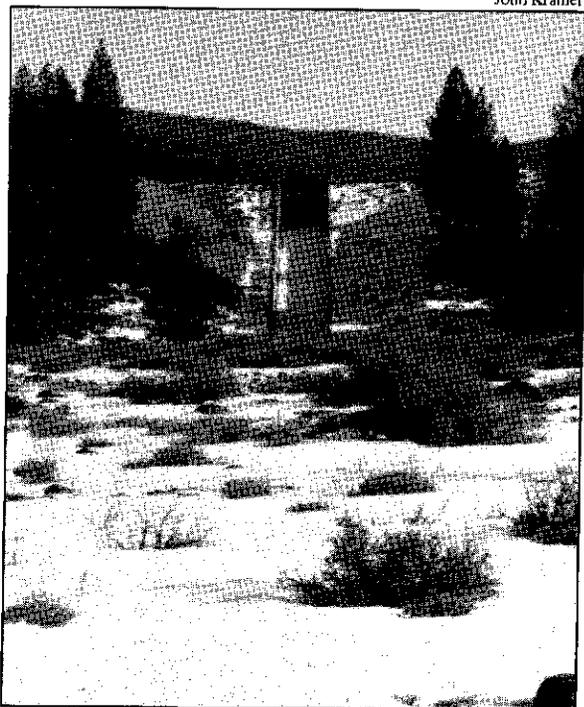
The many small bridges in the downtown area tend to exacerbate flooding problems, because flood-borne debris becomes entangled in the bridge piers, reducing channel capacity and causing the water to flow into the streets. The Corps of Engineers began some channel improvements to the river in the 1960s, followed by work in the 1970s by the City of Reno to increase channel capacity in the downtown area to 14,000 cfs.

Martis Creek Reservoir

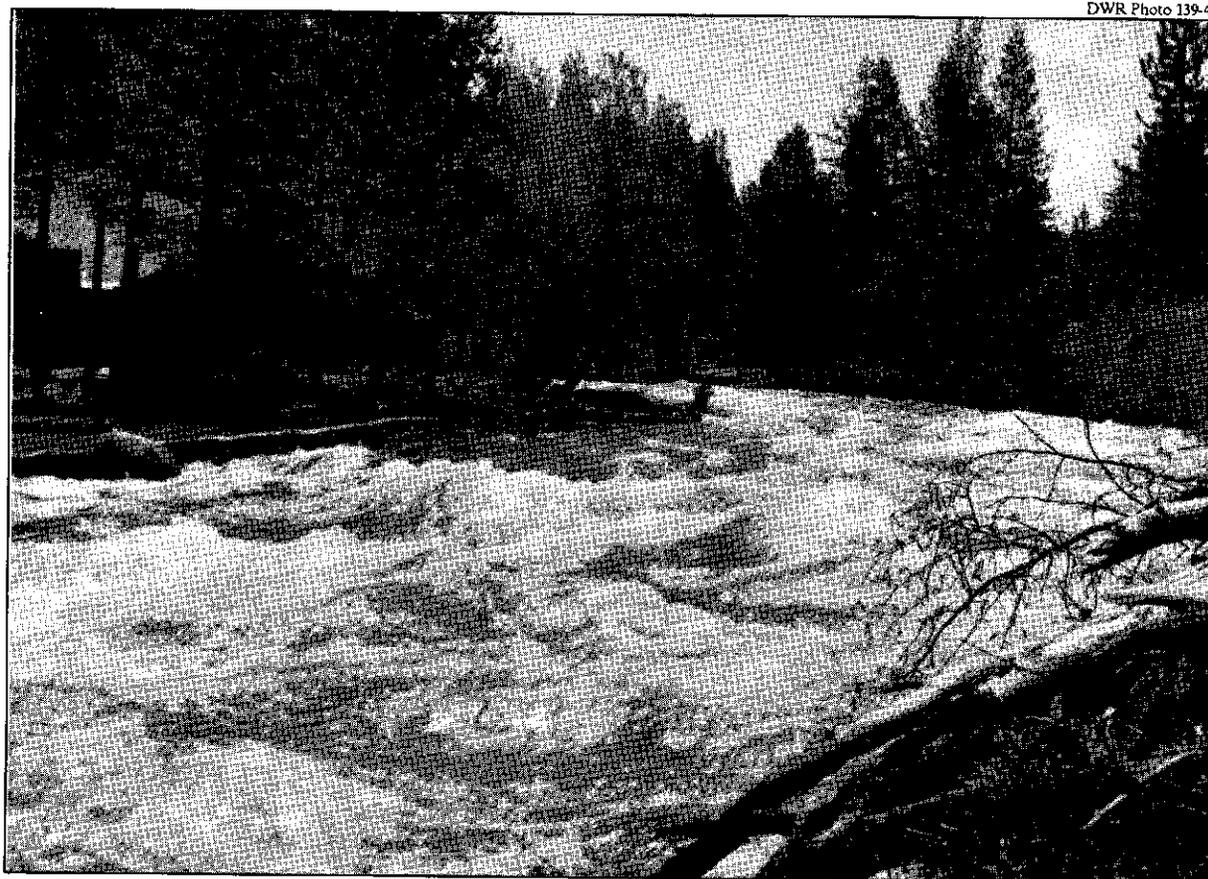
Martis Creek Reservoir serves only flood control purposes and, thus, normally retains a small minimum pool most of the year; streamflow is simply passed through the reservoir without being stored.

U.S. Army Corps of Engineers flood control procedures govern the combined operation of Martis Creek, Stampede, Boca, and Prosser Creek reservoirs for downstream flood protection in the winter. Up to 65,000 acre-feet of capacity in the four

John Kramer



Floodflows at Martis Creek Reservoir are released through this spillway.



The Truckee River at flood stage below Tahoe City, with a release from the Lake Tahoe Dam of 1,800 cubic feet per second.

reservoirs combined will be held in reserve to accommodate potential floodflows. All of Martis's 20,400 acre-foot capacity is available for this use; the remaining space is allocated among the other reservoirs, and inflows that encroach into the flood control reservation must be released.

During a flood, releases will be made to limit (to the extent possible) flows in the Reno area to the channel capacity of 14,000 cubic feet per second. If possible, flows will be limited to 6,000 cfs, which is the nominal channel capacity in the Truckee Meadows below Reno.

The Corps of Engineers is improving flood protection in this area and intends to provide channel improvements to increase the capacity to 14,000 cfs throughout the Truckee Meadows.

Prosser Creek Reservoir

Up to 20,000 acre-feet of the capacity of Prosser Creek Reservoir is reserved for flood control in winter months. The reservoir may begin filling at the end of the flood control season. The Tahoe-Prosser Exchange Agreement provides that a portion of the water stored in Prosser may be used to meet Floriston rates, in lieu of making such releases from Tahoe, when the water is available under specified conditions. Water that would otherwise have been released from Tahoe is then held in storage to make the 50 or 70 cfs instream flow releases to support fish life below Lake Tahoe.

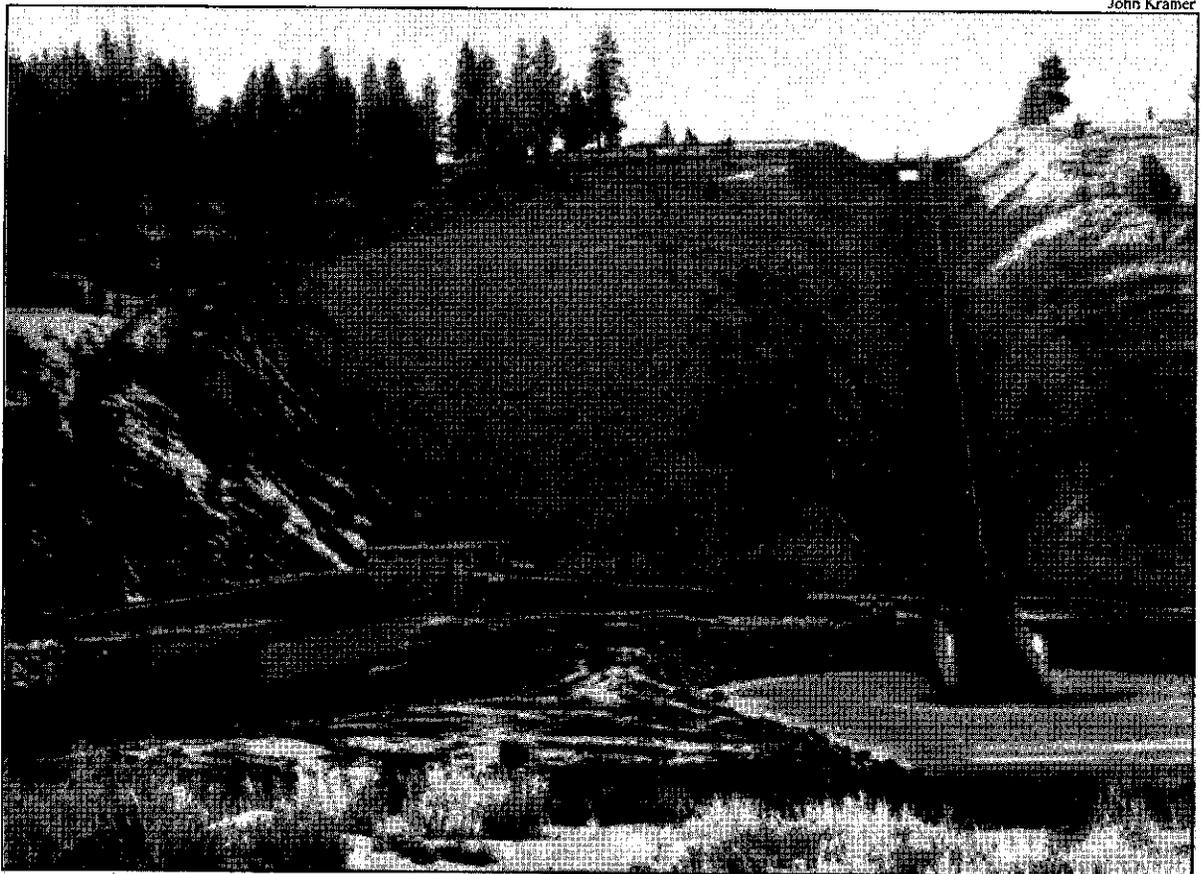
Historically water stored in Prosser in addition to that needed to support Floriston rates has been known as "uncommitted water", because the U.S. Bureau of Reclamation had not contracted for its use; the Tahoe-Prosser Exchange Agreement specifies that only evaporation of exchange water is charged against the uncommitted water. In the past, uncommitted water has been used by both irrigators and Pyramid

Lake. The settlement act directs the Secretary of the Interior to use this uncommitted water as may be required by the Endangered Species Act for the Pyramid Lake fishery, consistent with the operating agreement to be negotiated.

A minimum instream flow release of 5 cfs is required below Prosser.

Stampede Reservoir

Although Stampede is the second largest reservoir on the river system, it seldom fills because its water rights are relatively junior. Flood control regulation requires a maximum of 30,000 acre-feet of storage to be maintained in Stampede and Boca reservoirs combined, most of which is provided in Stampede.



The spillway at Stampede Dam.

The settlement act reinforced the Secretary of the Interior's earlier decision to use the water in Stampede for the benefit of endangered species by making such use mandatory, again consistent with the operating agreement.

The U.S. Bureau of Reclamation, in conjunction with the U.S. Fish and Wildlife Service, has operated Stampede to provide high flows in late spring, when the cui-ui spawn. All cui-ui do not spawn every year, but they tend to spawn in larger numbers in some years than in others. Factors influencing the number of spawners are not well understood; large freshwater inflows to Pyramid Lake or water temperature are possible triggers. Water is not released from Stampede every year for spawning, but is conserved for those years when a large spawn appears likely.

The Settlement Act provides that the Bureau of Reclamation may enter into an interim agreement with Sierra Pacific Power Company and the Pyramid Tribe to store up to 5,000 acre-feet of municipal water in Stampede until the new operating agreement takes effect.

Stampede provides a minimum instream flow release of 30 cfs.

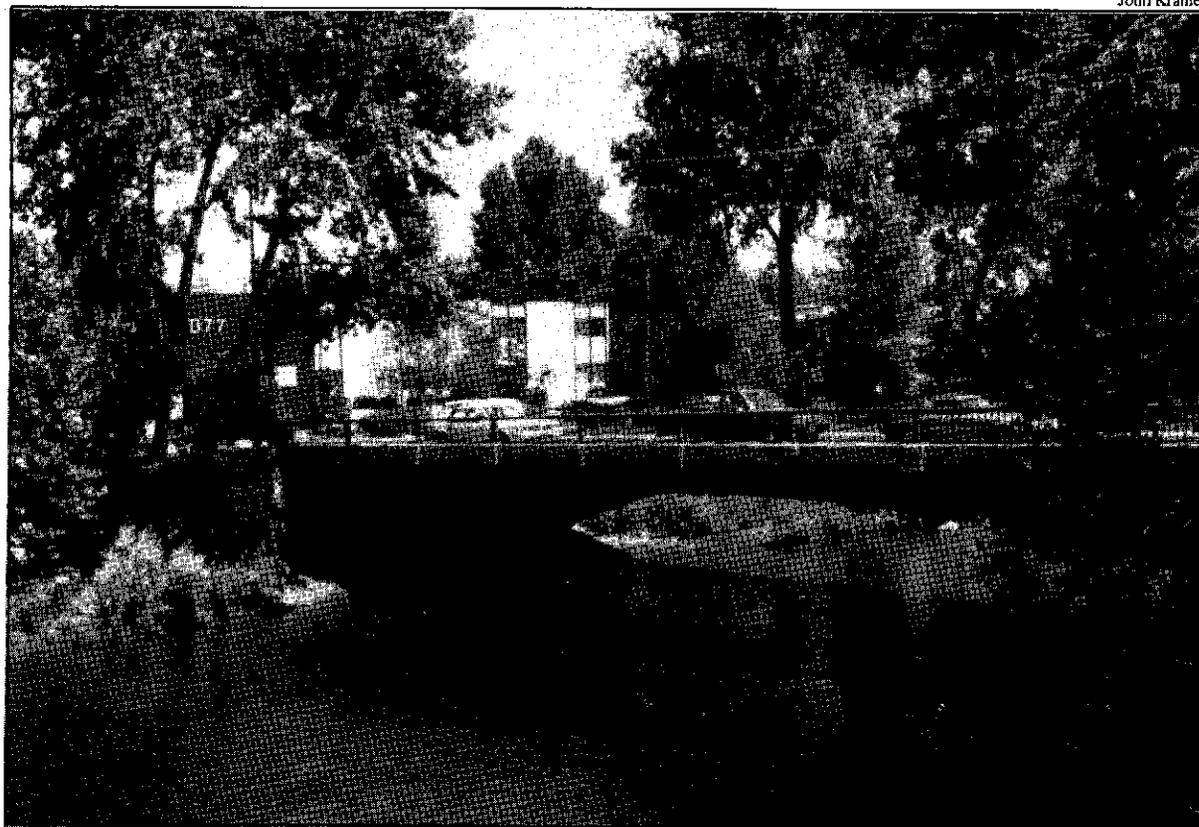
Boca Reservoir

Storage in Boca Reservoir is used to support Floriston rates and to provide a share (with Stampede Reservoir; see above) of the required flood control capacity.

The Truckee River Agreement allocates the water right priority of filling Boca and

making releases to serve downstream users under a complicated formula based on time of year and category of water right. Since Boca is directly downstream from Stampede, Boca must also be operated to pass Stampede releases when necessary. There is presently no instream flow requirement below Boca.

John Kramer



The many bridges crossing the Truckee River in downtown Reno tend to restrict channel capacity during large floods.

Derby Diversion Dam

Derby Diversion Dam stores no water; its purpose is to regulate the amount of flow diverted into the Truckee Canal for the Newlands Project. The U.S. Bureau of Reclamation's OCAP established methods for calculating the amount of diversions, based on the concept of maximizing use of Carson River water for the Newlands Project and minimizing export of Truckee River water. Factors entering into the calculations include time of year, target storage in Lahontan Reservoir, and projected agricultural demands. Historically, the OCAP has also contained incentive provisions to encourage efficiency of the Newlands Project by allowing irrigators to store in Lahontan Reservoir a portion of the water saved if targeted efficiencies were exceeded.

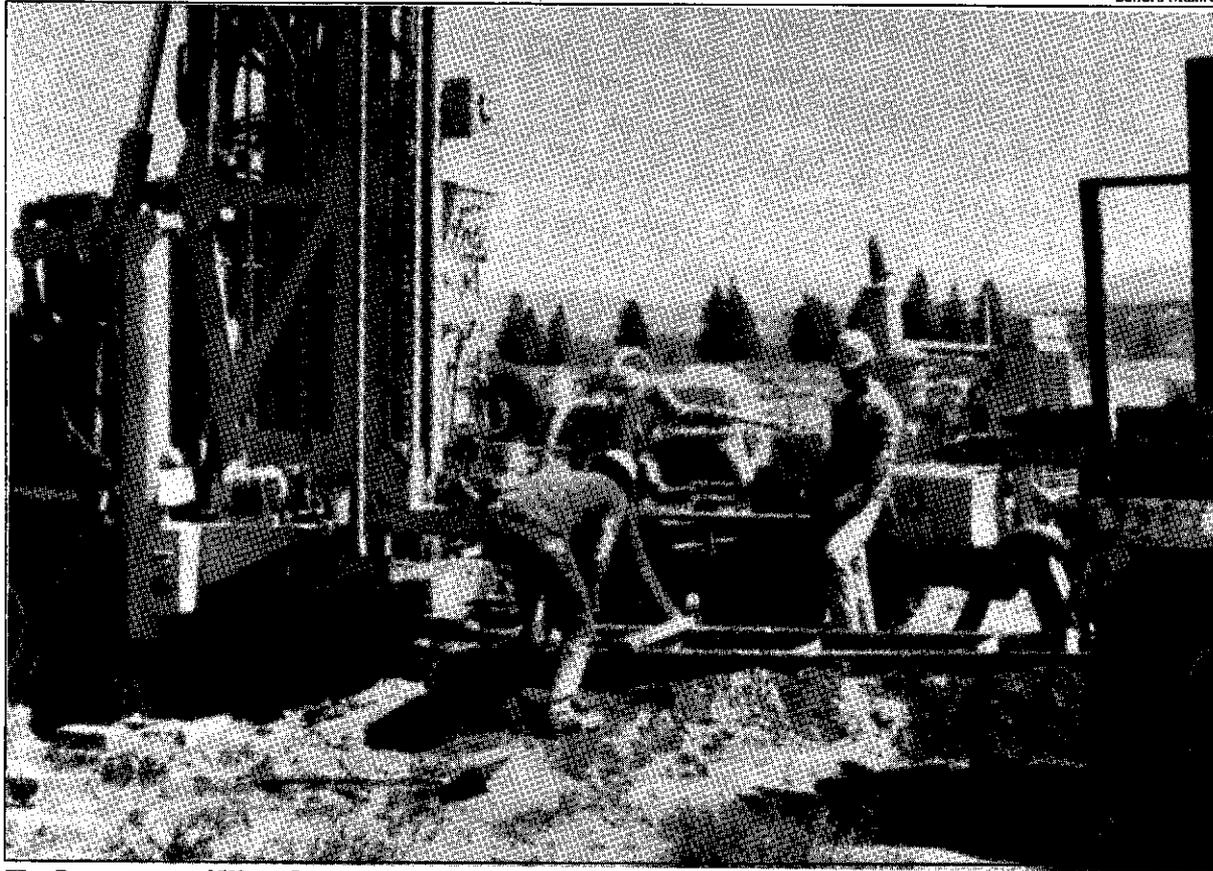
California's Public Trust Doctrine

*One example of changes in water allocation policies with changing social values lies in application of the public trust doctrine in California. A well-known 1983 State Supreme Court decision, *National Audubon Society v. Superior Court*, covered the application of public trust concepts to water rights administered by the State Water Resources Control Board. These concepts include balancing public trust uses of water (e.g., instream flows) against typical consumptive uses of water during the water rights application process. Additionally, the state retains continuing control over use of appropriated water and may reconsider the effect of past allocation decisions on public trust uses. This doctrine is now being used in many administrative and court water rights actions in California. One example is the recent series of court cases surrounding Mono Lake.*

River Operations in the Future

Negotiation of a new Truckee River operating agreement is expected to create changes in the methods of regulating the river, reflecting altered priorities for use of this limited resource. Goals of the agreement include better coordination of use of existing reservoirs to meet social and environmental needs and other objectives established in the settlement legislation. One of these objectives is to implement the Preliminary Settlement Agreement between the Pyramid Tribe and Sierra Pacific Power Company, together with any necessary environmental mitigation agreements.

The Preliminary Settlement Agreement would use existing water rights to create a system of municipal and fishery credit water under a series of rules governing the amount of credit water that could be established, its use, and how it could be stored. Tracking this credit storage and associated concepts would be handled by a complex accounting system covering water exchanges, evaporation losses, flood control releases, and other factors affecting the amounts of stored water. Although the possibility to create credit storage, under either the Preliminary Settlement Agreement or the operating agreement, could be pursued in any of the upstream federal reservoirs with appropriate negotiations,



The Department of Water Resources has installed piezometers in the Martis Valley area as part of a long-term program to monitor ground water levels. Interstate water allocations limit pumpage in this area.

Stampede Reservoir remains a prime location. Stampede's large capacity and relatively junior water rights result in excess storage space in normal years, implying that credit water stored there is less likely to spill in event of a required flood control drawdown.

The Preliminary Settlement Agreement also imposes, between its two signatories, additional conditions on pumping water for municipal use from Lake Tahoe, under what the agreement refers to as "worse than critical drought period". This and other provisions in the agreement will not take effect until a number of contingencies

have been met, including dismissal of pending litigation and final approval of the operating agreement.

The philosophy behind the Preliminary Settlement Agreement between the Pyramid Lake Paiute Tribe and Sierra Pacific Power Company reflects an awareness that there is no new water in this system and that changes in use will have to come from re-allocation of existing water or water rights or from changes in their management.

Timing of reservoir releases can be almost as important as magnitude of the release; river operation often becomes the art of establishing the most beneficial timing. Better coordination of releases from multiple reservoirs can provide for more efficient use of available water. Better understanding and quantification of the system's environmental needs and their timing — instream flow needs and needs of the fishery at Pyramid Lake — will also help in establishing goals for operation.

Preliminary work leading to the operating agreement negotiations is already underway. The Department of Water Resources is continuing to move forward with the engineering and environmental studies that will be necessary to support the negotiations.

APPENDIXES

Appendix 1. Public Law 101-618

Appendix 2. Preliminary Settlement Agreement

Appendix 3. Sources of Further Information

Appendix 1
PUBLIC LAW 101-618

An Act to provide for the settlement of water rights claims of the Fallon Paiute Shoshone Indian Tribes and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I--FALLON PAIUTE SHOSHONE TRIBAL SETTLEMENT ACT

SEC. 101. SHORT TITLE.

This Act may be cited as the "Fallon Paiute Shoshone Indian Tribes Water Rights Settlement Act of 1990".

SEC. 102. SETTLEMENT FUND.

(A) There is hereby established within the Treasury of the United States, the "Fallon Paiute Shoshone Tribal Settlement Fund", hereinafter referred to in the Act as the "Fund".

(B) There is authorized to be appropriated to the Fallon Paiute Shoshone Tribal Settlement Fund \$3,000,000 in fiscal year 1992, and \$8,000,000 in each year for fiscal years 1993, 1994, 1995, 1996, and 1997 for a total sum of \$43,000,000.

(C)(1) The income of the Fund may be obligated and expended only for the following purposes:

(a) Tribal economic development, including development of long-term profit-making opportunities for the Fallon Paiute Shoshone Tribes (hereinafter referred to in the Act as "Tribes") and its tribal members, and the development of employment opportunities for tribal members;

(b) Tribal governmental services and facilities;

(c) Per capita distributions to tribal members;

(d) Rehabilitation and betterment of the irrigation system on the Fallon Paiute Shoshone Indian Reservation (hereinafter referred to in the Act as "Reservation") not including lands added to the Reservation pursuant to the provisions of Public Law 95-337, 92 Stat. 455;

(e) Acquisition of lands, water rights or related property interests located outside the Reservation from willing sellers, and improvement of such lands;

(f) Acquisition of individually-owned land, water rights or related property interests on the Reservation from willing sellers, including those held in trust by the United States.

(2) Except as provided in subsection (C)(3) of this section, the principal of the Fund shall not be obligated or expended.

(3) In obligating and expending funds for the purposes set forth in subsections (C)(1)(d), (C)(1)(e) and (C)(1)(f) of this section, the Tribes may obligate and expend no more than 20 percent of the principal of the Fund, provided that any amounts so obligated and expended from principal must be restored to the principal from repayments of such amounts expended for the purposes identified in this subsection, or from income earned on the remaining principal.

(4) In obligating and expending funds for the purpose set forth in subsection (C)(1)(c), no more than twenty percent of the annual income from the Fund may be obligated or expended for the purpose of providing per capita payments to tribal members.

(D) The Tribes shall invest, manage, and use the monies appropriated to the Fund for the purposes set forth in this section in accordance with the plan developed in consultation with the Secretary under subsection (F) of this section.

(E) Upon the request of the Tribes, the Secretary shall invest the sums deposited in, accruing to, and remaining in the Fund, in interest-bearing deposits and securities in accordance with the Act of June 24, 1938, 52 Stat. 1037, 25 U.S.C. 162a, as amended. All income earned on such investments shall be added to the Fund.

(F)(1) The Tribes shall develop a plan, in consultation with the Secretary, for the investment, management, administration and expenditure of the monies in the Fund, and shall submit the plan to the Secretary. The plan shall set forth the manner in which such monies will be managed, administered and expended for the purposes outlined in subsection (C)(1) of this section. Such plan may be revised and updated by the Tribes in consultation with the Secretary.

(2) The plan shall include a description of a project for the rehabilitation and betterment of the existing irrigation system on the Reservation. The rehabilitation and betterment project shall include measures to increase the efficiency of irrigation deliveries. The Secretary may assist in the development of the rehabilitation and betterment project, and the Tribes shall use their best efforts to implement the project within four years of the time when appropriations authorized in subsection (B) of this section become available.

(3) Upon the request of the Tribes, the Secretary of the Treasury and the Secretary of the Interior shall make available to the Tribes, monies from the Fund to serve any of the purposes set forth in subsection (C)(1) of this section, except that no disbursement shall be made to the Tribes unless and until they adopt the plan required under this section.

(G) The provisions of section 7 of Public Law 93-134, 87 Stat. 468, as amended by section 4 of Public Law 97-458, 96 Stat. 2513, 25 U.S.C. 1407, shall apply to any funds which may be distributed per capita under subsection (C)(1)(c) of this section.

SEC. 103. ACQUISITION AND USE OF LANDS AND WATER RIGHTS.

(A) Title to all lands, water rights and related property interests acquired under section 102(C)(1)(e) within the counties of Churchill and Lyon in the State of Nevada, shall be held in trust by the United States for the Tribes as part of the Reservation, provided that no more than 2,415.3 acres of such acquired lands and no more than 8,453.55 acre feet per year of such water rights shall be held in trust by the United States and become part of the Reservation under this subsection.

(B) Any lands acquired under section 102(C)(1)(e) or (f) shall be subject to the provisions of section 20 of the Act of October 17, 1988, 102 Stat. 2485.

(C)(1) Total annual use of water rights appurtenant to the Reservation which are served by the Newlands Reclamation Project, including Newlands Reclamation Project water rights added to the Reservation under subsection (A) of this section, whether used on the Reservation or transferred and used off the Reservation pursuant to applicable law, shall not exceed the sum of:

(a) 10,587.5 acre feet of water per year, which is the quantum of water rights served by the Newlands Reclamation Project appurtenant to the Fallon Paiute Shoshone Indian Reservation lands that are currently served by irrigation facilities; and

(b) the quantum of active Newlands Reclamation Project water rights currently located outside of the Reservation that may be added to the Reservation or water rights which are acquired by the Secretary and exercised to benefit Reservation wetlands.

(2) The requirements of section 103(C)(1) shall not take effect until the Tribes agree to the limitations on annual use of water rights set forth in subsection (1) of this section.

(D) The Secretary is authorized and directed to reimburse non-Federal entities for reasonable and customary costs for delivery of Newlands Reclamation Project water to serve water rights added to the Reservation under subsection (A) of this section, and to enter into renewable contracts for the payment of such costs, for a term not exceeding forty years.

(E) Subject to the limitation on the quantum of use set forth in subsection (C) of this section, and applicable state law, all water rights appurtenant to the Reservation that are served by the Newlands Reclamation Project, including Newlands Reclamation Project water rights added to the Reservation under subsection (A) of this section, may be used for irrigation, fish and wildlife, municipal and industrial, recreation, or water quality purposes, or for any other beneficial use subject to applicable laws of the State of Nevada. Nothing in this subsection is intended to affect the jurisdiction of the Tribes or the State of Nevada, if any, over the use and transfer of water rights within the Reservation or off the Reservation, or to create any express or implied Federal reserved water right.

(F)(1) The Tribes are authorized to acquire by purchase, by exchange of lands or water rights, or interests therein, including those held in trust for the Tribes, or

by gift, any lands or water rights, or interests therein, including those held in trust, located within the Reservation, for any of the following purposes:

(a) Consolidating Reservation landholdings or water rights, including those held in trust;

(b) Eliminating fractionated heirship interests in Reservation lands or water rights, including those held in trust;

(c) Providing land or water rights for any tribal program;

(d) Improving the economy of the Tribes and the economic status of tribal members through the development of industry, recreational facilities, housing projects, or other means; and

(e) General rehabilitation and enhancement of the total resource potential of the Reservation: Provided, That any water rights shall be transferred in compliance with applicable state law.

(2) Title to any lands or water rights, or interests therein, acquired by the Tribes within the counties of Churchill and Lyon in the State of Nevada under the authority of this subsection shall be held by the United States in trust for the Tribes.

SEC. 104. RELEASE OF CLAIMS.

(A)(1) The Secretary of the Treasury and the Secretary of the Interior shall not disburse any monies from the Fund until such time as the following conditions have been met--

(a) the Tribes have released any and all claims they may have against the United States resulting from any failure of the United States to comply with section 7 of Public Law 95-337, 92 Stat. 457;

(b) the Tribes have dismissed with prejudice their claims in *Northern Paiute Nation v. United States*, Docket No. 87-A, United States Claims Court;

(c) the Tribes have agreed to accept and abide by the limitation on use of water rights served by the Newlands Reclamation Project on the Reservation, as set forth in section 103(C);

(d) the Tribes have dismissed, without prejudice, their claims in *Pyramid Lake Paiute Tribe of Indians v. Lujan*, No. R-85-197 (D.Nev.) and their objections to the Operating Criteria and Procedures for the Newlands Reclamation Project adopted by the Secretary on April 15, 1988, provided that such dismissal shall not prejudice in any respect the Tribes' right to object in any administrative or judicial proceeding to such Operating Criteria and Procedures, or any revisions thereto, or to assert that any Operating Criteria and Procedures should be changed due to new information, changes in environmental circumstance, changes in project descriptions or other relevant considerations, in accordance with the requirements of all applicable court decrees and applicable statutory requirements;

(e) the Tribes agree to be bound by a plan developed and implemented by the Secretary in accordance with section 106 of this title; and

(f)(1) the Tribes agree to indemnify the United States against monetary claims by any landowners who may hold water rights on the Reservation as of the date of enactment of the Act and who may assert that the provisions of section 103(C) of this title effect an unlawful taking of their rights: Provided, That--

- (i) the United States shall defend and resist any such claims at its own expense;
 - (ii) the Tribes shall be entitled to intervene in any administrative or judicial proceeding on such claims; and
 - (iii) the United States shall not compromise or settle any such claims without the consent of the Tribes.
- (2) The provisions of this section shall not be construed as:
- (i) implying that section 103(C) unlawfully takes any water rights;
 - (ii) conferring jurisdiction on any court or other tribunal to adjudicate any such taking claims;
 - (iii) waiving any immunities of the United States or the Tribes; or
 - (iv) otherwise establishing or enhancing any claims to water rights or for the unlawful taking of such rights.

(2) If the appropriations authorized in section 102(B) are not appropriated by the Congress, it shall be deemed that the conditions set forth in this Act have not been satisfied, and the Tribes may rescind their release of claims under this section and its agreement under subsection (c) of this section. (3) Upon the appropriation of monies authorized in section 102(B) of this Act, and the allocation of such monies to the Fund, section 7 of Public Law 95-337, 92 Stat. 457, shall be repealed.

SEC. 105. LIABILITY OF THE UNITED STATES.

(A) Except with regard to the responsibilities assumed by the United States under section 102(E), and those set forth in section 1301 of the Act of February 12, 1929, 45 Stat. 1164, as amended, 25 U.S.C. 161a, the United States shall not bear any obligation or liability regarding the investment, management, or use of funds by the Tribes.

(B) Except with regard to the responsibilities assumed by the United States under section 102(B), section 102(F)(3), section 103(A), section 103(D), section 103(F)(2), section 104(A)(1), and section 106, the United States shall not bear any obligation or liability for the implementation of the provisions of this Act.

SEC. 106. PLAN FOR THE CLOSURE OF TJ DRAIN.

(A) The Secretary, in consultation with the Tribes and in accordance with applicable law, shall develop and implement a plan for the closure, including if appropriate, modification of components, of the TJ drain system, including the main TJ drain, the TJ-1 drain and the A drain and its sublaterals, in order to address any significant environmental problems with that system and its closure.

(B) The plan shall include measures to provide necessary substitute drainage in accordance with Bureau of Reclamation standards for reservation lands in agricultural production as of the 1990 irrigation season that are served by that system, unless the Tribes and the Secretary agree otherwise.

(C) Implementation of the plan shall not interfere with ongoing agricultural operations.

(D) The United States shall bear all costs for developing and implementing the plan.

(E) There is authorized to be appropriated such sums as may be necessary to carry out the provisions of this section.

SEC. 107. DEFINITIONS.

For purposes of this title, and for no other purposes--

(A) the term "Fallon Paiute Shoshone Tribal Settlement Fund" or "Fund" means the Fund established under section 102(A) of this Act to enable the Fallon Paiute Shoshone Tribes to carry out the purposes set forth in section 102(C)(1) of this title;

(B) the term "income" means all interest, dividends, gains and other earnings resulting from the investment of the principal of the Fallon Paiute Shoshone Tribal Settlement Fund, and the earnings resulting from the investment of such income;

(C) the term "principal" means the total sum of monies appropriated to the Fallon Paiute Shoshone Tribal Settlement Fund under section 102(B) of this Act;

(D) the term "Reservation" means the lands set aside for the benefit of the Fallon Paiute Shoshone Tribes by the orders of the Department of the Interior of April 20, 1907, and November 21, 1917, as expanded and confirmed by the Act of August 4, 1978, Public Law 95-337, 92 Stat. 457; (E) the term "Secretary" means the Secretary of the Department of the Interior;

(F) the term "tribal members" means the enrolled members of the Fallon Paiute Shoshone Tribes; and

(G) the term "Tribe" means the Fallon Paiute-Shoshone Tribe.

TITLE II--TRUCKEE-CARSON-PYRAMID LAKE WATER SETTLEMENT

SEC. 201. SHORT TITLE.

This title may be cited as the "Truckee-Carson-Pyramid Lake Water Rights Settlement Act".

SEC. 202. PURPOSES.

The purposes of this title shall be to--

(a) provide for the equitable apportionment of the waters of the Truckee River, Carson River, and Lake Tahoe between the State of California and the State of Nevada,

(b) authorize modifications to the purposes and operation of certain Federal Reclamation project facilities to provide benefits to fish and wildlife, municipal, industrial, and irrigation users, and recreation;

(c) authorize acquisition of water rights for fish and wildlife;

(d) encourage settlement of litigation and claims;

(e) fulfill Federal trust obligations toward Indian tribes;

(f) fulfill the goals of the Endangered Species Act by promoting the enhancement and recovery of the Pyramid Lake fishery; and

(g) protect significant wetlands from further degradation and enhance the habitat of many species of wildlife which depend on those wetlands, and for other purposes.

SEC. 203. DEFINITIONS.

For purposes of this title:

(a) the term "Alpine court" means the court having continuing jurisdiction over the *Alpine* decree;

(b) the term "Alpine decree" means the final decree of the United States District Court for the District of Nevada in *United States of America v. Alpine Land and Reservoir Company*, Civ. No. D-183, entered December 18, 1980, and any supplements thereto;

(c) the term "Carson River basin" means the area which naturally drains into the Carson River and its tributaries and into the Carson River Sink, but excluding the Humboldt River drainage area;

(d) the term "Fallon Tribe" means the Fallon Paiute-Shoshone Tribe;

(e) the term "Lahontan Valley wetlands" means wetland areas associated with the Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area, Carson Lake and Pasture, and the Fallon Indian Reservation;

(f) the term "Lake Tahoe basin" means the drainage area naturally tributary to Lake Tahoe, including the lake, and including the Truckee River upstream of the intersection between the Truckee River and the western boundary of Section 12, Township 15 North, Range 16 East, Mount Diablo Base and Meridian;

(g) the term "Lower Truckee River" means the Truckee River below Derby Dam;

(h) the term "Operating Agreement" means the agreement to be negotiated between the Secretary and the States of California and Nevada and others, as more fully described in section 205 of this title;

(i) the term "Orr Ditch court" means the court having continuing jurisdiction over the *Orr Ditch* decree;

(j) the term "Orr Ditch decree" means the decree of the United States District Court for the District of Nevada in *United States of America v. Orr Water Ditch Company*, et al.--in Equity, Docket No. A3, including, but not limited to the Truckee River Agreement;

(k) the term "Preliminary Settlement Agreement as Modified by the Ratification Agreement" means the document with the title "Ratification Agreement by the United States of America," including Exhibit "1" attached thereto, submitted to the Chairman, Subcommittee on Water and Power, Committee on Energy and Natural Resources, United States Senate, by the Assistant Secretary for Water and Science, United States Department of the Interior, on August 2, 1990, as may be amended under the terms thereof. A copy of this agreement is included in the report of the Committee on Energy and Natural Resources as Appendix 1 to the Committee's report accompanying S. 1554;

(l) the term "Pyramid Lake fishery" means two fish species found in Pyramid Lake, the cui-ui (*Chasmistes cujus*) and the Lahontan cutthroat trout (*Salmo clarki henshawi*);

(m) the term "Pyramid Lake Tribe" means the Pyramid Lake Paiute Tribe;

(n) the term "Secretary" means the Secretary of the Interior;

(o) the term "Truckee River Agreement" means a certain agreement dated July 1, 1935 and entered into by the United States of America, Truckee-Carson Irrigation District, Washoe County Water Conservation District, Sierra Pacific Power Company, and other users of the waters of the Truckee River;

(p) the term "Truckee River basin" means the area which naturally drains into the Truckee River and its tributaries and into Pyramid Lake, including that lake, but excluding the Lake Tahoe basin;

(q) the term "Truckee River General Electric court" means the United States District Court for the Eastern District of California court having continuing jurisdiction over the *Truckee River General Electric* decree;

(r) the term "Truckee River General Electric decree" means the decree entered June 4, 1915, by the United States District Court for the Northern District of California in *United States of America v. Truckee River General Electric Co.*, No. 14861, which case was transferred to the United States District Court for the Eastern District of California on February 9, 1968, and is now designated No. S-643;

(s) the term "Truckee River reservoirs" means the storage provided by the dam at the outlet of Lake Tahoe, Boca Reservoir, Prosser Creek Reservoir, Martis Reservoir, and Stampede Reservoir; and

(t) the term "1948 Tripartite Agreement" means the agreement between the Truckee-Carson Irrigation District, the Nevada State Board of Fish and Game Commissioners, and the United States Fish and Wildlife Service regarding the establishment, development, operation, and maintenance of Stillwater National Wildlife Refuge and Management Area, dated November 26, 1948.

SEC. 204. INTERSTATE ALLOCATION.

(a) CARSON RIVER.--

(1) The interstate allocation of waters of the Carson River and its tributaries represented by the *Alpine* decree is confirmed.

(2) The allocations confirmed in paragraph (1) of this subsection shall not be construed as precluding, foreclosing, or limiting the assertion of any additional right to the waters of the Carson River or its tributaries which were in existence under applicable law as of January 1, 1989, but are not recognized in the *Alpine* decree. The allocation made in paragraph (1) of this subsection shall be modified to accommodate any such additional rights, and such additional rights, if established, shall be administered in accordance with the terms of the *Alpine* decree; except that the total amount of such additional allocations shall not exceed 1,300 acre-feet per year by depletion for use in the State of California and 2,131 acre-feet per-year by depletion for use in the State of Nevada. This paragraph shall not be construed to allow any increase in diversions from the Carson River or its tributaries beyond those in existence on December 31, 1992.

(3) If, on or after the date of enactment of this title, all or any portion of the effluent imported from the Lake Tahoe basin into the watershed of the Carson River in California is discontinued by reason of a change in the place of the disposal of such effluent, including underground disposal, to the Truckee River basin or the Lake Tahoe basin, in a manner which results in increasing the available supply of water in the Nevada portion of the Truckee River basin, the allocation to California of the water of the West Fork of the Carson River and its tributaries for use in the State of California shall be augmented by an amount of water which may be diverted to storage, except that such storage:

(A) shall not interfere with other storage or irrigation rights of Segments 4 and 5 of the Carson River, as defined in the *Alpine* decree;

(B) shall not cause significant adverse effects to fish and wildlife;

(C) shall not exceed 2,000 acre-feet per year, or the quantity by which the available annual supply of water to the Nevada portion of the Truckee River basin is increased, whichever is less; and

(D) shall be available for irrigation use in that or subsequent years, except that the cumulative amount of such storage shall not exceed 2,000 acre-feet in any year.

(4) Storage specified by paragraph (3) of this subsection shall compensate the State of California for any such discontinuance as referred to in such paragraph: Provided, That the augmentation authorized by such paragraph shall be used only on lands having appurtenant *Alpine* decree rights. Use of effluent for the irrigation of lands with appurtenant *Alpine* decree rights shall not result in the forfeiture or abandonment of all or any part of such appurtenant *Alpine* decree rights, but use of such wastewater shall not be deemed to create any new or additional water rights. Nothing in this title shall be construed as prohibiting the use of all or any portion of such effluent on any lands within the State of California. Any increased water

delivered to the Truckee River shall only be available to satisfy existing rights under the *Orr Ditch* decree or, as appropriate, to augment inflows to Pyramid Lake.

(5) Nothing in this title shall foreclose the right of either State to study, either jointly or individually, the use of Carson River surface water, which might otherwise be lost to beneficial use, to enable conjunctive use of groundwater. For purposes of this paragraph, beneficial use shall include the use of water on wetlands or wildlife areas within the Carson River basin, as may be permitted under State law.

(6) Nothing in this title shall preclude the State of Nevada, agencies of the State of Nevada, private entities, or individuals from constructing storage facilities within the Carson River basin, except that such storage facilities shall be constructed and operated in accordance with all applicable State and Federal laws and shall not result in the inundation of any portion of the East Fork of the Carson River within California.

(7) The right of any water right owner to seek a change in the beneficial use of water from irrigation to storage for municipal and industrial uses or other beneficial uses, as determined by applicable State law, is unaffected by this title. Water stored for municipal and industrial uses may be diverted to storage in a given year and held for municipal and industrial uses in that year or subsequent years. Such changes and storage shall be in accordance with the *Alpine* decree and applicable State laws.

(8) Interbasin transfers of Carson River water shall be allowed only as provided by applicable State law.

(b) LAKE TAHOE.--

(1) Total annual gross diversions for use within the Lake Tahoe basin from all natural sources, including groundwater, and under all water rights in the basin shall not exceed 34,000 acre-feet per year. From this total, 23,000 acre-feet per year are allocated to the State of California for use within the Lake Tahoe basin and 11,000 acre-feet per year are allocated to the State of Nevada for use within the Lake Tahoe basin. Water allocated pursuant to this paragraph may, after use, be exported from the Lake Tahoe basin or reused.

(2) Total annual gross diversions for use allocated pursuant to paragraph (1) of this subsection shall be determined in accordance with the following conditions:

(A) Water diverted and used to make snow within the Lake Tahoe basin shall be charged to the allocation of each State as follows:

(i) the first 600 acre-feet used in California each year and the first 350 acre-feet used each year in Nevada shall not be charged to the gross diversion allocation of either State;

(ii) where water from the Lake Tahoe basin is diverted and used to make snow in excess of the amounts specified in clause (i) of this subparagraph, the percentage of such diversions chargeable to the gross diversion allocations of each State shall be specified in the Operating Agreement; and

(iii) the provisions of paragraph 204(b)(1) notwithstanding, criteria for charging incidental runoff, if any, into the Carson River basin or the Truckee River

basin, including the amount and basin to be charged, from use of water in excess of the amount specified in clause (i) of this subparagraph, shall be specified in the Operating Agreement. The amounts of such water, if any, shall be included in each State's report prepared pursuant to paragraph 204(d)(1) of this title.

(B) Unmetered diversion or extraction of water by residences shall, for the purpose of calculating the amount of either State's gross diversion, be conclusively presumed to utilize a gross diversion of four-tenths of one acre-foot per residence per year.

(C) Where water is diverted by a distribution system, as defined in clause (iii) of this subparagraph, the amount of such water that shall be charged to the gross diversion allocation of either California or Nevada shall be measured as follows:

(i) where a water distribution system supplies any municipal, commercial, and/or industrial delivery points (not including fire hydrants, flushing or cleaning points), any one of which is not equipped with a water meter, the gross diversion attributed to that water distribution system shall be measured at the point of diversion or extraction from the source; or

(ii) where all municipal, commercial, and industrial delivery points (not including fire hydrants, flushing or cleaning points) within a water distribution system are equipped with a water meter, the gross diversion attributed to that water distribution system may be measured as the sum of all amounts of water supplied to each such delivery point, provided there is in effect for such water distribution system a water conservation and management plan. Such plan may be either an individual, local plan or an area-wide, regional, or basin-wide plan, except that such plan must be reviewed and found to be reasonable under all relevant circumstances by the State agency responsible for administering water rights, or any other entity delegated such responsibility under State law. Such plan must be reviewed every five years by the agency which prepared it, and implemented in accordance with its adopted schedule, and shall include all elements required by applicable State law and the following:

(a) an estimate of past, current, and projected water use and, to the extent records are available, a segregation of those uses between residential, industrial, and governmental uses;

(b) identification of conservation measures currently adopted and in practice;

(c) a description of alternative conservation measures, including leak detection and prevention and reduction in unaccounted for water, if any, which would improve the efficiency of water use, with an evaluation of the costs, and significant environmental and other impacts of such measures;

(d) a schedule of implementation for proposed actions as indicated by the plan;

(e) a description of the frequency and magnitude of supply deficiencies, including conditions of drought and emergency, and the ability to meet short-term deficiencies;

(f) an evaluation of management of water system pressures and peak demands;

(g) an evaluation of incentives to alter water use practices, including fixture and appliance retrofit programs;

(h) an evaluation of public information and educational programs to promote wise use and eliminate waste;

(i) an evaluation of changes in pricing, rate structure, and regulations; and

(j) an evaluation of alternative water management practices, taking into account economic and non-economic factors (including environmental, social, health, and customer impact), technological factors, and incremental costs of additional supplies.

(iii) As used in this subparagraph, the term "water distribution system" means a point or points of diversion from a water supply source or sources, together with associated piping, which serve a number of identifiable delivery points: Provided, That the distribution system is not operationally interconnected with other distribution systems (except for emergency cross-ties) which are served from other points of diversion. An agency serving municipal and industrial water may have more than one water distribution system.

(iv) If a program for the review of water conservation and management plans as provided in clause (ii) of this subparagraph is not in effect in that portion of the Lake Tahoe basin within a State, all gross diversions within such State shall be measured at the point of diversion.

(D) For the purpose of this subsection, water inflow and infiltration to sewer lines shall not be considered a diversion of water, and such water shall not be charged to the gross diversion allocation of either State.

(E) Regulation of streamflow for the purpose of preserving or enhancing instream beneficial uses shall not be charged to the gross diversion allocation of either State.

(3) The transbasin diversions from the Lake Tahoe basin in Nevada and California identified in this paragraph may be continued, to the extent that such diversions are recognized as vested or perfected rights under the laws of the State where each diversion is made. Unless otherwise provided in this subsection, such diversions are in addition to the other allocations made by this subsection. Such transbasin diversions are the following:

(A) diversion of a maximum of 3,000 acre-feet per year from Marlette Lake for use in Nevada;

(B) diversion of a maximum of 561 acre-feet per year from Lake Tahoe for use in Nevada as set forth in Nevada Permit to Appropriate Water No. 23017, except that such diversion shall count against the allocation to Nevada made by this subsection;

(C) diversion of water from Echo Lake for use in California, pursuant to rights vested under California law; and

(D) diversion of water from North Creek as set forth in the State of Nevada Certificate of Appropriation of Water No. 4217.

The transbasin diversions identified in subparagraphs (A), (C), and (D) of this paragraph may be transferred, for use only in the State where the recognized transbasin diversion exists, by lease of the right of use or by conveyance of the right, to the extent to which the right is vested or has been perfected.

Any such transfer shall be subject to the applicable laws of the State in which the right is vested or perfected. The transbasin diversion described in subparagraph (B) of this paragraph may be transferred in accordance with State law. With the exception of the transbasin diversion described in subparagraph (B), all water made available for use within the Lake Tahoe basin as a result of any such transfer shall not be charged against the allocations made by this section, and such water may be depleted.

(c) TRUCKEE RIVER.--

(1) There is allocated to the State of California the right to divert or extract, or to utilize any combination thereof, within the Truckee River basin in California the gross amount of 32,000 acre-feet of water per year from all natural sources, including both surface and groundwater, in the Truckee River basin subject to the following terms and conditions:

(A) maximum annual diversion of surface supplies shall not exceed 10,000 acre-feet; except that all diversions of surface supplies for use within California shall be subject to the right to water for use on the Pyramid Lake Indian Reservation in amounts as provided in Claim Nos. 1 and 2 of the *Orr Ditch* decree, and all such diversions initiated after the date of enactment of this title shall be subject to the right of the Sierra Pacific Power Company or its successor to divert forty (40) cubic feet per second of water for municipal, industrial, and domestic use in the Truckee Meadows in Nevada, as such right is more particularly described in Article V of the Truckee River Agreement;

(B) all new wells drilled after the date of enactment of this title shall be designed to minimize any short-term reductions of surface streamflows to the maximum extent feasible;

(C) any use within the State of Nevada of any Truckee River basin groundwater with a point of extraction within California shall be subordinate to existing and future uses in California, and any such use of water in Nevada shall cease to the extent that it causes extractions to exceed safe yield;

(D) except as otherwise provided in this paragraph, the extraction and use of groundwater pursuant to this subsection shall be subject to all terms and conditions of California law;

(E) determination of safe yield of any groundwater basin in the Truckee River basin in California shall be made by the United States Geological Survey in accordance with California law;

(F) water shall not be diverted from within the Truckee River basin in California for use in California outside the Truckee River basin;

(G) if the Tahoe-Truckee Sanitation Agency or its successor (hereafter "TTSA") changes in whole or in part the place of disposal of its treated wastewater

to a place outside the area between Martis Creek and the Truckee River below elevation 5800 NGVD Datum, or changes the existing method of disposing of its wastewater, which change in place or method of disposal reduces the amount or substantially changes the timing of return flows to the Truckee River of the treated wastewater, TTSA shall:

(i) acquire or arrange for the acquisition of preexisting water rights to divert and use water of the Truckee River or its tributaries in California or Nevada and discontinue the diversion and use of water at the preexisting point of diversion and place of use under such rights in a manner legally sufficient to offset such reduction in the amount of return flow or change in timing, and California's Truckee River basin gross diversion allocation shall continue to be charged the amount of the discontinued diversion; or

(ii) in compliance with California law, extract and discharge into the Truckee River or its tributaries an amount of Truckee River basin groundwater in California sufficient to offset such reduction or change in timing, subject to the following conditions:

(a) extraction and discharge of Truckee River Basin groundwater for purposes of this paragraph shall comply with the terms and conditions of subparagraphs 204(c)(1)(B) and (D) and shall not be deemed use of Truckee River basin groundwater within the State of Nevada within the meaning of subparagraph 204(c)(1)(D); and

(b) California's Truckee River basin gross diversion allocation shall be charged immediately with the amount of groundwater discharged and, when California's Truckee River Basin gross diversion allocation equals 22,000 acre-feet or when the total of any reductions resulting from the changes in the place or method of disposal exceed 1000 acre-feet, whichever occurs first, the California Truckee River basin gross diversion allocation shall thereafter be charged with an additional amount of water required to compensate for the return flows which would otherwise have accrued to the Truckee River basin from municipal and industrial use of the discharged groundwater. In no event shall the total of California's Truckee River gross diversions and extractions exceed 32,000 acre-feet.

(iii) For purposes of this paragraph, the existing method of disposal shall include, in addition to underground leach field disposal, surface spray or sprinkler infiltration of treated wastewater on the site between Martis Creek and the Truckee River referred to in this subsection.

(iv) The provisions of this paragraph requiring the acquisition of water rights or the extraction and discharge of groundwater to offset reductions in the amount or timing of return flow to the Truckee River shall also apply to entities other than TTSA that may treat and dispose of wastewater within the California portion of the Truckee River basin, but only if and to the extent that the treated wastewater is not returned to the Truckee River or its tributaries, as to timing and amount, substantially as if the wastewater had been treated and disposed of by TTSA in its existing place of disposal and by its existing method of disposal. The provisions of

this paragraph shall not apply to entities treating and disposing of the wastewater from less than eight dwelling units.

(H) All uses of water for commercial, irrigated agriculture within the Truckee River basin within California initiated after the date of enactment of this title shall not impair and shall be junior and subordinate to all beneficial uses in Nevada, including, but not limited to, the use of water for the maintenance and preservation of the Pyramid Lake fishery. As used in this provision, the term "commercial, irrigated agriculture" shall include traditional commercial irrigated farming operations but shall not include the following uses: irrigated golf courses and other recreational facilities, commercial nurseries, normal silvicultural activities other than commercial tree farms, irrigation under riparian rights on land irrigated at any time prior to the date of enactment of this title, lawns and ornamental shrubbery on parcels which include commercial, residential, governmental, or public buildings, and irrigated areas of two acres or less on parcels which include a residence.

(I) Water diverted within the Truckee River basin and used to make snow shall be charged to California's Truckee River allocation as follows:

(i) the first 225 acre-feet used in California each year shall not be charged to the gross diversion allocation;

(ii) where water from the Truckee River basin is diverted and used to make snow in excess of the amounts specified in clause (i) of this subparagraph, the percentage of such diversions chargeable to such allocation shall be specified in the Operating Agreement; and

(iii) the provision of subparagraph 204(c)(1)(F) notwithstanding, criteria for charging incidental runoff, if any, into the Lake Tahoe basin, including the amount and basin to be charged, from use of water in excess of the amount specified in clause (i) of this subparagraph, shall be specified in the Operating Agreement. The amounts of such water, if any, shall be included in each State's report prepared pursuant to paragraph 204(d)(1).

(J) Unmetered diversion or extraction of water by residences, shall, for the purpose of calculating the amount of California's gross diversion, be conclusively presumed to utilize a gross diversion of four-tenths of one acre-foot per residence per year.

(K) For the purposes of this subsection, water inflow and infiltration to sewer lines is not a diversion of water, and such water shall not be charged to California's Truckee River basin allocation.

(2) There is additionally allocated to California the amount of water decreed to the Sierra Valley Water Company by judgment in the case of *United States of America v. Sierra Valley Water Company*, United States District Court for the Northern District of California, Civil No. 5597, as limited by said judgment.

(3) There is allocated to the State of Nevada all water in excess of the allocations made in paragraphs 204(c)(1) and (2) of this title.

(4) The right to water for use on the Pyramid Lake Indian Reservation in the amounts provided in Claim Nos. 1 and 2 of the *Orr Ditch* decree is recognized and

confirmed. In accordance with and subject to the terms of the *Orr Ditch* decree and applicable law, the United States, acting for and on behalf of the Pyramid Lake Tribe, and with the agreement of the Pyramid Lake Tribe, or the Pyramid Lake Tribe shall have the right to change points of diversion, place, means, manner, or purpose of use of the water so decreed on the reservation.

(d) COMPLIANCE.--

(1) Compliance with the allocations made by this section and with other provisions of this section applicable to each State shall be assured by each State. With the third quarter following the end of each calendar year, each State shall publish a report of water use providing information necessary to determine compliance with the terms and conditions of this section.

(2) The United States District Courts for the Eastern District of California and the District of Nevada shall have jurisdiction to hear and decide any claims by any aggrieved party against the State of California, State of Nevada, or any other party where such claims allege failure to comply with the allocations or any other provision of this section. Normal rules of venue and transfers of cases between Federal courts shall remain in full force and effect. Each State, by accepting the allocations under this section, shall be deemed to have waived any immunity from the jurisdiction of such courts.

(e) FORFEITURE OR ABANDONMENT.--The provisions of this section shall not be interpreted to alter or affect the applicability of the law of each State regarding the forfeiture for nonuse or abandonment of any water right established in accordance with State law, nor shall the forfeiture for nonuse or abandonment of water rights under the applicable law of each State affect the allocations to each State made by this title.

(f) INTERSTATE TRANSFERS.--

(1) Nothing in this title shall prevent the interstate transfer of water or water rights for use within the Truckee River basin, subject to the following provisions:

(A) Each such interstate transfer shall comply with all State laws applicable to transfer of water or water rights, including but not limited to State laws regulating change in point of diversion, place of use, and purpose of use of water, except that such laws must apply equally to interstate and intrastate transfers.

(B) Use of water so transferred shall be charged to the allocation of the State wherein use of water was being made prior to the transfer.

(C) Subject to subparagraph (A) of this paragraph, in addition to the application of State laws intended to prevent injury to other lawful users of water, each State may, to the extent authorized by State law, deny or condition a proposed interstate transfer of water or water rights having a source within the Truckee River basin where the State agency responsible for administering water rights finds, on the basis of substantial evidence that the transfer would have substantial adverse impacts on the environment or overall economy of the area from which the use of the water or water right would be transferred.

(D) Nothing in this paragraph shall be construed to limit the jurisdiction of any court to review any action taken pursuant to this paragraph.

(2) The jurisdiction of the *Alpine* court to administer, inter alia, interstate transfers of water or water rights on the Carson River under the *Alpine* decree, pursuant to jurisdiction reserved therein, including any amendment or supplement thereto, is confirmed. Each State may intervene of right in any proceeding before the *Alpine* court wherein the reserved jurisdiction of that court is invoked with respect to an interstate transfer of water or water rights, and may report to the court findings or decisions concerning the proposed change which have been made by the State agency responsible for administering water rights under any State law applicable to transfers or change in the point of diversion, purpose of use, or place of use of water.

(3) This subsection shall not be construed to authorize the State of California or the State of Nevada to deny or condition a transfer application made by the United States or its agencies if such denial or conditioning would be inconsistent with any clear congressional directive.

(g) USE OF WATER BY THE UNITED STATES.--Use of water by the United States of America or any of its agencies or instrumentalities, or by any Indian Tribe shall be charged to the allocation of the State wherein the use is made, except as otherwise provided in subsection (f) of this section.

(h) COURT DECREES.--Nothing in this section shall be construed as modifying or terminating any court decree, or the jurisdiction of any court.

(i) PLACE OF USE TO DETERMINE ALLOCATION.--Water diverted or extracted in one State for use in the other shall be charged to the allocation under this section of the State in which the water is used, except as otherwise provided in subsection (f) of this section.

(j) APPLICABILITY OF STATE LAW.--Nothing in this section shall be construed to alter the applicability of State law or procedures to the water allocated to the States hereunder.

SEC. 205. TRUCKEE RIVER WATER SUPPLY MANAGEMENT.

(a) OPERATING AGREEMENT.--

(1) The Secretary shall negotiate an operating agreement (hereafter "Operating Agreement") with the State of Nevada and the State of California, after consultation with such other parties as may be designated by the Secretary, the State of Nevada or the State of California.

(2) The Operating Agreement shall provide for the operation of the Truckee River reservoirs and shall ensure that the reservoirs will be operated to:

(A) satisfy all applicable dam safety and flood control requirements;

(B) provide for the enhancement of spawning flows available in the Lower Truckee River for the Pyramid Lake fishery in a manner consistent with the Secretary's responsibilities under the Endangered Species Act, as amended;

(C) carry out the terms, conditions, and contingencies of the Preliminary Settlement Agreement as modified by the Ratification Agreement. Mitigation necessary to reduce or avoid significant adverse environmental effects, if any, of

the implementation of the Preliminary Settlement Agreement as modified by the Ratification Agreement, including instream beneficial uses of water within the Truckee River basin, shall be provided through one or more mitigation agreements which shall be negotiated and executed by the parties to the Preliminary Settlement Agreement as modified by the Ratification agreement and the appropriate agencies of the States of Nevada and California;

(D) ensure that water is stored in and released from Truckee River reservoirs to satisfy the exercise of water rights in conformance with the *Orr Ditch* decree and *Truckee River General Electric* decree, except for those rights that are voluntarily relinquished by the parties to the Preliminary Settlement Agreement as modified by the Ratification Agreement, or by any other persons or entities, or which are transferred pursuant to State law; and

(E) minimize the Secretary's costs associated with operation and maintenance of Stampede Reservoir.

(3) The Operating Agreement may include, but is not limited to, provisions concerning the following subjects:

(A) administration of the Operating Agreement, including but not limited to establishing or designating an agency or court to oversee operation of the Truckee River and Truckee River reservoirs;

(B) means of assuring compliance with the provisions of the Preliminary Settlement Agreement as modified by the Ratification Agreement and the Operating Agreement;

(C) operations of the Truckee River system which will not be changed;

(D) operations and procedures for use of Federal facilities for the purpose of meeting the Secretary's responsibilities under the Endangered Species Act, as amended;

(E) methods to diminish the likelihood of Lake Tahoe dropping below its natural rim and to improve the efficient use of Lake Tahoe water under extreme drought conditions;

(F) procedures for management and operations at the Truckee River reservoirs;

(G) procedures for operation of the Truckee River reservoirs for instream beneficial uses of water within the Truckee River basin;

(H) operation of other reservoirs in the Truckee River basin to the extent that owners of affected storage rights become parties to the Operating Agreement; and

(I) procedures and criteria for implementing California's allocation of Truckee River water.

(4) To enter into effect, the Operating Agreement shall be executed by the Secretary, the State of Nevada, and the State of California and shall be submitted to the *Orr Ditch* court and the *Truckee River General Electric* court for approval of any necessary modifications in the provisions of the *Orr Ditch* decree or the *Truckee River General Electric* decree. Other affected parties may be offered the opportunity to execute the Operating Agreement.

(5) When an Operating Agreement meeting the requirements of this subsection has been approved by the Secretary, the State of Nevada, and the State of California, the Secretary, pursuant to title 5 of the United States Code, shall promulgate the Operating Agreement, together with such additional measures as have been agreed to by the Secretary, the State of Nevada, and the State of California, as the exclusive Federal regulations governing the Operating Agreement. The Secretary and the other signatories to the Operating Agreement shall, if necessary, develop and implement a plan to mitigate for any significant adverse environmental impacts resulting from the Operating Agreement. Any subsequent changes to the Operating Agreement must be adopted and promulgated in the same manner as the original Operating Agreement. Any changes which affect the Preliminary Settlement Agreement as modified by the Ratification Agreement must also be approved by the signatories thereto. Judicial review of any such promulgation of the Operating Agreement may be had by any aggrieved party in the United States District Court for the Eastern District of California or the United States District Court for District of Nevada. A request for review must be filed not later than 90 days after the promulgation of the Operating Agreement becomes final, and by a person who participated in the administrative proceedings leading to the final promulgation. The scope of such review shall be limited to the administrative record and the standard of review shall be that prescribed in 5 U.S.C. 706(2)(A)-(D): Provided, That the limits on judicial review in this paragraph shall not apply to any claim based on the provisions of the Endangered Species Act, as amended.

(6) The Secretary shall take such other actions as are necessary to implement the Preliminary Settlement Agreement as modified by the Ratification Agreement and to implement the Operating Agreement, including entering into contracts for the use of space in Truckee River reservoirs for the purposes of storing or exchanging water, subject to the preconditions that the Sierra Pacific Power Company and the Secretary shall have executed a mutually satisfactory agreement for payment by Sierra-Pacific Power Company of appropriate amounts for the availability and use of storage capacity in Stampede Reservoir and other reservoirs.

(7) As provided in the Preliminary Settlement Agreement as modified by the Ratification Agreement, firm and non-firm municipal and industrial credit water and the 7,500 acre-feet of fishery credit water in Stampede Reservoir to be available under worse than critical drought conditions shall be used only to supply municipal and industrial needs when drought conditions or emergency or repair conditions exist, or as may be required to be converted to fishery credit water. None of these quantities of water shall be used to serve normal year municipal and industrial needs except when an emergency or repair condition exists.

(8) Subject to the terms and conditions of the Preliminary Settlement Agreement as modified by the Ratification Agreement, all of the fishery credit water established thereunder shall be used by the United States solely for the benefit of the Pyramid Lake fishery.

(9) In negotiating the Operating Agreement, the Secretary shall satisfy the requirements of the National Environmental Policy Act and regulations issued to implement the provisions thereof. The Secretary may not become a party to the Operating Agreement if the Secretary determines that the effects of such action, together with cumulative effects, are likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of any designated critical habitat of such species.

(b) AUTHORIZATION FOR USE OF WASHOE PROJECT FACILITIES, TRUCKEE RIVER STORAGE FACILITIES, AND LAKE TAHOE DAM AND RESERVOIR.--

(1) The Secretary is authorized to use Washoe Project facilities, Truckee River Storage Project facilities, and Lake Tahoe Dam and Reservoir for the storage of non-project water to fulfill the purposes of this title, including the Preliminary Settlement Agreement as modified by the Ratification Agreement and the Operating Agreement. The Secretary shall collect appropriate charges for such uses.

(2) Payments received by the Secretary pursuant to this subsection and paragraph 205(a)(6) shall be credited annually first to pay the operation and maintenance costs of Stampede Reservoir, then covered into the Lahontan Valley and Pyramid Lake Fish and Wildlife Fund created pursuant to subsection 206(f) of this title, with funds not needed for those purposes, if any, credited to the Reclamation Fund.

(3) The Secretary is authorized to enter into an interim agreement with the Sierra Pacific Power Company and Pyramid Lake Tribe to store water owned by Sierra Pacific Power Company in Stampede Reservoir, except that the amount of such storage shall not exceed 5,000 acre-feet on September 1 of any year, such agreement shall be superseded by the Preliminary Settlement as modified by the Ratification Agreement and the Operating Agreement upon the entry into effect of those agreements.

(c) RELEASE OF WASHOE PROJECT REPAYMENT OBLIGATION.--The Secretary is released from any obligation to secure payment for the costs of constructing Washoe Project facilities, other than the power plant, including those specified in the Act of August 1, 1956, 70 Stat. 775, and under Federal reclamation laws, and such costs are hereby made non-reimbursable. Authority to construct a reservoir at the Watasheamu site, together with other necessary works for impoundment, diversion, and delivery of water, generation and transmission of hydroelectric power, and drainage of lands as conferred to the Secretary in the Act of August 1, 1956, 70 Stat. 775, is hereby revoked.

SEC. 206. WETLANDS PROTECTION.

(a) AUTHORIZATION TO PURCHASE WATER RIGHTS.--

(1) The Secretary is authorized and directed, in conjunction with the State of Nevada and such other parties as may provide water and water rights for the purposes of this section, to acquire by purchase or other means water and water

rights, with or without the lands to which such rights are appurtenant, and to transfer, hold, and exercise such water and water rights and related interests to sustain, on a long-term average, approximately 25,000 acres of primary wetland habitat within the Lahontan Valley wetlands in accordance with the following provisions of this subsection:

(A) water rights acquired under this subsection shall, to the maximum extent practicable, be used for direct application to such wetlands and shall not be sold, exchanged, or otherwise disposed of except as provided by the National Wildlife Refuge Administration Act and for the benefit of fish and wildlife within the Lahontan Valley;

(B) the Secretary shall select from any water rights acquired pursuant to this subsection those water rights or portions thereof, if not all, that can be transferred to the wetlands referenced in this subsection consistent with subsection 209(b) of this title; and

(C) in implementing this subsection, the Secretary shall consult with the State of Nevada and affected interests. Those water rights or portions thereof, if not all, which the Secretary selects for transfer shall then be transferred in accordance with applicable court decrees and State law, and shall be used to apply water directly to wetlands. No water rights shall be purchased, however, unless the Secretary expects that the water rights can be so transferred and applied to direct use to a substantial degree.

(2) Acquisition of water rights and related interests pursuant to this subsection shall be subject to the following conditions:

(A) water right purchases shall be only from willing sellers, but the Secretary may target purchases in areas deemed by the Secretary to be most beneficial to such a purchase program;

(B) water rights acquired by the Secretary shall be managed by the Secretary after consultation with the State of Nevada and affected interests, except that any water rights acquired for Fallon Indian Reservation wetlands shall be managed by the Secretary in consultation with the Fallon Tribe; and

(C) prior to acquiring any water or water rights in the State of California for the Lahontan Valley wetlands, the Secretary shall first consult with the Governor of California and shall prepare a record of decision on the basis of such consultations.

(3) The Secretary is authorized to:

(A) use, modify, or extend, on a non-reimbursable basis, Federal water diversion, storage, and conveyance systems to deliver water to wetlands referenced in paragraph (a)(1) of this subsection, including the Fernley Wildlife Management Area;

(B) reimburse non-Federal entities for reasonable and customary costs for operation and maintenance of the Newlands Project associated with the delivery of water in carrying out the provisions of this subsection; and

(C) enter into renewable contracts for the payment of reasonable and customary costs for operation and maintenance of the Newlands Project associated

with the delivery of water acquired by the Secretary to benefit the Lahontan Valley wetlands. The contracts shall be for a term not exceeding 40 years. Any such contract shall provide that upon the failure of the Secretary to pay such charges, the United States shall be liable for their payment and other costs provided for in applicable provisions of the contract, subject to the availability of appropriations.

(4) Consistent with fulfillment of this subsection and not as a precondition thereto, the Secretary shall study and report on the social, economic, and environmental effects of the water rights purchase program authorized by this subsection and the water management measures authorized by subsection 206(c). This study may be conducted in coordination with the studies authorized by paragraph 207(c)(5) and subsection 209(c) of this title, and shall be reported to the Committees on Energy and Natural Resources, Environment and Public Works, and Appropriations of the Senate, and the Committees on Interior and Insular Affairs, Merchant Marine and Fisheries, and Appropriations of the House of Representatives not later than three years after the date of enactment of this Act.

(b) EXPANSION OF STILLWATER NATIONAL WILDLIFE REFUGE.--

(1) Notwithstanding any other provisions of law, the Secretary shall manage approximately 77,520 acres of Federal land in the State of Nevada, as depicted upon a map entitled "Stillwater National Wildlife Refuge," dated July 16, 1990, and available for inspection in appropriate offices of the United States Fish and Wildlife Service, as a unit of the National Wildlife Refuge System.

(2) The lands identified in paragraph (1) of this subsection shall be known as the Stillwater National Wildlife Refuge and shall be managed by the Secretary through the United States Fish and Wildlife Service for the purposes of:

(A) maintaining and restoring natural biological diversity within the refuge;

(B) providing for the conservation and management of fish and wildlife and their habitats within the refuge;

(C) fulfilling the international treaty obligations of the United States with respect to fish and wildlife; and

(D) providing opportunities for scientific research, environmental education, and fish and wildlife oriented recreation.

(3) The Secretary shall administer all lands, waters, and interests therein transferred under this title in accordance with the provisions of the National Wildlife Refuge System Administration Act of 1966, as amended, except that any activity provided for under the terms of the 1948 Tripartite Agreement may continue under the terms of that agreement until its expiration date, unless such agreement is otherwise terminated. The Secretary may utilize such additional statutory authority as may be available to the Secretary for the conservation and development of wildlife and natural resources, interpretive education, and outdoor recreation as the Secretary deems appropriate to carry out the purposes of this title.

(4) The Secretary is authorized to take such actions as may be necessary to prevent, correct, or mitigate for adverse water quality and fish and wildlife habitat conditions attributable to agricultural drain water originating from lands irrigated by the Newlands Project, except that nothing in this subsection shall be construed

to preclude the use of the lands referred to in paragraph (1) of this subsection for Newlands Project drainage purposes. Such actions, if taken with respect to drains located on the Fallon Indian Reservation, shall be taken after consultation with the Fallon Tribe.

(5) Not later than November 26, 1997, after consultation with the State of Nevada and affected local interests, the Secretary shall submit to the Congress recommendations, if any, concerning:

(A) revisions in the boundaries of the Stillwater National Wildlife Refuge as may be appropriate to carry out the purposes of the Stillwater National Wildlife Refuge, and the provisions of subsection 206(a) of this section;

(B) transfer of any other United States Bureau of Reclamation withdrawn public lands within existing wildlife use areas in the Lahontan Valley to the United States Fish and Wildlife Service for addition to the National Wildlife Refuge System; and

(C) identification of those lands currently under the jurisdiction of the United States Fish and Wildlife Service in the Lahontan Valley that no longer warrant continued status as units of the National Wildlife Refuge System, with recommendations for their disposition.

(c) WATER USE, NAVAL AIR STATION, FALLON, NEVADA.--

(1) Not later than one year after the date of enactment of this title, the Secretary of the Navy, in consultation with the Secretary, shall undertake a study to develop land management plans or measures to achieve dust control, fire abatement and safety, and foreign object damage control on those lands owned by the United States within the Naval Air Station at Fallon, Nevada, in a manner that, to the maximum extent practicable, reduce direct surface deliveries of water. Water saved or conserved shall be defined as reduced project deliveries relative to the maximum annual headgate delivery entitlement associated with recently irrigated water-righted Navy lands. Recently irrigated water-righted Navy lands shall be determined by the Secretary of the Navy in consultation with the Secretary and the State of Nevada.

(2) The Secretary of the Navy shall promptly select and implement land management plans or measures developed by the study described in paragraph (1) of this subsection upon determining that water savings can be made without impairing the safety of operations at Naval Air Station, Fallon.

(3) All water no longer used and water rights no longer exercised by the Secretary of the Navy as a result of the implementation of the modified land management plan or measures specified by this subsection shall be managed by the Secretary for the benefit of fish and wildlife resources referenced in sections 206 and 207 of this title: Provided, That,

(A) as may be required to fulfill the Secretary's responsibilities under the Endangered Species Act, as amended, the Secretary shall manage such water and water rights primarily for the conservation of the Pyramid Lake fishery and in a manner which is consistent with the Secretary's responsibilities under the

Endangered Species Act, as amended, and the requirements of applicable operating criteria and procedures for the Newlands Project; and

(B) the Secretary may manage such water or transfer temporarily or permanently some or all of the water rights no longer exercised by the Secretary of the Navy for the benefit of the Lahontan Valley wetlands so long as such management or transfers are consistent with applicable operating criteria and procedures.

(4) The Secretary of the Navy, in consultation with the Secretary of Agriculture and other interested parties, shall fund and implement a demonstration project and test site for the cultivation and development of low-precipitation grasses, shrubs, and other native or appropriate high-desert plant species, including the development of appropriate soil stabilization and land management techniques, with the goal of restoring previously irrigated farmland in the Newlands Project area to a stable and ecologically appropriate dryland condition.

(5) The Secretary shall reimburse appropriate non-Federal entities for reasonable and customary operation and maintenance costs associated with delivery of the water that comes under the Secretary's management pursuant to this subsection.

(6) In carrying out the provisions of this subsection, the Secretary of the Navy and the Secretary shall comply with all applicable provisions of State law and fulfill the Federal trust obligation to the Pyramid Lake Tribe and the Fallon Tribe.

(d) STATE COST-SHARING.--The Secretary is authorized to enter into an agreement with the State of Nevada for use by the State of not less than \$9 million of State funds for water and water rights acquisitions and other protective measures to benefit Lahontan Valley wetlands. The Secretary's authority under subsection 206(a) is contingent upon the State of Nevada making such sums available pursuant to the terms of the agreement referenced in this subsection.

(e) TRANSFER OF CARSON LAKE AND PASTURE.--The Secretary is authorized to convey to the State of Nevada Federal lands in the area known generally as the "Carson Lake and Pasture," as depicted on the map entitled "Carson Lake Area," dated July 16, 1990, for use by the State as a State wildlife refuge. Prior to and as a condition of such transfer, the Secretary and the State of Nevada shall execute an agreement, in consultation with affected local interests, including the operator of the Newlands Project, ensuring that the Carson Lake and Pasture shall be managed in a manner consistent with applicable international agreements and designation of the area as a component of the Western Hemisphere Shorebird Reserve Network. The Secretary shall retain a right of reverter under such conveyance if the terms of the agreement are not observed by the State. The official map shall be on file with the United States Fish and Wildlife Service. Carson Lake and Pasture shall be eligible for receipt of water through Newlands Project facilities.

(f) LAHONTAN VALLEY AND PYRAMID LAKE FISH AND WILDLIFE FUND.--

(1) There is hereby established in the Treasury of the United States the "Lahontan Valley and Pyramid Lake Fish and Wildlife Fund" which shall be available for deposit of donations from any source and funds provided under subsections 205(a) and (b), 206(d), and subparagraph 208(a)(2)(C), if any, of this title.

(2) Moneys deposited into this fund shall be available for appropriation to the Secretary for fish and wildlife programs for Lahontan Valley consistent with this section and for protection and restoration of the Pyramid Lake fishery consistent with plans prepared under subsection 207(a) of this title. The Secretary shall endeavor to distribute benefits from this fund on an equal basis between the Pyramid Lake fishery and the Lahontan Valley wetlands, except that moneys deposited into the fund by the State of Nevada or donated by non-Federal entities or individuals for express purposes shall be available only for such purposes and may be expended without further appropriation, and funds deposited under subparagraph 208(a)(2)(C) shall only be available for the benefit of the Pyramid Lake fishery and may be expended without further appropriation.

(g) INDIAN LAKES AREA.--The Secretary is authorized to convey to the State of Nevada or Churchill County, Nevada, Federal lands in the area generally known as the Indian Lakes area, as depicted on the map entitled "Indian Lakes Area," dated July 16, 1990, pursuant to an agreement between the Secretary and the State of Nevada or Churchill County, Nevada, as appropriate, for the purposes of fish and wildlife, and recreation. Any activity provided under the terms of the 1948 Tripartite Agreement may continue under the terms of that agreement until its expiration date, unless such agreement is otherwise terminated. The official map shall be on file with the United States Fish and Wildlife Service.

SEC. 207. CUI-UI AND LAHONTAN CUTTHROAT TROUT RECOVERY AND ENHANCEMENT PROGRAM.

(a) RECOVERY PLANS.--Pursuant to the Endangered Species Act, as amended, the Secretary shall expeditiously revise, update, and implement plans for the conservation and recovery of the cui-ui and Lahontan cutthroat trout. Such plans shall be completed and updated from time to time as appropriate in accordance with the Endangered Species Act, as amended, and shall include all relevant measures necessary to conserve and recover the species. Such plans and any amendments and revisions thereto shall take into account and be implemented in a manner consistent with the allocations of water to the State of Nevada and the State of California made under section 204 of this title, the Preliminary Settlement Agreement as modified by the Ratification Agreement, and the Operating Agreement, if and when those allocations and agreements enter into effect.

(b) TRUCKEE RIVER REHABILITATION.--

(1) The Secretary of the Army, in consultation with and with the assistance of the Pyramid Lake Tribe, State of Nevada, Environmental Protection Agency, the Secretary, and other interested parties, is authorized and directed to incorporate into its ongoing reconnaissance level study of the Truckee River, a study of the rehabilitation of the lower Truckee River to and including the river terminus delta at Pyramid Lake, for the benefit of the Pyramid Lake fishery. Such study shall analyze, among other relevant factors, the feasibility of:

- (A) restoring riparian habitat and vegetative cover;
- (B) stabilizing the course of the Truckee River to minimize erosion;
- (C) improving spawning and migratory habitat for the cui-ui;
- (D) improving spawning and migratory habitat for the Lahontan cutthroat trout; and

(E) improving or replacing existing facilities, or creating new facilities, to enable the efficient passage of cui-ui and Lahontan cutthroat trout through or around the delta at the mouth of the Truckee River, and to upstream reaches above Derby Dam, to obtain access to upstream spawning habitat.

(2) There are authorized to be appropriated to the Secretary of the Army such funds as are necessary to supplement the on-going reconnaissance level study, referenced in paragraph (1), to address and report on the activities and facilities described in that paragraph.

(c) ACQUISITION OF WATER RIGHTS.--

(1) The Secretary is authorized to acquire water and water rights, with or without the lands to which such rights are appurtenant, and to transfer, hold, and exercise such water and water rights and related interests to assist the conservation and recovery of the Pyramid Lake fishery in accordance with the provisions of this subsection. Water rights acquired under this subsection shall be exercised in a manner consistent with the Operating Agreement and the Preliminary Settlement Agreement as modified by the Ratification Agreement and, to the maximum extent

practicable, used for the benefit of the Pyramid Lake fishery and shall not be sold, exchanged, or otherwise disposed of except to the benefit of the Pyramid Lake fishery.

(2) Acquisition of water rights and related interests pursuant to this subsection shall be subject to the following conditions:

(A) water rights acquired must satisfy eligibility criteria adopted by the Secretary;

(B) water right purchases shall be only from willing sellers, but the Secretary may target purchases in areas deemed by the Secretary to be most beneficial to such a purchase program;

(C) prior to acquiring any water or water rights in the State of California for the Pyramid Lake fishery, the Secretary shall first consult with the Governor of California and prepare a record of decision on the basis of such consultation;

(D) all water rights shall be transferred in accordance with any applicable State law; and

(E) water rights acquired by the Secretary shall be managed by the Secretary in consultation with the Pyramid Lake Tribe and affected interests.

(3) Nothing in this subsection shall be construed as limiting or affecting the authority of the Secretary to acquire water and water rights under other applicable laws.

(4) The Secretary is authorized to reimburse non-Federal entities for reasonable and customary costs for operation and maintenance of the Newlands Project associated with the delivery of water in carrying out the provisions of this subsection.

(5) Consistent with fulfillment of this section and not as a precondition thereto, the Secretary shall study and report on the social, economic, and environmental effects of the water rights purchase program authorized by this section. This study may be conducted in coordination with the studies authorized by paragraph 206(a)(4) and subsection 209(c) of this title, and shall be reported to the Committees on Energy and Natural Resources, Environment and Public Works, and Appropriations of the Senate, and the Committees on Interior and Insular Affairs, Merchant Marine and Fisheries, and Appropriations of the House of Representatives not later than three years after the date of enactment of this title.

(d) USE OF STAMPEDE AND PROSSER RESERVOIRS.--

(1) The rights of the United States to store water in Stampede Reservoir shall be used by the Secretary for the conservation of the Pyramid Lake fishery, except that such use must be consistent with the Preliminary Settlement Agreement as modified by the Ratification Agreement, the Operating Agreement, and the mitigation agreement specified in subparagraph 205(a)(1)(C) of this title.

(2) The rights of the United States to store water in Prosser Creek Reservoir shall be used by the Secretary as may be required to restore and maintain the Pyramid Lake fishery pursuant to the Endangered Species Act, as amended, except that such use must be consistent with the Tahoe-Prosser Exchange Agreement, the

Preliminary Settlement Agreement as modified by the Ratification Agreement, the Operating Agreement, and the mitigation agreement specified in subparagraph 205(a)(1)(C) of this title.

(3) Nothing in this subsection shall prevent exchanges of such water or the use of the water stored in or released from these reservoirs for coordinated non-consumptive purposes, including recreation, instream beneficial uses, and generation of hydro-electric power. Subject to the Secretary's obligations to use water for the Pyramid Lake fishery, the Secretary is authorized to use storage capacity in the Truckee River reservoirs, including Stampede and Prosser Creek reservoirs, for storage of non-project water, including, but not limited to, storage of California's Truckee River basin surface water allocation, through negotiation of appropriate provisions for storage of such water in the Operating Agreement. To the extent it is not necessary for the Pyramid Lake fishery, the Secretary may allow Truckee River reservoir capacity dedicated to Washoe Project water to be used for exchanges of water or water rights, and to enable conjunctive use. In carrying out the provisions of this subsection, the Secretary shall comply with all applicable provisions of State law.

(e) OFFSETTING FLOWS.--Additional flows in the Truckee River and to Pyramid Lake resulting from the implementation of subsection 206(c) of this title are intended to offset any reductions in those flows which may be attributable to the allocations to California or Nevada under section 204 of this title or to the waivers in sections 3 and 21 of article II of the Preliminary Settlement Agreement as modified by the Ratification Agreement.

SEC. 208. PYRAMID LAKE FISHERIES AND DEVELOPMENT FUNDS.

(a) FUNDS ESTABLISHED.--

(1) There are hereby established within the Treasury of the United States the "Pyramid Lake Paiute Fisheries Fund" and "Pyramid Lake Paiute Economic Development Fund".

(2) There is authorized to be appropriated to the Pyramid Lake Paiute Fisheries Fund \$25,000,000.

(A) The principal of the Pyramid Lake Paiute Fisheries Fund shall be unavailable for withdrawal.

(B) Interest earned on the Pyramid Lake Paiute Fisheries Fund shall be available to the Pyramid Lake Tribe only for the purposes of operation and maintenance of fishery facilities at Pyramid Lake, excluding Marble Bluff Dam and Fishway, and for conservation of the Pyramid Lake fishery in accordance with plans prepared by the Pyramid Lake Tribe in consultation with and the concurrence of the United States Fish and Wildlife Service and approved by the Secretary. Of interest earned annually on the principal, 25 percent per year, or an amount which, in the sole judgment of the Secretary of the Treasury, is sufficient to maintain the principal of the fund at \$25,000,000 in 1990 constant dollars, whichever is less, shall be retained in the fund as principal and shall not be

available for withdrawal. Deposits of earned interest in excess of that amount may be made at the discretion of the Pyramid Lake Tribe, and all such deposits and associated interest shall be available for withdrawal.

(C) All sums deposited in, accruing to, and remaining in the Pyramid Lake Paiute Fishery Fund shall be invested by the Secretary and the Secretary of the Treasury in interest-bearing deposits and securities in accordance with the Act of June 24, 1938, 52 Stat. 1037. Interest earnings not expended, added to principal, or obligated by the Pyramid Lake Tribe in the year in which such earnings accrue to the fund or in the four years that immediately follow shall be credited to the fund established under subsection 206(f) of this title.

(D) Subject to subparagraph (E) of this paragraph, the Secretary and the Secretary of the Treasury shall allocate and make available to the Pyramid Lake Tribe such eligible moneys from the Pyramid Lake Fishery Fund as are requested by the Pyramid Lake Tribe to carry out plans developed under subparagraph (B) of this paragraph.

(E) The Secretary and the Secretary of the Treasury shall not disburse moneys from the Pyramid Lake Paiute Fishery Fund until such time as the following conditions have been met:

(i) The Pyramid Lake Tribe has released any and all claims of any kind whatsoever against the United States for damages to the Pyramid Lake fishery resulting from the Secretary's acts or omissions prior to the date of enactment of this title; and

(ii) The Pyramid Lake Tribe has assumed financial responsibility for operation and maintenance of the fishery facilities located at Pyramid Lake for the benefit of the Pyramid Lake fishery, excluding the Marble Bluff Dam and Fishway.

(3) There is authorized to be appropriated to the Pyramid Lake Paiute Economic Development Fund \$40,000,000 in five equal annual installments in the 1993, 1994, 1995, 1996, and 1997 fiscal years.

(A) The principal and interest of the Pyramid Lake Paiute Economic Development Fund shall be available for tribal economic development only in accordance with a plan developed by the Pyramid Lake Tribe in consultation with the Secretary. The objectives of the plan shall be to develop long-term, profit-making opportunities for the Pyramid Lake Tribe and its members, to create optimum employment opportunities for tribal members, and to establish a high quality recreation area at Pyramid Lake using the unique natural and cultural resources of the Pyramid Lake Indian Reservation. The plan shall be consistent with the fishery restoration goals of section 207 of this title. The plan may be revised and updated by the Pyramid Lake Tribe in consultation with the Secretary.

(B) The Pyramid Lake Tribe shall have complete discretion to invest and manage the Pyramid Lake Paiute Economic Development Fund, except that no portion of the principal shall be used to develop, operate, or finance any form of gaming or gambling, except as may be provided by the Indian Gaming Regulatory Act, Public Law 100-497 (102 Stat. 2467), and the United States shall not bear any

obligation or liability regarding the investment, management, or use of such funds that the Pyramid Lake Tribe chooses to invest, manage, or use.

(C) If the Pyramid Lake Tribe so requests, all sums deposited in, accruing to, and remaining in the Pyramid Lake Paiute Economic Development Fund shall be invested by the Secretary and the Secretary of the Treasury in interest-bearing deposits and securities in accordance with the Act of June 24, 1938, 52 Stat. 1037. All such interest shall be added to the Pyramid Lake Paiute Economic Development Fund.

(D) The Secretary and the Secretary of the Treasury shall allocate and make available to the Pyramid Lake Tribe such moneys from the Pyramid Lake Economic Development Fund as are requested by the Pyramid Lake Tribe, except that no disbursements shall be made to the Pyramid Lake Tribe unless and until the Pyramid Lake Tribe adopts and submits to the Secretary the economic development plan described in subparagraph (A) of this paragraph, and section 204, the Preliminary Settlement Agreement as modified by the Ratification Agreement, and the Operating Agreement enter into effect in accordance with the terms of subsection 210(a) of this title.

(4) Under no circumstances shall any part of the principal of the funds established under this section be distributed to members of the Pyramid Lake Tribe on a per capita basis.

(5) If, and to the extent that any portion of the sum authorized to be appropriated in paragraph 208(a)(2) is appropriated after fiscal year 1992, or in a lesser amount, there shall be deposited in the Pyramid Lake Paiute Fisheries Fund, subject to appropriations, in addition to the full contribution to the Pyramid Lake Paiute Fisheries Fund, an adjustment representing the interest income as determined by the Secretary in his sole discretion that would have been earned on any unpaid amount had the amount authorized in paragraph 208(a)(2) been appropriated in full for fiscal year 1992.

(6) If and to the extent that any portion of the sums authorized to be appropriated in paragraph 208(a)(3) are appropriated after fiscal years 1993, 1994, 1995, 1996, and 1997, or in lesser amounts than provided by paragraph 208(a)(3), there shall be deposited in the Pyramid Lake Paiute Economic Development Fund, subject to appropriations, in addition to the full contributions to the Pyramid Lake Paiute Economic Development Fund, an adjustment representing the interest income as determined by the Secretary in his sole discretion that would have been earned on any unpaid amounts had the amounts authorized in paragraph 208(a)(3) been appropriated in full for fiscal years 1993, 1994, 1995, 1996, and 1997.

SEC. 209. NEWLANDS PROJECT IMPROVEMENT.

(a) EXPANSION OF AUTHORIZED PURPOSES.--

(1) In addition to the existing irrigation purpose of the Newlands Reclamation Project, the Secretary is authorized to operate and maintain the project for the purposes of:

- (A) fish and wildlife, including endangered and threatened species;
- (B) municipal and industrial water supply in Lyon and Churchill counties, Nevada, including the Fallon Indian Reservation;
- (C) recreation;
- (D) water quality; and
- (E) any other purposes recognized as beneficial under the law of the State of Nevada.

(2) Additional uses of the Newlands Project made pursuant to this section shall have valid water rights and, if transferred, shall be transferred in accordance with State law.

(b) TRUCKEE RIVER DIVERSIONS.--The Secretary shall not implement any provision of this title in a manner that would:

- (1) increase diversions of Truckee River water to the Newlands Project over those allowed under applicable operating criteria and procedures; or
- (2) conflict with applicable court decrees.

(c) PROJECT EFFICIENCY STUDY.--

(1) The Secretary shall study the feasibility of improving the conveyance efficiency of Newlands Project facilities to the extent that, within twelve years after the date of enactment of this title, on average not less than seventy-five percent of actual diversions under applicable operating criteria and procedures shall be delivered to satisfy the exercise of water rights within the Newlands Project for authorized project purposes.

(2) The Secretary shall consider the effects of the measures required to achieve such efficiency on groundwater resources and wetlands in the Newlands Project area. The Secretary shall report the results of such study to the Committees on Energy and Natural Resources, Environment and Public Works, and Appropriations of the Senate and the Committees on Interior and Insular Affairs, Merchant Marine and Fisheries, and Appropriations of the House of Representatives not later than three years after the date of enactment of this title.

(d) WATER BANK.--The Secretary, in consultation with the State of Nevada and the operator of the Newlands Project, is authorized to use and enter into agreements to allow water right holders to use Newlands Project facilities in Nevada, where such facilities are not otherwise committed or required to fulfill project purposes or other Federal obligations, for supplying carryover storage of irrigation and other water for drought protection and other purposes, consistent with subsections (a) and (b) of this section. The use of such water shall be consistent with and subject to applicable State laws.

(e) RECREATION STUDY.--The Secretary, in consultation with the State of Nevada, is authorized to conduct a study to identify administrative, operational, and structural measures to benefit recreational use of Lahontan Reservoir and the Carson River downstream of Lahontan Dam. Such study shall be reported to the

Committee on Energy and Natural Resources of the Senate and the Committee on Interior and Insular Affairs of the House of Representatives.

(f) EFFLUENT REUSE STUDY.--The Secretary, in cooperation with the Administrator of the Environmental Protection Agency, the State of Nevada, and appropriate local entities, shall study the feasibility of reusing municipal wastewater for the purpose of wetland improvement or creation, or other beneficial purposes, in the areas of Fernley, Nevada, the former Lake Winnemucca National Wildlife Refuge, and the Lahontan Valley. The Secretary shall coordinate such studies with other efforts underway to manage wastewater from the Reno and Sparks, Nevada, area and to improve Truckee River and Pyramid Lake water quality. Such study shall be reported to the Committees on Energy and Natural Resources, Environment and Public Works, and Appropriations of the Senate and the Committees on Interior and Insular Affairs, Merchant Marine and Fisheries, and Appropriations of the House of Representatives.

(g) REPAYMENT CANCELLATION.--Notwithstanding any other provision of law, the Secretary may cancel all repayment obligations owing to the Bureau of Reclamation by the Truckee-Carson Irrigation District. As a precondition for the Secretary to cancel such obligations, the Truckee-Carson Irrigation District shall agree to collect all such repayment obligations and use such funds for water conservation measures. For the purpose of this subsection and paragraph 209(h)(2), the term "water conservation measures" shall not include repair, modification, or replacement of Derby Dam.

(h) SETTLEMENT OF CLAIMS.--

(1) The provisions of subsections 209(d), (e), (f), and (g) of this section shall not become effective unless and until the Truckee-Carson Irrigation District has entered into a settlement agreement with the Secretary concerning claims for recoupment of water diverted in excess of the amounts permitted by applicable operating criteria and procedures.

(2) The provisions of subsection 209(g) of this section shall not become effective unless and until the State of Nevada provides not less than \$4,000,000 for use in implementing water conservation measures pursuant to the settlement described in paragraph (1) of this subsection.

(3) The Secretary is authorized to expend such sums as may be required to match equally the sums provided by the State of Nevada under paragraph (2) of this subsection. Such sums shall be available for use only in implementing water conservation measures pursuant to the settlement described in paragraph (1) of this subsection.

(i) FISH AND WILDLIFE.--The Secretary shall, insofar as is consistent with project irrigation purposes and applicable operating criteria and procedures, manage existing Newlands Project re-regulatory reservoirs for the purpose of fish and wildlife.

(j) OPERATING CRITERIA AND PROCEDURES.--

(1) In carrying out the provisions of this title, the Secretary shall act in a manner that is fully consistent with the decision in the case of *Pyramid Lake Paiute Tribe of Indians v. Morton*, 354 F.Supp. 252 (D.D.C.1973).

(2) Notwithstanding any other provision of law, the operating criteria and procedures for the Newlands Reclamation Project adopted by the Secretary on April 15, 1988 shall remain in effect at least through December 31, 1997, unless the Secretary decides, in his sole discretion, that changes are necessary to comply with his obligations, including those under the Endangered Species Act, as amended. Prior to December 31, 1997, no court or administrative tribunal shall have jurisdiction to set aside any of such operating criteria and procedures or to order or direct that they be changed in any way. All actions taken heretofore by the Secretary under any operating criteria and procedures are hereby declared to be valid and shall not be subject to review in any judicial or administrative proceeding, except as set forth in paragraph (3) of this subsection.

(3) The Secretary shall henceforth ensure compliance with all of the provisions of the operating criteria and procedures referenced in paragraph (2) of this subsection or any applicable provision of any other operating criteria or procedures for the Newlands Project previously adopted by the Secretary, and shall, pursuant to subsection 709(h) or judicial proceeding, pursue recoupment of any water diverted from the Truckee River in excess of the amounts permitted by any such operating criteria and procedures. The Secretary shall have exclusive authority and responsibility to pursue such recoupment, except that, if an agreement or order leading to such recoupment is not in effect as of December 31, 1997, any party with standing to pursue such recoupment prior to enactment of this title may pursue such recoupment thereafter. Any agreement or court order between the Secretary and other parties concerning recoupment of Truckee River water diverted in violation of applicable operating criteria and procedures shall be consistent with the requirements of this subsection and the Endangered Species Act, as amended, and shall be submitted for the review and approval of the court exercising jurisdiction over the operating criteria and procedures for the Newlands Project. All interested parties may participate in such review. In any recoupment action brought by any party, other than the Secretary, after December 31, 1997, the only relief available from any court of the United States will be the issuance of a declaratory judgment and injunctive relief directing any unlawful user of water to restore the amount of water unlawfully diverted. In no event shall a court enter any order in such a proceeding that will result in the expenditure of any funds out of the United States Treasury.

SEC. 210. MISCELLANEOUS PROVISIONS.

(a) CLAIMS SETTLEMENT.--

(1) The effectiveness of section 204 of this title, the Preliminary Settlement Agreement as modified by the Ratification Agreement, the Operating Agreement, and the Secretary's authority to disburse funds under paragraph 208(a)(3) of this

title are contingent upon dismissal with prejudice or other final resolution, with respect to the parties to the Preliminary Settlement Agreement as modified by the Ratification Agreement and the State of Nevada and the State of California, of the following outstanding litigation and proceedings:

(A) *Pyramid Lake Paiute Tribe v. California*, Civ. S-181-378-RAR-RCB, United States District Court, Eastern District of California;

(B) *United States v. Truckee-Carson Irrigation District*, Civ. No. R-2987-RCB, United States District Court, District of Nevada;

(C) *Pyramid Lake Paiute Tribe v. Lujan*, Civ. S-87-1281-LKK, United States District Court, Eastern District of California;

(D) *Pyramid Lake Paiute Tribe v. Department of the Navy*, Civ. No. R-86-115-BRT in the United States District Court, District of Nevada and Docket No. 88-1650 in the United States Court of Appeals for the Ninth Circuit; and

(E) All pending motions filed by the Tribe in Docket No. E-9530 before the Federal Energy Regulatory Commission.

(2) In addition to any other conditions on the effectiveness of this title set forth in this title, the provisions of:

(A) section 204, subsections 206(c), 207(c) and (d), subparagraph 208(a)(3)(D), and paragraph 210(a)(3) of this title shall not take effect until:

(i) the agreements and regulations required under section 205 of this title, including the Truckee Meadows water conservation plan referenced in the Preliminary Settlement Agreement as modified by the Ratification Agreement, enter into effect;

(ii) the outstanding claims described in paragraph 210(a)(1) have been dismissed with prejudice or otherwise finally resolved;

(B) section 204 of this title, the Preliminary Settlement Agreement as modified by the Ratification Agreement, and the Operating Agreement, shall not take effect until the Pyramid Lake Tribe's claim to the remaining waters of the Truckee River which are not subject to vested or perfected rights has been finally resolved in a manner satisfactory to the State of Nevada and the Pyramid Lake Tribe; and

(C) section 204 of this title, the Preliminary Settlement Agreement as modified by the Ratification Agreement, the Operating Agreement, and subsection 207(d) shall not take effect until the funds authorized in paragraph 208(a)(3) of this title have been appropriated.

(3) On and after the effective date of section 204 of this title, except as otherwise specifically provided herein, no person or entity who has entered into the Preliminary Settlement Agreement as modified by the Ratification Agreement or the Operating Agreement, or accepted any benefits or payments under this legislation, including any Indian Tribe and the States of California and Nevada, the United States and its officers and agencies may assert in any judicial or administrative proceeding a claim that is inconsistent with the allocations provided in section 204 of this title, or inconsistent or in conflict with the operational criteria for the Truckee River established pursuant to section 205 of this title. No

person or entity who does not become a party to the Preliminary Settlement Agreement as modified by the Ratification Agreement or the Operating Agreement may assert in any judicial or administrative proceeding any claim for water or water rights for the Pyramid Lake Tribe, the Pyramid Lake Indian Reservation, or the Pyramid Lake fishery. Any such claims are hereby barred and extinguished and no court of the United States may hear or consider any such claims by such persons or entities.

(b) GENERAL PROVISIONS.--

(1) Subject to the provisions of paragraphs (2) and (3) of this subsection, and to all existing property rights or interests, all of the trust land within the exterior boundaries of the Pyramid Lake Indian Reservation shall be permanently held by the United States for the sole use and benefit of the Pyramid Lake Tribe.

(2) Anaho Island in its entirety is hereby recognized as part of the Pyramid Lake Indian Reservation. In recognition of the consent of the Pyramid Lake Tribe evidenced by Resolution No. 19-90 of the Pyramid Lake Paiute Tribal Council, all of Anaho Island shall hereafter be managed and administered by and under the primary jurisdiction of the United States Fish and Wildlife Service as an integral component of the National Wildlife Refuge System for the benefit and protection of colonial nesting species and other migratory birds. Anaho Island National Wildlife Refuge shall be managed by the United States Fish and Wildlife Service in accord with the National Wildlife Refuge System Administration Act, as amended, and other applicable provisions of Federal law. Consistent with the National Wildlife Refuge System Administration Act, as amended, the Director of the United States Fish and Wildlife Service is authorized to enter into cooperative agreements with the Pyramid Lake Tribe regarding Anaho Island National Wildlife Refuge.

(3) Subject to the relinquishment by the legislature of the State of Nevada of any claim the State of Nevada may have to ownership of the beds and banks of the Truckee River within the exterior boundaries of the Pyramid Lake Indian Reservation and of Pyramid Lake, those beds and banks are recognized as part of the Pyramid Lake Indian Reservation and as being held by the United States in trust for the sole use and benefit of the Pyramid Lake Tribe. Nothing in this subsection shall be deemed to recognize any right, title, or interest of the State of Nevada in those beds and banks which it would not otherwise have. No other provision of this title shall be contingent on the effectiveness of this subsection.

(4) Except as provided in paragraphs (2) and (9) of this subsection, the Pyramid Lake Tribe shall have the sole and exclusive authority to establish rules and regulations governing hunting, fishing, boating, and all forms of water based recreation on all lands within the Pyramid Lake Indian Reservation except fee-patented land, provided that the regulation of such activities on fee-patented land within the Pyramid Lake Indian Reservation shall not be affected by this paragraph. Nothing in this paragraph shall be deemed to recognize or confer any criminal jurisdiction on the Pyramid Lake Tribe or to affect any regulatory jurisdiction of the State of Nevada with respect to any other matters.

(5) The consent of the United States is given to the negotiation and execution of an intergovernmental agreement between the Pyramid Lake Tribe and the State of Nevada, which agreement may also include Washoe County, Nevada, providing for the enforcement by the State of Nevada and Washoe County of the rules and regulations referred to in paragraph (4) adopted by the Pyramid Lake Tribe governing hunting, fishing, boating, and all forms of water based recreation against non-members of the Pyramid Lake Tribe and for State courts or other forums of the State of Nevada or its political subdivisions to exercise civil and criminal jurisdiction over violations of the Pyramid Lake Tribe's rules and regulations allegedly committed by such non-members, except as provided by paragraphs (2) and (9) of this subsection.

(6) The consent of the United States is given to the negotiation and execution of an intergovernmental agreement between the Pyramid Lake Tribe and the State of Nevada, which agreement may also include Washoe County, Nevada, providing for the enforcement of rules and regulations governing hunting, fishing, boating and all forms of water based recreation on fee-patented land within the Pyramid Lake Indian Reservation, except as provided by paragraphs (2) and (9) of this subsection.

(7) Nothing in this title shall limit or diminish the Federal Government's trust responsibility to any Indian Tribe, except that this provision shall not be interpreted to impose any liability on the United States or its agencies for any damages resulting from actions taken by the Pyramid Lake Paiute Tribe as to which the United States is not a party or with respect to which the United States has no supervisory responsibility.

(8) Subject to the terms, conditions, and contingencies of and relating to the Preliminary Settlement Agreement as modified by the Ratification Agreement, the United States on its own behalf and in its capacity as trustee to the Pyramid Lake Tribe confirms and ratifies the waivers of any right to object to the use and implementation of the water supply measures described in sections 3 and 21 of article II of the Preliminary Settlement Agreement as modified by the Ratification Agreement, and any waivers of sovereign immunity given in connection with that agreement or the Operating Agreement, upon the entry into effect of the Preliminary Settlement Agreement as modified by the Ratification Agreement.

(9) Nothing in this title shall be construed as waiving or altering the requirements of any Federal environmental or wildlife conservation law, including, but not limited to, the Endangered Species Act, as amended, including the consultation and reinitiation of consultation responsibilities of the Secretary under section 7 of the Act, and the National Environmental Policy Act of 1969.

(10) Nothing in this title shall be construed to create an express or implied Federal reserved water right.

(11) Nothing in this title shall subject the United States or any of its agencies or instrumentalities or any Indian Tribe to any State jurisdiction or regulation to which they would not otherwise be subject.

(12) Nothing in this title is intended to abrogate the jurisdiction of or required approvals by the Nevada State Engineer or the California State Water Resources Control Board.

(13) Nothing in this title is intended to affect the power of the *Orr Ditch* court or the *Alpine* court to ensure that the owners of vested and perfected Truckee River water rights receive the amount of water to which they are entitled under the *Orr Ditch* decree or the *Alpine* decree. Nothing in this title is intended to alter or conflict with any vested and perfected right of any person or entity to use the water of the Truckee River or its tributaries, including, but not limited to, the rights of landowners within the Newlands Project for delivery of the water of the Truckee River to Derby Dam and for the diversion of such waters at Derby Dam pursuant to the *Orr Ditch* decree or any applicable law.

(14) No single provision or combination of provisions in this title, including interstate allocations under section 204, or associated agreements which may adversely affect inflows of water to Pyramid Lake shall form the basis for additional claims of water to benefit Pyramid Lake, the Pyramid Lake fishery, or lands within the Pyramid Lake Indian Reservation.

(15) Nothing in this title shall affect any claim of Federal reserved water rights, if any, to the Carson River or its tributaries for the benefit of lands within the Fallon Indian Reservation.

(16) The Secretary, in consultation with the State of Nevada and affected local interests, shall undertake appropriate measures to address significant adverse impacts, identified by studies authorized by this title, on domestic uses of groundwater directly resulting from the water purchases authorized by this title.

(17) It is hereby declared that after August 26, 1935, and prior to the date of enactment of this title, there was no construction within the meaning of section 23(b) of the Federal Power Act, as amended, at the four run-of-river hydroelectric project works owned by Sierra Pacific Power Company and located on the Truckee

River. Notwithstanding any other provision of law, after the date of enactment of this title, development of additional generating capacity at such project works that is accomplished through replacement of turbine generators and increases in effective head shall not constitute construction within the meaning of section 23(b) of the Federal Power Act, as amended: Provided, That such development may not change the location of or increase any existing impoundments and may not require diversions of water in excess of existing water rights for such project works; And provided further, That the diversions of water for the operation of such project works shall be consistent with the Preliminary Settlement Agreement as modified by the Ratification Agreement, and the Operating Agreement. The Secretary shall take into account the monetary value of this provision to the Sierra Pacific Power Company in calculating the storage charge referred to in paragraph 205(a)(6).

(18) The Secretary is authorized, in accordance with this section and applicable provisions of existing law, to exchange surveyed public lands in Nevada for interests in fee patented lands, water rights, or surface rights to lands within or contiguous to the exterior boundaries of the Pyramid Lake Indian Reservation. The values of the lands or interests therein exchanged by the Secretary under this paragraph shall be substantially equal, but the Secretary is authorized to accept monetary payments from the owners of such fee patented lands, water rights, or surface rights as circumstances may require in order to compensate for any difference in value. Any such payments shall be deposited to the Treasury. The value of improvements on land to be exchanged shall be given due consideration and an appropriate allowance shall be made therefor in the valuation. Title to lands or any interest therein acquired by the Secretary pursuant to this subsection shall be taken in the name of the United States in trust for the Pyramid Lake Tribe and shall be added to the Pyramid Lake Indian Reservation.

(c) APPROPRIATIONS AUTHORIZED.--There are authorized to be appropriated such sums as may be required to implement the provisions of this title.

PRELIMINARY SETTLEMENT AGREEMENT

WHEREAS, on May 23, 1989, the Pyramid Lake Paiute Tribe of Indians (Tribe) and Sierra Pacific Power Company (Sierra) entered into a Preliminary Settlement Agreement, which contemplates the use of federally owned storage reservoirs in the Truckee River Basin in California for storage of the waters available under the described water rights for fishery and municipal and industrial purposes;

WHEREAS, a condition of the effectiveness of the Preliminary Settlement Agreement (see paragraph 29(g) of Article III of the Preliminary Settlement Agreement) is that the United States would become a party to the agreement and accept, approve and become bound by all of its terms and conditions to the same extent as the Tribe; and

WHEREAS, the United States has reviewed the terms and conditions of that Preliminary Settlement Agreement and found them to be generally acceptable.

NOW THEREFORE, the United States by its authorized official, ratifies, confirms and agrees by this instrument to become a party to that Agreement, and, subject to the following clarifications and understandings, accepts, approves, and agrees to be bound by said terms and conditions to the same extent as the Tribe:

A. Attached hereto and incorporated herein as Exhibit A is a clarified and revised Preliminary Settlement Agreement which includes the revisions to be made to that Agreement as a result of this ratification. The United States shall be bound only by the terms of Exhibit A and not by any other version of the Preliminary Settlement Agreement.

B. (1) The United States reserves the right to cancel in full and withdraw this Ratification Agreement if either the Tribe or Sierra attempts to rely upon condition (a) of Section 29 of Article III of the Preliminary Settlement in whole or in part.

(2) The Operating Agreement referred to in paragraph 29(f) of Article III of the Preliminary Settlement Agreement shall be construed to refer to the Operating Agreement, if any, required by Title II of the "Truckee-Carson-Pyramid Lake Water Rights Settlement Act."

(3) As to subsection (j) of Section 29 of Article III of the Preliminary Settlement Agreement, the United States shall not be bound by any of the provisions thereof in any respect unless and until it, through an authorized official, enters into a binding agreement relating to the subject matter thereof, but only to such extent and not otherwise. The discretion of the United States or its officers to enter into any such agreement shall not be impaired or affected in any degree by these provisions, and it shall remain discretionary with the United States as to whether to enter into any such Agreement and which terms such Agreement, if any, shall include, subject to the terms, conditions and limitations of all applicable laws.

C. Sierra Pacific and the Tribe must agree in carrying out the terms and provisions of this Agreement to abide by and comply with all applicable state and federal laws and to abide by all lawful regulations issued by the Secretary.

EXHIBIT "A" PRELIMINARY SETTLEMENT AGREEMENT

THIS AGREEMENT is entered into this 23rd day of May, 1989, between the Pyramid Lake Paiute Tribe of Indians ("Tribe") and Sierra Pacific Power Company ("Sierra").

I. RECITALS

1. The cui-ui (*Chasmistes cujus*) is officially classified as an endangered species. It is the only pure species remaining in its genus, Chasmistes, and is found only in the Pyramid Lake/Lower Truckee River ecosystem in Nevada.

2. The Lahontan cutthroat trout (*Salmo clarki henshawi*) is officially classified as a threatened species. It is found in the Pyramid Lake/Truckee River ecosystem as well as other lakes, streams and rivers in the Great Basin.

3. The Tribe is organized under Section 16 of the Act of June 18, 1934 (25 U.S.C. 476) and governs the Pyramid Lake Indian Reservation which includes Pyramid Lake and a large portion of the Lower Truckee River.

4. The Tribe desires to increase flows in the Lower Truckee River in the spring and early summer months to improve Spawning Flows in the Lower Truckee River for the endangered cui-ui and the threatened Lahontan cutthroat trout.

5. Sierra serves water to the Cities of Reno and Sparks and unincorporated portions of Washoe County and also provides electricity to northern Nevada and portions of east central, California.

6. In addition to its other power generating facilities, Sierra owns and operates four run of the river hydroelectric plants on the Truckee River above Reno. Sierra owns and utilizes water rights for these hydroelectric plants utilizing water which is released from or passed through Lake Tahoe and other Truckee River reservoirs.

7. Sierra owns and utilizes substantial Truckee River water rights to provide water for municipal, industrial and domestic (M&I) purposes within its service area. Sierra also participates with the local governments of Reno, Sparks and Washoe County in an acquisition program approved by the Public Service Commission of Nevada to acquire agricultural water rights in the Truckee River Basin and to change them to M&I purposes.

8. The water rights acquired, owned and utilized by Sierra are sufficient to provide water for M&I use within its service area in most years. Sierra needs additional storage, however, to insure an adequate supply of water under Drought Conditions.

9. The parties hereto and others are involved in negotiations and in supporting enactment of proposed congressional settlement legislation which, if finalized and enacted, will provide for:

- (a) Allocation of the waters of the Lake Tahoe, Truckee River and Carson River Basins;
- (b) The purchase of water for the wetlands in the Lahontan Valley and possibly other wetlands;
- (c) The development and implementation of a mitigation and enhancement program for the cui-ui and Lahontan cutthroat trout;
- (d) A fund for the economic development of the Pyramid Lake Indian Reservation;
- (e) The resolution of existing litigation and the avoidance of future litigation; and
- (f) Authorization and agreement for the operation of the Truckee River Reservoirs, including Lake Tahoe.

10. In order for the negotiations and proposed settlement legislation to progress, it is necessary for the parties hereto to enter into this Preliminary Agreement concerning the utilization of water rights and the operation of the Truckee River Reservoirs to provide greater Spawning Flows in the Lower Truckee River and an adequate supply of water for Sierra's Service Area under Drought Conditions.

II. DEFINITIONS

As used in this Preliminary Agreement:

1. "Critical Drought Period" means a hydrologic period during which the water supplies available from the Truckee River are limited to the same or similar extent as the water supplies available from the Truckee River under a repetition of hydrologic conditions which existed from 1928 to 1935.
2. "Drought Conditions" means conditions under which Sierra's Normal Water Supplies are not sufficient to satisfy Sierra's normal water year demand, but in no event shall Drought Conditions exist when a Drought Situation does not also exist.
3. "Drought Situation" means a situation under which it appears, based on the April 1 seasonal Truckee River runoff forecast and assuming median precipitation after April 1, either that there will not be sufficient unregulated natural runoff and pooled water in storage in the Truckee River Reservoirs to meet the Floriston Rates through the following October 31, or that the level of Lake Tahoe, excluding all Firm M&I, Non-Firm M&I and Fishery Credit Water, will be below 6223.5 feet Lake Tahoe Datum on or before the following November 15.
4. "Emergency or Repair Conditions" means an unexpected circumstance when the demands of Sierra's water customers cannot be met from Sierra's Normal Water Supplies or a scheduled alteration or repair which prevents the use of some

or all of Sierra's Normal Water Supplies to meet the demands of Sierra's water customers.

5. "Firm M&I Credit Water" means the water that is stored in Stampede Reservoir and can be utilized under the terms and conditions of this Agreement for the purpose of providing water under Drought Conditions or Emergency or Repair Conditions for M&I purposes within Sierra's Service Area and which shall not spill or be subject to evaporation losses unless it is the only remaining water in Stampede Reservoir.

6. "Fishery Credit Water" means the water that can be stored and utilized under the terms and conditions of this Agreement for the benefit of the Pyramid Lake Fishery.

7. "Floriston Rates" means the rate of flow of the Truckee River at the head of the diversion penstock at Floriston, California (but measured at the USGS Stream Gaging Station near Farad, California) consisting of an average flow of 500 cubic feet of water per second each day during the period commencing March 1 and ending September 30 of any year and an average flow of 400 cubic feet of water per second each day during the period commencing October 1 and ending the last day of the next following February of any year.

8. "Former Agricultural Water Right" means a water right from the Truckee River and its tributaries which Sierra now has or will acquire as described in Section 2 of Article III of this Agreement and which was originally established for agricultural use and has been or will be acquired or leased and transferred to or otherwise provided for M&I use.

9. "Lower Truckee River" means the Truckee River below Derby Dam.

10. "M&I" means municipal, industrial and domestic.

11. "Non-Firm M&I Credit Water" means any water other than Firm M&I Credit Water that can be stored in any Truckee River Reservoir and utilized under the terms and conditions of this Agreement under Drought Conditions or Emergency or Repair Conditions for M&I purposes within Sierra's Service Area.

12. "Orr Ditch Decree" means the Final Decree entered on September 8, 1944, in the case of United States v. Orr Water Ditch Co., et al., Equity No. A-3, in the United States District Court for the District of Nevada.

13. "Prosser Creek Fishery Water" means the water in Prosser Creek Reservoir that may be committed by the United States for the benefit of the Pyramid Lake Fishery and is not needed to carry out the Tahoe-Prosser Exchange pursuant to the Agreement of June 15, 1959.

14. "Pyramid Lake Fishery" means the two primary species found in Pyramid Lake, the cui-ui (*Chasmistes cujus*) and the Lahontan cutthroat trout (*Salmo Clarki henshawi*).

15. "Remaining Waters of the Truckee River" means the waters of the Truckee River system other than the following: (i) the waters of the Lake Tahoe Basin allocated to California and Nevada; (ii) the waters of the Truckee River and its tributaries allocated to California; and (iii) the waters of the Truckee River and its tributaries allocated to Nevada to which valid and perfected rights attach under applicable law.

16. "Sierra's Normal Water Supplies" means the water sources and supplies Sierra has and would have to meet the M&I needs of its customers in the absence of this Agreement, including the water sources and supplies described in Section 2

of Article III of this Agreement and any supplies obtained or developed pursuant to Section 3 of this Agreement, but excluding all of the water sources and supplies described in Section 21 of Article III of this Agreement and 7,500 acre feet of water above the outlet facilities of Independence Lake.

17. "Sierra's Privately Owned Stored Water" means the stored water which Sierra now has or may hereafter acquire the right to use in Donner Lake and Independence Lake.

18. "Sierra's Service Area" means the retail and wholesale certificated boundaries as may be established from time to time by the Public Service Commission of Nevada as the territory in which Sierra is entitled to sell or to distribute water.

19. "Spawning Flows in the Lower Truckee River" means the water which provides suitable conditions for fish passage, maintaining habitat, attracting, egg-taking, spawning and/or nursing of cui-ui and/or Lahontan cutthroat trout in the Lower Truckee River.

20. "Stampede Project Water" means the water that is currently captured and impounded in Stampede Reservoir and is released to support Spawning Flows in the Lower Truckee River.

21. "Truckee River Agreement" means the Agreement dated July 1, 1935, which was approved, adopted and incorporated in the Orr Ditch Decree.

22. "Truckee River General Electric Co. Decree" means the Final Decree entered on June 4, 1915 in the case of United States v. Truckee River General Electric Co., No. 14861, in the United States District Court for the Northern District of California which was transferred on February 9, 1968 to the United States District Court for the Eastern District of California and is now designated No. S-643.

23. "Truckee River Reservoirs" means the storage provided by the dam at the outlet of Lake Tahoe, Boca Reservoir, Prosser Creek Reservoir and Stampede Reservoir.

III. AGREEMENT

Section 1. Waiver of Single Purpose Hydroelectric Water. For purposes of this Agreement only, Sierra agrees to waive its rights to require releases or pass throughs of water from the Truckee River Reservoirs solely for the generation of hydroelectric power pursuant to the Truckee River General Electric Co. Decree and Claim Nos. 5, 6, 7, 8 and 9 of the Orr Ditch Decree. The water to which Sierra's rights are waived pursuant to this Section shall become Fishery Credit Water subject to the limitations set forth in Section 27 of Article III of this Agreement and shall be held in storage in the Truckee River Reservoirs and released for the sole use and benefit of the Pyramid Lake Fishery.

Section 2. Water Rights Required for New Service Commitments. Sierra agrees that it will not issue new service commitments unless such commitments are accompanied by such water rights provided directly to Sierra or through a municipal entity as are necessary to meet the new water service requirement. Sierra shall require new service commitments which rely on surface water rights to provide water rights at the rate of not less than 1.72 acre feet of water rights for every acre foot of commitment until such time as Sierra has committed to the

amount of water needed to meet a normal year demand of 80,000 acre feet within Sierra's Service Area. After the amount of water is provided to meet Sierra's normal year commitment of 80,000 acre feet and until such time as Sierra has committed to the amounts of water required to meet a normal water year demand of 119,000 acre feet within Sierra's Service Area, the water rights provided to meet new service commitments in reliance upon surface water rights may be reduced to not less than 1 acre foot of water rights for every acre foot of new service commitment; provided, however, that if Sierra is able to develop the water supply referred to in Section 3(b) of Article III of this Agreement, then the ratio of new service commitments in reliance on surface water rights shall be not less than 1.11 acre feet of water rights for every acre foot of new service commitment.

Section 3. Development of Additional M&I Water Supplies. Sierra agrees to use its best efforts to implement the following measures on a schedule to be agreed upon in the operating agreement referred to in Section 29(f) of Article III of this Agreement, to the extent legally, technically and economically feasible, to help meet the water supply demands of its customers as Sierra's total normal year water demand increases to a maximum normal year demand of 119,000 acre feet:

(a) Development of the capacity to pump 2,000 acre feet of water annually from the Sparks pit source under Drought Conditions or Emergency or Repair Conditions;

(b) The right to develop an additional 3,000 acre feet annually of groundwater from the Truckee Meadows groundwater basin (over and above the currently approved 12,616 acre feet of groundwater available from the Truckee Meadows groundwater basin); and

(c) Acquisition and utilization of the right of the Truckee-Carson Irrigation District to store and use water in Donner Lake.

The Tribe and the United States waive any and all rights or claims they may have to object to Sierra's implementation and use of the water supply measures described in this Section or Section 21 of Article III.

The measures described in Sections 3(a) and 3(c) of Article III shall not be included in, and shall be in addition to, the water rights Sierra obtains to meet new service commitments pursuant to Section 2 of Article III of this Agreement.

Section 4. Storage of Firm and Non-Firm M&I Credit Water in Truckee River Reservoirs. Sierra shall have the right to establish Firm and Non-Firm M&I Credit Water by utilizing the Truckee River Reservoirs to store or retain its Privately Owned Stored Water and the consumptive use portion of Former Agricultural Water Rights which are not utilized to supply the demands of its customers in any given year for later use under Drought Conditions or Emergency or Repair Conditions for M&I purposes. Such water may be accumulated in those Reservoirs or may be transferred between those Reservoirs through acre foot for acre foot exchanges. Sierra agrees to use the full extent of the consumptive use portion of its Former Agricultural Water Rights which are not utilized to supply the demands of its customers in any given year to establish Firm or Non-Firm M&I Credit Water pursuant to the terms and conditions of this Agreement.

Section 5. Use of Firm and Non-Firm M&I Credit Water. Sierra may use Firm M&I Credit Water and Non-Firm M&I Credit Water to supply the demands of its customers under Drought Conditions to meet its normal water year demand, up to a maximum of 119,000 acre feet, less the sum of the quantities of water actually

conserved through the implementation of the measures required by Section 29(e) of Article III of this Agreement and the additional water supplies described in Section 3 of Article III of this Agreement and implemented in accordance with the operating agreement described in Section 29(f) of Article III of this Agreement. Sierra also may use Firm M&I Credit Water and Non-Firm M&I Credit Water to meet the demands of its customers under Emergency or Repair Conditions.

Section 6. Calculation of Base Amounts of Firm and Non-Firm M&I Credit Water. The base amount of Firm M&I Credit Water Sierra may store pursuant to Section 4 of Article III of this Agreement shall vary from 2,000 acre feet to 12,000 acre feet in relation to the amount of water needed to satisfy the normal water demand of Sierra's customers as shown on Exhibit "A". The base amount of Non-Firm M&I Credit Water Sierra may store pursuant to Section 4 of Article III of this Agreement shall vary from 4,000 acre feet to 20,000 acre feet in relation to the amount of water needed to satisfy the normal water year demand of Sierra's customers as shown on Exhibit "B" and as the amount of water depleted from the Truckee River, its tributaries and groundwater basins within California increases as shown on Exhibit "C". The amount of Non-Firm M&I Credit Water shown on Exhibit "B" shall be multiplied by the percentage factor shown on Exhibit "C" for the amount of water being depleted in a normal year from the Truckee River, its tributaries and groundwater basins within California at the time the calculation is made. The product so obtained shall be the base amount of Non-Firm M&I Credit Water which Sierra may store pursuant to Section 4 of Article III of this Agreement; provided, however, that the base amount of Non-Firm M&I Credit Water which Sierra may store shall not be less than 4,000 acre feet. Sierra may commence storing Firm and Non-Firm M&I Credit Water pursuant to the provisions of this Agreement when this Agreement becomes effective.

Section 7. Status of M&I Credit Water. All of Sierra's M&I Credit Water stored in Stampede Reservoir at any given time up to the base amount of Firm M&I Credit Water determined in accordance with Section 6 of Article III of this Agreement shall be considered Firm M&I Credit Water and shall have all of the attributes of Firm M&I Credit Water. All of Sierra's remaining M&I Credit Water stored in Stampede Reservoir and all of its M&I Credit Water in other Truckee River Reservoirs shall be considered Non-Firm M&I Credit Water.

Section 8. Annual Adjustment of M&I Credit Water. The amounts of Firm and Non-Firm M&I Credit Water in storage in the Truckee River Reservoirs shall be adjusted once annually not later than April 15 of each year based upon whether or not a Drought Situation exists utilizing the April 1 seasonal runoff forecast. Following that annual adjustment, during the ensuing 12 months and whether or not a Drought Situation exists, Sierra shall have the right to utilize the available space in the Truckee River Reservoirs to store its Privately Owned Stored water and the consumptive use portion of Former Agricultural Water Rights which are not needed to supply the demands of its customers to establish additional amounts of M&I Credit Storage in excess of the base amounts of Firm and Non-Firm M&I Credit Water set forth in Section 6 of Article III of this Agreement.

Section 9. Exchanges to Permit Firm M&I Credit Water to be Stored in Stampede Reservoir and to Avoid Unnecessary Spill or Displacement. The Tribe, the United States and Sierra agree to make exchanges and to take such other measures as are necessary to permit Firm M&I Credit Water to be stored in

Stampede Reservoir up to the base amount determined in accordance with Section 6 of Article III and to insure, to the maximum extent possible, that Firm M&I Credit Water, Non-Firm M&I Credit Water, Fishery Credit Water and Stampede Project Water will be available at the appropriate times and will not be displaced or caused to spill.

Section 10. Storage Priorities -- Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, the Tribe and the United States agree as follows: (a) that Sierra shall have the first right to store Firm M&I Credit Water in Stampede Reservoir from the following July 1 through December 31 up to the base amount determined in accordance with Section 6 of Article III of this Agreement; (b) that Sierra may displace Fishery Credit Water in Stampede Reservoir and may displace Stampede Project Water from July 1 through the following December 31 of each year to the extent necessary to achieve and not exceed the base amount of Firm M&I Credit Water in storage; and (c) that Sierra may accumulate additional Non-Firm M&I Credit Water in Truckee River Reservoirs other than Stampede Reservoir to the extent Sierra's total Firm M&I Credit Water is less than the base amount of Firm M&I Credit Water determined pursuant to Section 6 of Article III. Such additional Non-Firm M&I Credit Water may displace Fishery Credit Water from July 1 through the following December 31, shall spill or be reduced for precautionary drawdowns after Fishery Credit Water and shall share the net evaporation losses proportionately with any other water in all such reservoirs except Lake Tahoe.

Section 11. Conversion of M&I Credit Water to Fishery Credit Water -- Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, the amount of Non-Firm M&I Credit Water established in accordance with Section 8 of Article III of this Agreement in excess of the base amount determined in accordance with Section 6 of Article III of this Agreement shall become Fishery Credit Water. Sierra shall have the right to determine and identify the location of the excess Non-Firm M&I Credit Water stored in the Truckee River Reservoirs which shall become Fishery Credit Water.

Section 12. Credit Storage Rules -- Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, then for the ensuing 12 months, the following rules shall apply: (a) the Fishery Credit water and Non-Firm M&I Credit Water shall share the net evaporation losses proportionately with any other water in Truckee River Reservoirs other than Lake Tahoe; (b) Non-Firm M&I Credit Water shall be the first water to spill from Stampede Reservoir; and (c) except as provided in Section 10 of Article III of this Agreement, Non-Firm M&I Credit Water and Fishery Credit Water shall spill or be reduced for precautionary drawdowns proportionately from all other Truckee River Reservoirs.

Section 13. Displacement of Fishery Credit Water and Stampede Project Water -- Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, the Tribe and the United States agree as follows: (a) to allow Sierra to displace Fishery Credit Water in Stampede Reservoir or Stampede Project Water from April 15 to July 1 to the extent necessary to enable Sierra to store up to 6,000 acre feet of the consumptive use portion of Former Agricultural Water Rights; (b) to allow Sierra to displace Fishery Credit Water in Stampede Reservoir or Stampede Project Water from July 1 to the

following April 1 to the extent necessary to enable Sierra to store the base amounts of Firm and Non-Firm M&I Credit Water determined in accordance with Section 6 of Article III of this Agreement, except that for this purpose only the base amount of Non-Firm M&I Credit Water shall not be adjusted by the Exhibit "C" percentage reduction based upon the amount of water depleted from the Truckee River and its tributaries and groundwater basins in California; and (c) to allow Sierra to displace Fishery Credit Water in Truckee River Reservoirs other than Stampede Reservoir to the extent necessary to enable Sierra to increase the amounts of Firm and Non-Firm M&I Credit Water to the maximum extent possible without regard to the limitations of Section 6 of Article III of this Agreement.

Section 14. Carryover of Firm and Non-Firm M&I Credit Storage -- Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, Sierra shall have the right to retain and carry over until the following year all of its Firm M&I Credit Water up to the base amount determined in accordance with Section 6 of Article III and all of its Non-Firm M&I Credit Water including the excess Non-Firm M&I Credit Water established in accordance with Sections 8 and 13 of Article III of this Agreement. All such excess Non-Firm M&I Credit Water may be retained and carried over and may continue to be increased pursuant to Sections 8 and 13 of Article III of this Agreement until, based upon a subsequent April 1 seasonal runoff forecast, a Drought Situation no longer exists.

Section 15. Credit Storage Rules -- Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, for the ensuing 12 months the Fishery Credit Water in all Truckee River Reservoirs in which it is stored shall be the first water to spill or be reduced for precautionary drawdowns. Non-Firm M&I Credit Water and Fishery Credit Water shall share the net evaporation losses proportionately from all Truckee River Reservoirs in which they are stored except Lake Tahoe.

Section 16. Use of Sierra's Privately Owned Stored Water. Sierra's Privately Owned Stored Water may be used to supply the demands of its customers in normal water years, under Drought Conditions and under Emergency or Repair Conditions. Sierra agrees to use all available Donner Lake water and all but 7,500 acre feet of its water above the outlet facilities of Independence Lake before using any Firm M&I or Non-Firm M&I Credit Water or the remaining 7,500 acre feet in Independence Lake to meet the needs of its customers under Drought Conditions or Emergency or Repair Conditions. Except as provided in Section 22 of Article III of this Agreement, all of Sierra's Privately Owned Stored Water that is not carried over or used to meet the demands of its customers in normal water years, under Drought Conditions or under Emergency or Repair Conditions shall be used if legally and physically possible to establish Firm or Non-Firm M&I Credit Water pursuant to the terms and conditions of this Agreement.

Section 17. Sierra to Control Privately Owned Stored Water. The quantities of Firm and Non-Firm M&I Credit Water stored, held and used pursuant to this Agreement shall not include, and shall be in addition to, the quantities of Sierra's Privately Owned Stored Water in Donner Lake and Independence Lake at any given time. Sierra retains the sole right to control and manage Sierra's Privately Owned Stored Water in Donner Lake and Independence Lake subject to all applicable laws, conditions and regulations.

Section 18. Exchanges of Fishery Credit Water and Prosser Creek Fishery Water to Enable Storage of M&I Credit Water in Stampede Reservoir. The Tribe and the United States agree to allow exchanges of their rights to store and use Fishery Credit Water and Prosser Creek Fishery Water for Sierra's right to store and use Non-Firm M&I Credit Water so as to enable Sierra to store the maximum amount of its Firm M&I Credit Water and Non-Firm M&I Credit Water in Stampede Reservoir. When releases of Stampede Project Water would otherwise be made, the Tribe and the United States agree to allow exchanges to enable Sierra to create Firm or Non-Firm M&I Credit Water in Stampede Reservoir.

Section 19. Additional Voluntary Exchanges of Credit Water. The Tribe, the United States and Sierra may agree to additional voluntary exchanges involving their respective rights and their Fishery, Firm M&I and Non-Firm M&I Credit Water as they may deem desirable and in furtherance of the objectives of this Agreement.

Section 20. Use of Fishery Credit Water. Subject to the provisions of Section 22 of Article III, all of the Fishery Credit Water established pursuant to this Agreement shall be stored in Truckee River Reservoirs and shall be utilized to provide Spawning Flows in the Lower Truckee River.

Section 21. Additional Water -- Worse Than Critical Drought Period. To meet the demands of its customers in the event of water supply conditions which are worse than those experienced during the Critical Drought Period, after exhausting Sierra's Normal Water Supplies, the 7,500 acre feet of water above the outlet facilities of Independence Lake to the extent permissible under then applicable law, and all Firm and Non-Firm M&I Credit Water, Sierra shall have the right to obtain sufficient water to meet its normal year water demand, up to a maximum of 119,000 acre feet, less the sum of the quantities of water conserved through the implementation of Section 29(e) of Article III of this Agreement and the additional water supplies described in Section 3 of this Agreement, from the following sources in the following order:

(a) Pump up to 5,000 acre feet of water from below the outlet works of Independence Lake to the extent permitted after making all necessary applications for such use; provided that if such water is not made available at the time required to satisfy the demands of Sierra's customers, Sierra may utilize the water supplies available in Section 21(b) of Article III of this Agreement to the extent required;

(b) Utilize as necessary a maximum of 7,500 acre feet of Fishery Credit Water in Stampede Reservoir; and

(c) Pump water from Lake Tahoe in accordance with, and to the extent permissible under, then applicable law.

Section 22. Establishment of Fishery Credit Water for Worse Than Critical Drought Period. As soon as practicable after this Agreement becomes effective, the Tribe and the United States agree to take all measures necessary to provide and hold in Stampede Reservoir the 7,500 acre feet of Fishery Credit Water referred to in Section 21(b) of Article III of this Agreement subject to the same terms and conditions as Firm M&I Credit Water utilizing the first Fishery Credit Water obtained pursuant to Section 11 of Article III of this Agreement. Once the 7,500 acre feet is in storage, it shall not be used for the benefit of the Pyramid Lake Fishery, and spill and evaporation losses and minimum instream flow requirements shall not be charged against it unless it is the only water in Stampede Reservoir.

Sierra may, at its option, fill the 7,500 acre feet provided in Section 21(b) of Article III directly from Sierra's Privately Owned Stored Water. Any of the water referred to in Section 21(b) of Article III that is used by Sierra shall be replaced by the Tribe and the United States as soon as practicable.

Section 23. Credit Water To Have Attributes of Privately Owned Stored Water. All Fishery Credit Water and Firm and Non-Firm M&I Credit Water stored pursuant to this Agreement shall have all the attributes of privately owned stored water under the Truckee River Agreement.

Section 24. Development of Additional M&I Water Supplies Above 119,000 Acre Feet of Demand. Sierra may obtain additional supplies of water to meet the demands of its customers above 119,000 acre feet per year, either after normal demand reaches 119,000 acre feet or prior thereto, through: (i) the acquisition of water rights in addition to those provided under Sections 2 and 3 of Article III of this Agreement; (ii) the utilization of water from hydrologic basins outside the Truckee River Basin; (iii) the development of Truckee River groundwater basins in Nevada beyond the 15,616 acre foot supply referenced in Section 3 of Article III of this Agreement to the extent that Sierra has added customers through expansion of the boundaries of its Service Area and acquired a water supply adequate to meet full demands of the new Service Area both in normal water years and during Drought Conditions; and (iv) the implementation of other measures. Any supplies developed pursuant to this Section shall not adversely affect the rights secured to the Tribe or the United States under this Agreement, any right of the Tribe or the United States to the Remaining Waters of the Truckee River, any rights secured to the Tribe or the United States under the settlement legislation which may be enacted by the Congress, or any other rights that the United States or the Tribe may claim. Such supplies must also comply with such state, local and federal permits and approvals as may be required under the then existing and applicable laws, rules and regulations. Provided, however, that the water supplies made available to Sierra pursuant to other Sections of this Agreement may only be used to the extent provided in Sections 5, 16 and 21 of Article III of this Agreement.

Section 25. Use of Water Outside Truckee River Basin. Sierra may utilize outside of the Truckee River Basin any of its existing Truckee River water rights or any such rights that it may acquire in the future. For any use of water outside the Truckee River Basin, except the approximately 3,000 acre feet of water committed to the Stead, Silver Lake and Golden Valley areas prior to the date of this Agreement, additional water rights shall be acquired in order to insure that return flows to the Truckee River are no less than they would have been if the water had been used in the Truckee River Basin.

Section 26. Additional Measures to Carry Out Agreement. Sierra, the United States and the Tribe agree to do those things as may be reasonably necessary to carry out the terms and conditions of this Agreement.

Section 27. Protection of Existing Perfected Rights. Nothing in this Agreement shall be construed to:

(a) Alter or conflict with any recognized and perfected right of any other person or entity to use the waters of the Truckee River or its tributaries including, but not limited to, the rights of landowners within the Newlands Project for delivery of the waters of the Truckee River to Derby Dam and for diversion of such waters at Derby Dam pursuant to the Orr Ditch Decree or any applicable law;

(b) Affect the right of Sierra to acquire and use for M&I purposes in accordance with this Agreement any recognized and perfected rights to waters of the Truckee River or its tributaries held by any person or entity;

(c) Affect Sierra's right to generate power at its hydroelectric plants on the Truckee River with any water rights it has or may acquire other than the rights to require releases of water from the Truckee River Reservoirs solely for hydroelectric power generation which are waived pursuant to Section 1 of Article III of this Agreement;

(d) Affect the quantity of water that is retained or carried over in storage in, or released from, the Truckee River Reservoirs pursuant to the Orr Ditch Decree and the Truckee River Agreement to satisfy the non-hydroelectric water rights recognized in the Orr Ditch Decree except for the consumptive use portion of Former Agricultural Water Rights which may be stored pursuant to the provisions of this Agreement;

(e) Affect the operation of any Truckee River Reservoirs to satisfy any applicable dam safety or flood control requirements;

(f) Affect the implementation of the Tahoe-Prosser Exchange Agreement of June 15, 1959;

(g) Result in an abandonment or forfeiture of the water rights of any party hereto; or

(h) Evidence any intention of any party hereto to abandon or forfeit any water rights.

Section 28. Water Master May Require Releases of Credit Water to Protect Existing Perfected Rights. Nothing in this Agreement is intended to affect the power of the Orr Ditch Court and the Water Master under the administrative provisions of the Orr Ditch Decree to ensure that the owners of the recognized and perfected Truckee River water rights receive the amount of water to which they are entitled under the Orr Ditch Decree. To the extent that implementation of this Agreement results in owners not receiving the amount of water to which they are legally entitled under the Orr Ditch Decree, the United States, the Tribe and Sierra Pacific agree that the owners' water will be made up through releases of water stored in Truckee River Reservoirs pursuant to this Agreement utilizing the water of the party or parties benefitting from such storage.

Section 29. Conditions for Agreement to be Effective and Operative. The provisions of this Agreement shall not take effect and this Agreement shall not be operative unless and until each of the following has occurred:

(a) The Congress of the United States has enacted, and the President of the United States has signed, Pyramid Lake and Truckee River settlement legislation whose terms and provisions are satisfactory to the Tribe and Sierra;

(b) The Legislature of Nevada has enacted, and the Governor of Nevada has signed, legislation which repeals or substantially modifies N.R.S. 704.230 to permit installation of water meters on all old and new residences within Sierra's Service Area, excluding existing unmetered apartments and condominium units or complexes which have all outdoor irrigation use metered, and to permit water rates based on the amount of water delivered to each customer;

(c) A plan for financing and installing water meters in Sierra's Service Area has received required governmental approvals and there are no foreseeable obstacles to its implementation;

(d) Sierra has proposed, and the Nevada Public Service Commission has approved, an inverted block water rate structure which provides financial incentives for the conservation of water by Sierra's residential customers;

(e) All required governmental approvals have been obtained for a mandatory water conservation plan designed to produce annual water savings of 10 percent or more during the ensuing year whenever it appears, based on the April 1 seasonal Truckee River runoff forecast, that a Drought Situation exists;

(f) An operating agreement has been executed at least by the United States, the Tribe and Sierra whose provisions include: (i) all of the necessary details required for the administration and implementation of this Agreement; and (ii) the consequences in the event that any provisions of this Agreement cannot be fulfilled for reasons that are beyond the control of the parties hereto such as, by way of example, final outcomes of administrative proceedings or litigation involving other parties which are not consistent with the terms or conditions of this Agreement;

(g) The United States becomes a party to this Agreement and accepts, approves and becomes bound by all of its terms and conditions to the same extent as the Tribe;

(h) All contracts and governmental approvals required to carry out the terms and provisions of this Agreement and the operating agreement, including, without limitation, contracts for the use of space in Truckee River Reservoirs for purposes of storing and exchanging water as provided in this Agreement have been executed;

(i) This Agreement and the operating agreement referred to in subsection (f) above have been submitted to the Court in United States v. Orr Water Ditch Co., Equity No. A-3, (D.Nev.), and by the Court in United States v. Truckee River General Electric Company, Civil No. 14861 (now S-643) (E.D. Cal.), and found to be consistent with those Decrees or is otherwise approved.

(j) Sierra and the United States have reached agreement on: (i) the compensation Sierra shall pay to the United States for the right to use the storage capacity in the Truckee River Reservoirs; (ii) arrangements to compensate Sierra for the reduction in the amount of hydroelectric power generated at its four run of the river hydroelectric plants on the Truckee River above Reno which will result from the implementation of this Agreement; and (iii) indemnification with respect to water damage resulting from the operation of the dam and controlling works at the outlet of Lake Tahoe; and

(k) All pending litigation or the portions of pending litigation involving the Tribe, Sierra and the United States have been resolved to their mutual satisfaction.

At an appropriate time, the Tribe the United States and Sierra agree to execute a written document which shall either confirm or deny that the conditions set forth in this Section have been satisfied.

Section 30. Notices. All notices and other communications required or permitted to be given by this Agreement must be in writing and will be deemed given on the day when delivered in person or on the third business day after the day on which mailed from within the United States of America by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Tribe: Pyramid Lake Paiute Tribal
Chairman
P.O. Box 256
Nixon, Nevada 89424

If to Sierra: Philip G. Seges
Senior Vice President
Sierra Pacific Power Company
P.O. Box 10100
Reno, Nevada 89520

If to United States: Lahontan Basin Project Manager
P.O. Box 640
705 North Plaza
Carson City, Nevada 89702

or to such other place as either party may from time to time designate in a written notice to the other.

Section 31. Captions For Convenience Only. The captions of the Sections of this Agreement are for convenience only and shall not in any way affect the construction of the terms and conditions of this Agreement.

Section 32. Entire Agreement. This Agreement contains the entire agreement between the parties hereto and there are no promises, agreements, conditions, undertakings, warranties, or representations, oral or written, express or implied, between them other than as herein set forth. No change or modification of this Agreement or of any of the provisions hereof shall be valid or effective unless the same is in writing and signed by the parties hereto. No alleged or contended waiver of any of the provisions of this Agreement shall be valid or effective unless signed in writing by the party against whom it is sought to be enforced.

EXHIBIT A

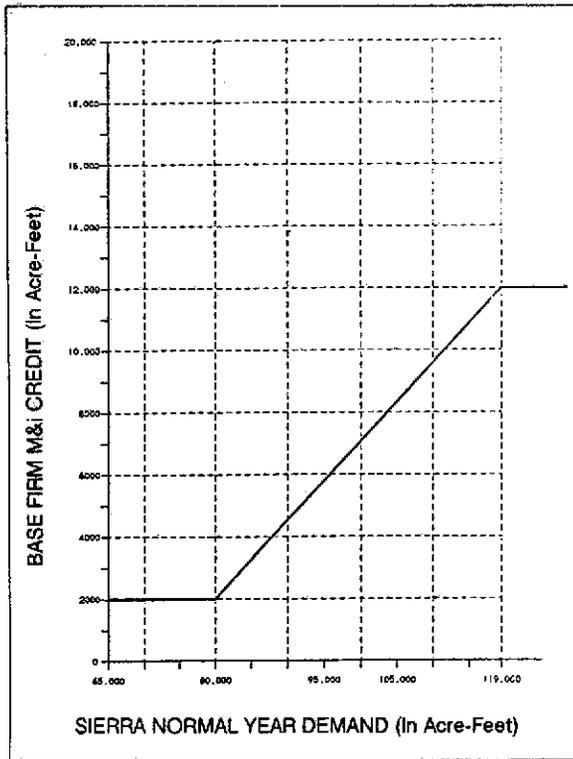


EXHIBIT B

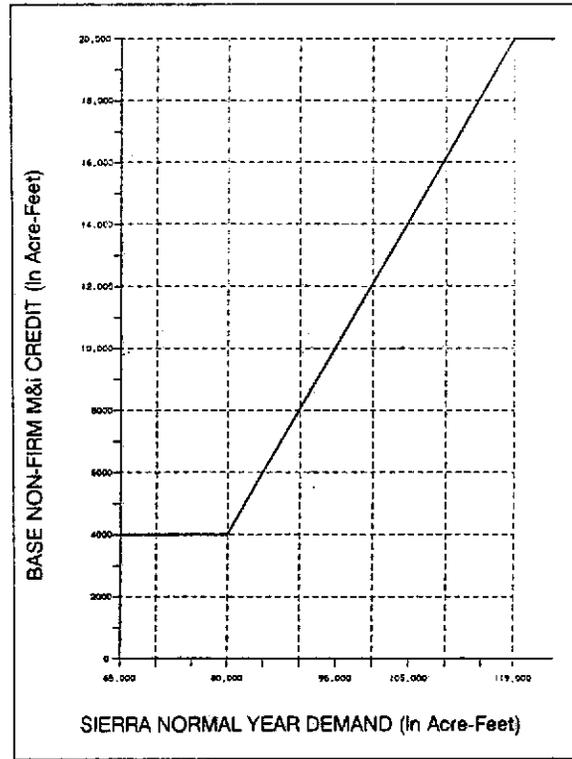
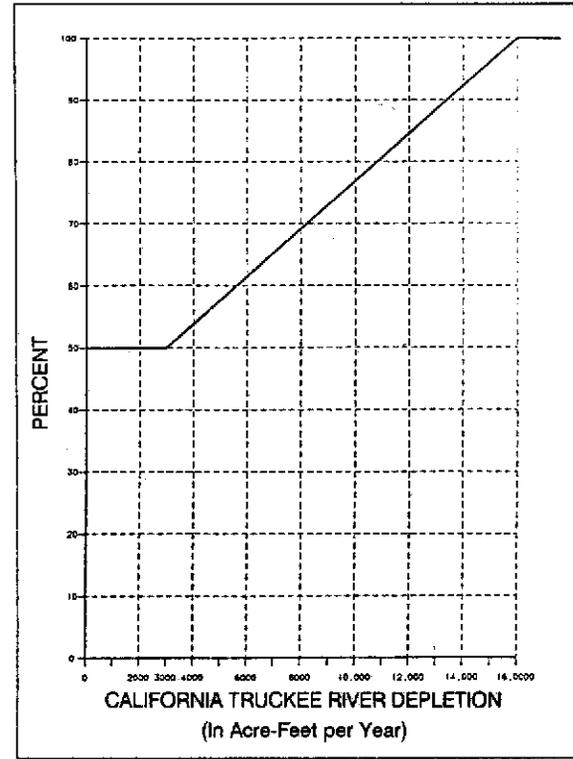


EXHIBIT C



SOURCES OF FURTHER INFORMATION

This appendix presents some suggestions for further reading on the subjects covered in this atlas. Background material used to prepare the atlas came primarily from information collected by the Department of Water Resources as part of its work over the years on the often thorny questions of allocating the waters of the Truckee River. The following material is not a complete bibliography, but instead is intended to provide the reader with a listing of some of the primary information sources and some of the more interesting general references.

Historical References

- A History of the Comstock Lode, 1850-1920.* Grant H. Smith. University of Nevada Bulletin, Vol. XXXVII, No. 3, July 1, 1943, Geology and Mining Series No. 37. Publication of the Nevada State Bureau of Mines and the Mackay School of Mines.
- The Big Bonanza, An Authentic Account of the Discovery, History, and Working of the World-Renowned Comstock Lode of Nevada.* Dan De Quille (William Wright). Alfred A. Knopf, New York. 1947.
- A History of the Comstock Mines; Mineral and Agricultural Resources of Silver Land.* Dan De Quille (William Wright). F. Boegle, Virginia City. 1889.
- As Long as the River Shall Run: An Ethnohistory of the Pyramid Lake Indian Reservation.* Martha Knack and Omer Stewart. University of California Press, Berkeley. 1984.
- Lake Tahoe Water: A Chronicle of Conflict Affecting the Environment, 1863-1939.* W. Turrentine Jackson and Donald J. Pisani. Institute of Governmental Affairs, UC Davis, Environmental Quality Series, No. 6, February 1972.
- A Case Study in Interstate Resource Management: The California-Nevada Water Controversy, 1865-1955.* W. Turrentine Jackson and Donald J. Pisani. California Water Resources Center, UC Davis, Contribution No. 142, May 1973.

General Information

- The Lake Tahoe Basin, California-Nevada.* J.R. Crippen and B.R. Pavelka. U.S. Geological Water Supply Paper No. 1972. 1970.
- Recent Variations in the Water Supply of the Western Great Basin.* S.T. Harding. Water Resources Center Archives, UC Berkeley, Archives Series Report No. 16, June 1965.

Water and Related Land Resources, Central Lahontan Basin, Nevada-California. Report prepared by USDA Nevada River Basin Study Staff in cooperation with Nevada Department of Conservation and Natural Resources, University of Nevada, Resources Agency of California, and USDA. July 1975.

Legal References -- Constitution and Statutes

- Endangered Species Act, 16 U.S.C. Sec. 1531 et seq.*
- Reclamation Act of 1902, 32 Stat. 388.*
- Truckee-Carson-Pyramid Lake Water Rights Settlement Act, Title II of Public Law 101-618, 104 Stat. 3289.*
- California Constitution, Art. III, Sec. 2.* (State boundaries.)
- California-Nevada Interstate Compact, California Water Code Sec. 5976 and Nev. Rev. Stat. Sec. 538.600.* (As ratified and approved by the legislatures of both states, but not consented to by Congress.)
- Tahoe Regional Planning Compact, California Government Code Sec. 66801 and Nev. Rev. Stat. Sect 277.190 et seq.* (As ratified and approved by the legislatures of both states.)

Legal References -- Judicial Actions

- State of California v. State of Nevada 447 U.S. 125 (1980).* (Boundary litigation.)
- State of California v. United States of America, 438 U.S. 645 (1978).* (Duty of Bureau of Reclamation to comply with state water rights law.)
- State of Nevada v. United States of America, 463 U.S. 110 (1983).* (Attempt by the United States on behalf of the Pyramid Lake Paiute Tribe to reopen Orr Ditch Decree.)
- United States of America v. State of New Mexico, 438 U.S. 696 (1978).* (Discussion of federal reserved water rights.)
- Winters v. United States of America, 277 U.S. 564 (1908).* (Establishment of the doctrinal basis of federal Indian reserved water rights; and see cases cited in Sly, *Reserved Water Rights Settlement Manual*, below.)
- Carson-Truckee Water Conservancy District v. Watt, 537 F. Supp. 106 (1982), affirmed 741 F.2d 257 (1984); Carson-Truckee Water Conservancy District v. Watt, 549 F. Supp. 704 (1982).* (Operation of Stampede Reservoir for fishery purposes.)

- Pyramid Lake Paiute Tribe of Indians v. Hodel*, No. S-87-1281-LKK/JFM, U.S.D.C., E.D. Cal. (1987). (Repair and reoperation of dam at Lake Tahoe.)
- Pyramid Lake Paiute Tribe of Indians v. Morton*, 354 F. Supp. 252 (1973). (The first court decision in the "OCAP litigation".)
- Pyramid Lake Paiute Tribe of Indians v. State of California*, No. Civ S-81-378 RAR U.S.D.C., E.D. Cal. (1981). (Assertion against California by the Pyramid Lake Tribe of reserved right for fishery.)
- United States of America v. Orr Ditch Water Company*, Equity No. A-3 (D. Nev. 1944). (The "Orr Ditch Decree".)
- United States of America v. Sierra Valley Water Company*, Civil No. 5597 (U.S.D.C., N.D. Cal. 1958). (The "Sierra Valley Decree".)
- United States of America v. Truckee River General Electric Co.*, Civ. No. S-643-LKK (E.D. Cal. 1915). (Control of dam at Lake Tahoe and recognition of "Floriston Rates".)
- National Audubon Society v. Superior Court of Alpine County*, 33 Cal.3d 419, 189 Cal. Rptr. 346, 568 P.2d 709 (1983). (Initial exposition of application of California's public trust doctrine to water rights.)

Water Rights and Litigation

- Reserved Water Rights Settlement Manual*. Peter W. Sly. Island Press, Washington, D.C. 1988.
- Lake Tahoe, the Truckee River, and Pyramid Lake: The Past, Present, and Future of Interstate Water Issues*. John Kramer. Pacific Law Journal, Volume 19, No. 4, July 1988.

River Operations

- Truckee River Basin Reservoirs, Truckee River, Nevada and California, Water Control Manual*. U.S. Army Corps of Engineers, Sacramento District. July 1985.
- Final Environmental Impact Statement for the Newlands Project Proposed Operating Criteria and Procedures*. Prepared by URS Corporation for the U.S. Bureau of Reclamation, Mid-Pacific Regional Office. December, 1987.
- Westpac Utilities Water Resources Plan, 1988-2008*. Prepared by Westpac Utilities, a division of Sierra Pacific Power Company. January 1989.

Copies of this report at \$5.00 each may be ordered from:

State of California
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Make checks payable to Department of Water Resources.
California residents add sales tax.

