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HISTORY OF HUMAN IMPACT ON BEAR LAKE

The immediate uses of the water in Bear Lake, local surrounding streams, and the larger Bear River, were primarily for fishing and irrigation. After building a few aspen cabins, the newly settled pioneers began the task of constructing irrigation canals. Within its valley, the Bear River and its tributaries water over 50,000 acres of land in Rich County. The largest irrigation sources are Big Spring and Swan Creek. Settlers in Laketown, Round Valley, and Meadowville continued to construct a network of canals still being used today; these included the Crawford and Thompson Canal, the Beackwith Canal, and the Chapman Canal (Parson, 1996).

Between 1885 and 1891 the Randolph/Woodruff Canal was completed which, as of 1996, still irrigates nearly ten thousand acres. The partnership with the federal government after the Newlands Reclamation Act in 1902 allowed the construction

of reservoirs to improve irrigation systems. Big Creek Reservoir was built in 1936 followed by a dam in the Woodruff Narrows on the Bear River.

The water held in Bear Lake helps irrigate over 150,000 acres, or 234 square miles, of farmland and raises $45 million in crops each year. The most senior water rights holder is the Bear River Canal Company in Box Elder County (Hayes, 2002)

After irrigation, the second use of water in the valley was for waterpower. The first gristmill was completed in 1865, and the first water-powered saw mill was built in 1886. Electricity, from a small hydropower plant, on Swan Creek came to the area in 1912. New development in the area occurred with the completion of the federal surveys in the late 1870's. It was then acknowledged that the Bear River Basin was part of three territories; Utah, Idaho, and Wyoming; and that the lake lay both in Idaho and Utah territories. The transcontinental railroad passed through the basin during this same period and brought significant numbers of non-mormon settlers into the area. As the easily irrigated land was appropriated, the irrigation of new land required more sophisticated construction techniques and a great increase in the amount of water to be used.

Several large canals were built in the basin below Bear Lake around the turn of the century. Experiments in raising beets proved highly successful and the Utah-Idaho Sugar Company bought stock in several existing canal companies that were having financial problems. The Utah-Idaho Sugar Company bought rights to the Bear River for power production as well as for irrigation. In 1912, Utah Power and Light Company purchased the hydroelectric property and the accompanying water rights insuring virtual control of the Bear River waters below Bear Lake.

The Bear River has not naturally entered Bear Lake for roughly 12,000 years. Bear River waters flowed into Mud Lake, but were separated from Bear Lake by a natural sand bar. In the late 1800's irrigators wishing to use the lake as a storage reservoir conceived a plan to divert the Bear River into Bear Lake. In 1911 the Telluride Power Company completed a water diversion on the Bear River and began water

diversion into Mud Lake via the Dingle canal. In that first year, 40 million cubic yards of water were diverted and stored for irrigation releases (USU Special Collections, 1995).

The Utah Power and Light Company secured its control in 1912 when it purchased the Telluride Power Company. In 1914 the Telluride and Utah Power Company completed three canals between the Bear River and Bear Lake. Utah Power expanded the diversion operation by building Steward Dam on the Bear River and Lifton Pump station at the Bear Lake outflow. These structures were completed in 1916 and 1917 respectively and allowed for more diversion and elimination of reliance on natural flows out of Bear Lake. The Bear River water enters via a canal that enters Mud Lake and then Bear Lake. The mixed lake and river water exits just west of Mud Lake with the help of Lifton Pumping Station. The purpose of the Rainbow and Telluride canals was to more efficiently divert Bear River water through Dingle Marsh into Bear Lake. During dry years, the Utah Power and Light Company can drain 20 vertical feet off the top of the lake to produce electricity and irrigation water downstream. Hydroelectric power is produced when the water held in the lake, along with the natural flow of the Bear River, passes through 5 down-stream plants. These five plants provide about 94% of the hydroelectric

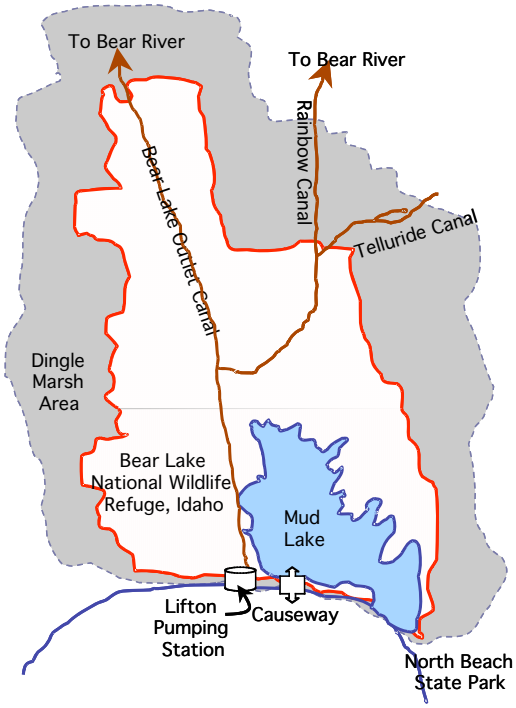
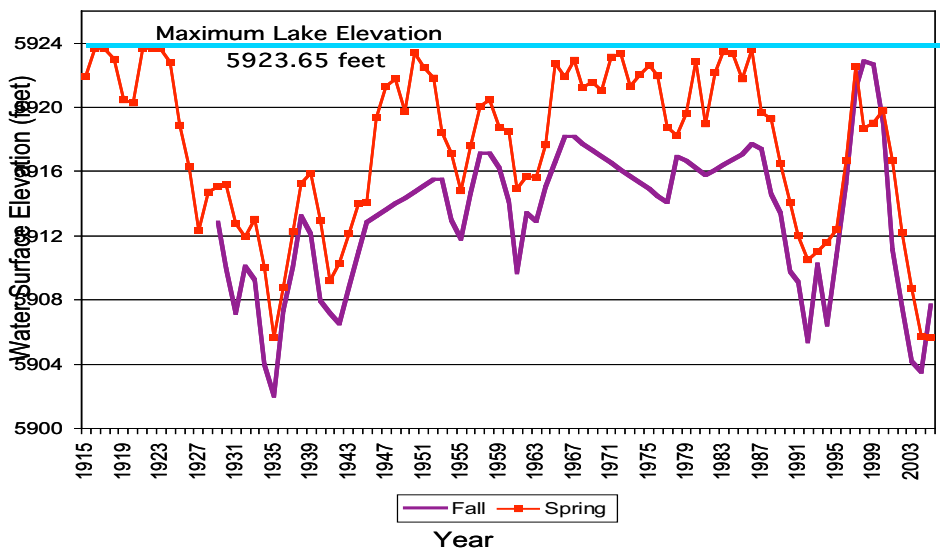


Figure 3. Dingle Marsh and the Utah Power and Light Canal System (Modified from Sigler, 1972).

generating capacity in the Bear River Basin. The Bear River Compact controls the amounts of water for power generation and irrigation projects. Figure 3 shows location and configuration of the canal systems in Dingle Marsh, Idaho.

Water levels of Bear Lake have fluctuated annually since use as a reservoir began (Graph 1). 2.8 billion cubic yards of water were diverted from the Bear River into Bear Lake during the years of 1975 and 1984. During the same time period low and high annual Bear River inputs were 15.8 and 450 million cubic yards for 1977 and 1980 respectively (Lamarra, 1986). Water diverted from the Bear River account for the majority of the waters entering Bear Lake (Lamarra, 1986). The remaining water enters from streams in the endemic (all surface waters except Bear River) Bear Lake drainage, in-lake springs or through direct precipitation on the lake itself.



Graph 1. Utah Power Water Levels Reported at Lifton Pump Station 1915-2005. Flat Line Indicates "Full Pool" at 5923.65 Feet Above Sea Level.

During the 40 years following completion of the Lifton complex extensive litigation occurred to decide the water allocations and distribution of Bear River waters. In 1958 the Bear River Compact was finalized and the formation of the Bear River Commission was enacted to manage water use along the entire length of the Bear

River. The Bear River Compact is a collaborative effort by the states of Utah, Idaho, and Wyoming that provides for the distribution of water on the Bear River and a reserved portion of the storage capacity in Bear Lake. (See appendix A for full text of compact). Negotiators recognized the extreme high and low water elevations that can occur in Bear Lake and measures were passed to mandate certain actions. Among other stipulations the Compact reserved all Bear Lake waters below 5,914.61 ft to be maintained for irrigation and that water could not be released for the sole purpose of hydropower generation (Bear River Compact, 1963). Water levels are not allowed to go above historic high water elevation of 5923.65 feet or below the historic low of 5902.00 feet. Since the mid-1960's, Utah Power and Light Company has operated Bear Lake at an elevation of 5918 feet which satisfies most recreational users and provides a good holdover storage for irrigators (BLRC, 1997).

Utah Power and Light dates back to 1881, when Salt Lake City became the fifth city in the world to have central station electricity. In just 10 years, UP&L grew to serve 205 communities and 83,000 customers. PacifiCorp was formed in 1984, when its coal mining and telephone businesses grew into full-fledged enterprises. In 1989, it merged with Utah Power and Light, and continued doing business as Pacific Power and Utah Power. In 1999, PacifiCorp merged with United Kingdom-based Scottish Power. PacifiCorp operates as Pacific Power in Oregon, Washington and California; and as Rocky Mountain Power in Utah, Wyoming and Idaho. The company was acquired by MidAmerican Energy Holdings Company in 2006.

PacifiCorp merged with Utah Power in 1989 and currently controls the operation of the Bear Lake portion of the Bear River Compact. The lake is operated with 2 main goals: water storage for irrigation and flood control along the Bear River. Power generation is considered a by-product of the 2 main goals (UDWR, 2005). Utah Power operates 5 on-river hydropower stations along the Bear River below Bear Lake, and associated with 3 of those facilities are small storage reservoirs. Those

small storage reservoirs were licensed to generate 115.9 MW (mega watts) in 2000 (UDWR, 2005).

The Commission does not get involved in the operation of the river unless conditions exist that trigger provisions of the Compact. Rights to direct flow in the 3 administrative diversions of the river is administered by the contributor state under state law. The divisions are defined as a) Upper division – that portion of the river from its source to the Pixley Dam near Cokeville, Wyoming; b) Central division – that portion of the river from Pixley Dam to Stewart Dam just northeast of Bear Lake and; c) Lower division – that portion of the river from Stewart Dam to the Great Salt Lake, including Bear Lake (Bear River Compact, 1963). General watermasters are appointed by the respective state engineers to operate the river reaches and canal diversions in their region.

Article XIII of the Compact allows the Commission to review the provisions of the Compact every 20 and to propose amendments. In 1977 an amended compact was signed that allowed better defined citizen rights, additional storage rights for all 3 states, and included groundwater development as a part of the allocations. In November 1997, the Commission completed the next 20-year review and no amendments were proposed.

Over time the number of farms around the lake has begun to decrease and the rural non-farm population has increased. Agriculture in the area is slowly giving way to recreational and housing developments. For this reason, in 1973, the Bear Lake Regional Commission was formed. The purpose of the Commission is to provide an organization to administer and plan the development of the Bear Lake surrounding areas, to focus on lake conservation, and to provide orderly growth and recreational opportunities within the region.

This group, along with PacifiCorp and other downstream water users, reached an agreement titled the “Bear Lake Settlement Agreement” in 1995. The agreement provides, among other things, that starting at a lake elevation of 5914 feet,

downstream users will restrict their call for Bear Lake stored water. This reduction in use will add additional stabilization of lake levels and encourage conservation within the provisions of the Compact and the parameters of the states (BRLC, 1997).