

# Soda Lakes

## Nevada's Underwater Mystery in the Desert

To find Soda Lakes, turn north on Soda Lake Road and then west on Cox Road. About one mile from the turn onto Cox Road turn north again onto a dirt road. This road will lead the visitor to the top of the cauldron that surrounds Big Soda Lake. Part of the the lake area is owned by Churchill County and part of the area is private property. These areas are well marked and visitors are asked to please obey all posted signage.

### Soda Lake History

Soda Lakes become known to the early emigrants who passed by them after crossing the dreaded Forty Mile Desert. There were small fresh water springs along the shoreline, but the thirsty travelers knew they would be rewarded even more -- with abundant fresh water and green grass for their animals -- when they arrived at Ragtown on the Carson River, two miles further ahead. They chose to press on.

The first settlers to develop the Soda Lakes area were Asa L. Kenyon and his wife Catherine. They began selling provisions and fresh livestock to the survivors of the dangerous trip across the desert in the 1850s. Kenyon claimed Little Soda Lake in 1855, and sold it in 1868 to Higgins and Duffy. In a rare early photograph taken by Timothy O'Sullivan on the King Survey in 1867, a large pile of white material, probably soda, is shown near a building along the lakeshore.

Commercial production of soda began at Little Soda Lake in 1868, making it the first commercial use of soda in Nevada and probably the first of any importance in the West. This commodity was in great demand, being used in soap, glass and paper factories, in the calico printing process, in bleaching and dyeing, and many other chemical operations.

(Today most people are familiar with baking soda and bicarbonate of soda as common household products.) The chemical composition of the water in Soda Lakes proved to be rich in this mineral. So much so that in 1876 samples of the soda from the lakes were awarded a prize medal and diploma at the Centennial Exposition in Philadelphia.

By 1875, processing of soda from Big Soda Lake had also begun. It took two processes to extract soda from the water depending upon the season. During cold weather lake water was pumped from the lake into evaporating ponds along the shore. Once the water had precipitated and the soda was left behind, it was cleaned of light impurities by washing, was dried again, and packaged for shipment.



*Evaporating ponds at Big Soda Lake can be seen here surrounded by dikes to contain the water.*



*Horse teams haul wagon loads of sacked soda from Soda Lake to a distributor.*

During hot weather the process was much more complex because of the presence of brine shrimp (*Atremia gracilis*). The natural lake water was pumped from the lake into the evaporating ponds and the liquid was allowed to evaporate. As the solution was heated by the sun the brine shrimp died and settled, becoming part of the cake of soda. Since pure soda was the final goal of this process, the shrimp needed to be eradicated from the cake. This was done by heating the dried soda to 600 to 700 degrees Fahrenheit in a revolving roasting furnace. This step carbonized the brine shrimp, but left the soda with an undesirable grayish hue. To clear the color and complete the process the soda had to receive a



*What looks like piles of white snow in this 1880s photograph of Big Soda Lake are actually piles of dried soda. The buildings pictured here belong to one of the soda manufacturing companies working at the lake.*

finishing heat on a two-step reverberatory hearth furnace, where the temperature was kept just below the fusing point of 1,497 degrees Fahrenheit. The furnace had a capacity of producing about 30 tons of fine soda every 24 hours. It consumed four cords of pinyon pine during this time and required three men on twelve-hour shifts to handle it. A final cooling of the soda was needed before packaging could begin.

In 1885 I.C. Russell, surveyors with the U.S. Geological Survey, visited the lakes and recorded their composition and features. Big Soda was recorded at 268.5 acres in area and Little Soda was described as, "a pond of variable size." The depth of the big lake was 147 feet after a series of careful soundings was made, and the recorders noted the millions of brine shrimp occupying the waters. The lakes, they wrote, were formed in remnants of volcanic calderas, had no streams feeding them, and were supplied entirely by subterranean water sources. These early studies would be important in unraveling the complexities of the lakes' histories.

Soda continued to be produced at Soda Lakes until after the turn of the last century but not in the large amounts of earlier years. The decline came for two reasons. More readily available sources had been identified in other parts of the West where soda was more cheaply processed and because of a mysterious rise in the waters of the lakes after Derby Dam and the Truckee Canal were completed in 1905.

The last two companies working at the lake were the Natron Soda Company at Big Soda Lake and Horstman & Company at Little Soda. Both companies were out of business by 1907, because of the rise of the lake levels.

The cause of the rising water was the source of disputes that began as a series of letters in 1908 and ended in a precedent-setting legal decision by the United States Supreme Court in 1921. The newly-formed U.S. Reclamation Service (USRS) had begun a project to bring water to the desert in 1903 that is now known as the Newlands Project.

In the flow of letters that began in 1908, the owner of the works at Big Soda Lake steadfastly tried to prove that the USRS, who built the dams and irrigation canals of the Newlands Reclamation Project had put him out of business. At first the Reclamation Service denied that their canals could have caused the higher water. As the years passed more and more people became involved in the correspondence and the federal responses began to change. By 1912, C.W. Cole, a new engineer on the Newlands Project, admitted that the previous findings were wrong and that the Newlands Project and its system of canals was directly responsible for the rising water level in the lakes.

On June 25, 1917, both soda companies sued the federal government for a total of \$205,000. Two years later, the court held the government not responsible for the damage to the soda works. Even an appeal to the United States Supreme Court in 1921 proved useless to the Natron Soda Company and Horstman & Company, who were never repaid for their losses.

By 1984, the waters of Big Soda Lake were more than 200 feet deep, up some fifty feet since the 1885 measurement. The soda works are all but forgotten and the way of life they represented are only memories. Thanks to the interest of the underwater diving members of RAID (Reno Area Interested Divers), who have taken underwater photographs of the old soda processing equipment, and the Churchill County Museum, details surrounding the mystery of Soda Lakes is now becoming clear.



*Murky water filled with brine shrimp greets divers in Big Soda Lake today. This photo shows a faint outline of manufacturing equipment that was flooded by 1907.*