



By LeRoy W. Hooton, Jr.

Utah Lake, Utah County Circa 1989

## **Introduction**

Utah Lake is a major source of water for Salt Lake County, including Salt Lake City. The lake is situated in Utah County and covers 93,000 acres at compromise level. It is a fresh water lake; however, due to certain springs and the high evaporation rate of the lake, it tends to be slightly saline. However this has not prevented it from being a primary irrigation water supply for thousands of acres of farmland in Salt Lake County. At the turn of the century 50,628 acres of land was irrigated by the waters of Utah Lake and the Jordan River. Canals built during the early 1900s irrigated thousands of additional acres.

Most of the water inflow into the lake comes from the Spanish Fork, Provo and American Fork Rivers. The average inflow into the lake is 720,000 acre-feet. The average outflow is 346,000 acre-feet, and evaporation accounts for 380,000 acre- feet.

The Jordan River is the outlet for the lake, flowing in a northerly direction to the Great Salt Lake. It appears that the earliest dam in the Jordan River was constructed in the year 1859, by Ferimortz Little and others to irrigate land on the west side of the river. Over the years there have been various controversies and lawsuits over the placement of dams in the Jordan River. In 1885, a "Compromise Agreement" was negotiated which settled the

elevation of the lake; however, in 1986 the district court finally determined the elevation of the lake. As part of the settlement agreement the "Utah Lake Jordan River Flood Management Plan" was adopted.

Today, there are two major dams, the Turner Dam at the Jordan Narrows and the Joint Dam about one mile downstream that diverts water into the Jordan & Salt Lake City and the South Jordan Canals. The Turner Dam diverts water to the East Jordan and Utah & Salt Lake Canals.

### Compromise Level

In 1872 Salt Lake County constructed a dam at the Jordan Narrows. During the next spring the county court of Utah County asserted that the lake had risen, and it was suggested that the Utah and Salt Lake County Courts meet to resolve the problem. Apparently, no resolution was forthcoming, and the dam was washed out. According to the records of the court of Salt Lake County, "... the head gates washed out, being helped by persons unknown." The issue of a dam in the Jordan River continued to be a point of contention between the two counties. The dam was rebuilt in the spring of 1874. The landowners around the lake continued to complain about the dam, claiming that it was flooding their property. Their complaints were investigated by the county court of Salt Lake, with the finding that the dam had no effect on the elevation of Utah Lake. In 1880, the dam was



The "Old Dam" located at the Jordan Narrows was built by the County in 1872. Under the same project the County began construction of the Utah and Salt Lake Canal. The dam consisted of timber uprights set in cement, between which planks were inserted to raise water into the East Jordan and Utah and Salt Lake Canals.



The Turner Dam was constructed in 1914, and replaced the "Old Dam." On the left, water is diverted to the East Jordan Canal and on the right, water is diverted to the Utah and Salt Lake Canal. In the background is the Salt Lake County Water Conservancy District Pump Plant, and behind that facility is the Metropolitan Water District of Salt Lake City Pump Plant. The Salt Lake County Conservancy Pumping Plant provides exchange water to the Provo Reservoir Canal and the Metropolitan Water District exchange water to the Utah Lake Distribution Canal- both on the west side of the Jordan River.

raised, evoking even more outcry from the Utah County landowners. In 1885, after several years of dispute, an arbitration committee of prominent citizens, led by President John Taylor of the L.D.S. Church established a compromise elevation of 4,515.799 City datum. The "Compromise Agreement" also provided for the operation of the gates in the Jordan River.

Subsequently, the Utah Lake and Jordan River Commission took over the burden of operations and deciding how the gates would be operated and to what extent they would be opened and closed. The Commission was composed of two members from Salt Lake County, two members from Utah County, and a fifth member who was a referee.



Observer inspects the Utah Lake Compromise Monument. Circa 1900

### **1983 Lawsuit**

The 1885 "compromise" elevation held for a century, but the heavy precipitation of the early 1980s changed it.

On September 15, 1983, the Utah Lake Landowner's Association filed a class action suit. The complaint sought damages and injunctive relief relating to the flooding of lands adjacent to the lake. The plaintiffs alleged a breach of contract based upon the 1885 "Compromise Agreement," by Salt Lake County, the Associated Canal Companies and all others claiming any rights to the waters of Utah Lake.

In 1984, the Legislature discussed the need to address the problem of flooding around Utah Lake and the Jordan River. At that time, \$1.5 million was appropriated to the Disaster Relief Board, of which \$500,000 was earmarked for engineering studies necessary to alleviate the flooding problems. The studies produced the "Utah Lake Jordan River Flood Management Program" with engineering and construction costing over \$10 million.

The construction program consisted of a new outlet structure at Utah Lake, dredging in the lake and the Jordan River and modification to five water control diversion structures. The operation of the lake sought to reduce the lake to compromise level by the end of runoff

season, utilization of National Weather Service forecasts for Utah Lake inflow to determine flood releases and to continue the Utah Lake-Jordan River Dam Commission. However, one flood control manager from each county was added to the commission, with the State Engineer or other agreed upon third party acting as a tiebreaker.

With the operation plan in place and the construction projects planned, the lawsuit was settled. The parties stipulated on March 8, 1985 that the flood waters in Utah Lake and in the Jordan River shall be managed solely pursuant to the "Utah Lake and Jordan River Operating Procedures and Flood Management Plan," rather than the 1885 Compromise Agreement; and that the flow in the Jordan River would not exceed 3,400 cubic feet per second measured at 2100 South. The new compromise elevation of 4489.0455 above sea level (USGS Survey datum) was established in 1985. When the lake is at compromise the storage capacity is 870,000 acre-feet, of which 128,300 acre-feet is inactive storage, occurring at about 9.2 feet below compromise.

It further settled the long-standing belief that the Turner Dam was the cause of water backing into Utah Lake and flooding the surrounding property around the lake. The engineering study proved that a natural restriction at "Indian Ford," south of Camp Williams impeded the flow of the Jordan River.

## **Major Diversions on the Jordan River**

The earliest recorded diversions out of the Jordan River were in 1850 by the Bennion Mill at 5 cubic feet per second and the Gardner Mill Race at eleven cubic feet per second. In 1853, the North Jordan Irrigation Company extended the Gardner tailrace to a point near Taylorsville, enlarging the canal to carry 125 cubic feet per second to irrigate 8,000 acres of land. The canal was completed in 1881.

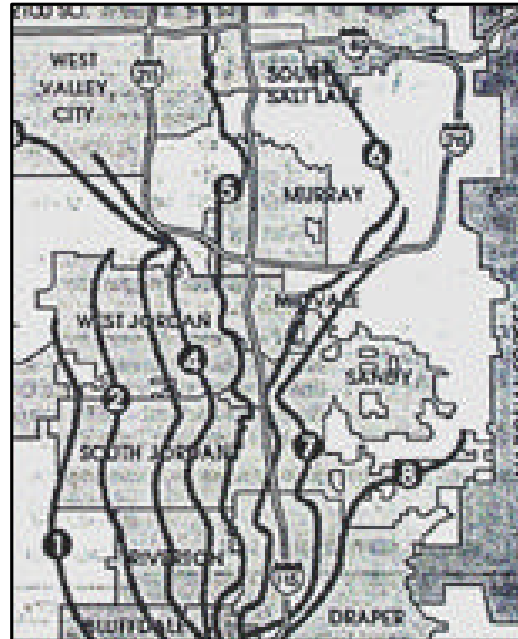
According to the 1901 Morse Decree, various other smaller canals were constructed to divert water from the Jordan River, but the next large canal built was the South Jordan Canal in 1870, with a capacity of 142 cubic feet per second.

Simultaneously, in 1870, the Utah and Salt Lake Canal was constructed at a capacity of 246 cubic feet per second to irrigate 9,000 acres of land. The canal works was completed in 1880.

Salt Lake City completed the Jordan and Salt Lake City Canal in 1882, with a capacity of 150 cubic feet per second. The 28-mile canal provided irrigation and municipal water to Salt Lake City.

The last large canal was constructed in 1877, when the East Jordan Canal Company constructed the East Jordan Canal with a capacity of 170 cubic feet per second to irrigate 16,000 acres of land along the southeastern portion of Salt Lake County.

Under the 1880 water legislation entitled, "Water Rights" an act providing for the recorded vested rights to the use of the water and regulating their exercise, the county court of Salt Lake deeded the water of the Jordan River to the five canal companies on April 14, 1883. The East Jordan Irrigation Company, the North Jordan Irrigation Company, the South Jordan Canal Company, the Utah and Salt Lake Canal and Salt Lake City, each received one-sixth interest in the County dam, leaving one-sixth to be disposed of later. On September 22, 1885, the Court agreed to deed the remaining one-sixth of the dam and river to the Hydraulic Canal Company. This company never built its canal, and in 1888, the court ordered that the interest in the rights formerly deeded to the Hydraulic Canal Company be deeded to Salt Lake City. These earliest priority rights in Utah Lake and are called "Primary Storage Rights."



**Canals:**

- (1) Provo Reservoir Canal
- (2) Utah Lake Distribution Canal
- (3) Utah and Salt Lake Canal
- (4) South Jordan Canal
- (5) Jordan River
- (6) Jordan & Salt Lake City Canal
- (7) East Jordan Canal
- (8) Draper Irrigation Company Canal

**In 1899, Salt Lake City, the Utah and Salt Lake Canal Company, East Jordan Irrigation Company and the North Jordan Canal and Irrigation Company entered into an agreement to dredge the Jordan River in order to gain more water out of Utah Lake during this drought period. This joint effort forged a beneficial relationship, which would lead to the joint construction of pumps at Utah Lake and shared operations and maintenance of the facility. The Associated Canal Companies including Salt Lake City jointly manage the pumping plant through the "Board of Canal Presidents."**

### **Jordan River Diversions (1900)**

**Besides the East Jordan and Utah and Salt Lake Canals, diversions were at the present Turner Dam at the Jordan Narrows and at the Joint Dam, the South Jordan and Jordan & Salt Lake City diversions. Other diversions along the Jordan River were:**

- 1. Mousley Ditch, a small ditch on the east side of the river about 2 miles downstream from the Jordan and Salt Lake City diversion. The ditch was about a mile long and irrigated about 100 acres.**
- 2. Galena Ditch, a ditch about 2 miles downstream from the Mousley Ditch.**
- 3. Beckstead Ditch, located on the west side of the Jordan River about 6 miles from the present Turner Dam. The ditch provided water to the South Jordan Mill and irrigated a small area of farmland.**
- 4. Cooper Ditch, located on the east side of the Jordan River about 9 miles downstream from the present Turner Dam and about 1-mile above the North Jordan Canal diversion. Less than 2 miles long, the ditch conveyed water to the Sandy Roller Mill.**
- 5. The North Jordan Canal diversion is on the west side of the Jordan River about 10 miles downstream from the present Turner Dam.**
- 6. The Bennion Ditch diverts water from the west side of the Jordan River and provided water to a small amount of farmland and to a mill once located in Taylorsville.**
- 7. The Brighton Canal diverts water on the west side of the Jordan River about 18 miles downstream from the present Turner Dam.**
- 8. The Surplus and North Point Canal was built at a point where the Jordan River entered Salt Lake City in the 1890s. The Surplus Canal was built to relieve flooding along the banks of the Jordan River as it passed through Salt Lake City. The North Point Canal covered a large area in the northwest area to the Great Salt Lake.**

## **Major Canals built after 1900**

- 1. The Utah Lake Distribution Canal on the west side of the Jordan River. The company filed with the State Engineer on October 27, 1908, Application No. 2136, to appropriate water from Utah Lake at a rate of 135 cubic feet per second. The application was approved on January 27, 1931 and corrected May 8, 1944. A Certificate of Appropriation No. 1970 was issued, subject to prior rights and certain restrictions to use water from Utah Lake at the rate of 135 cubic feet per second from April 1 to October 31 of each year. This right is a secondary storage right in Utah Lake.**
- 2. As part of Application No. 2136, the Draper Irrigation Company acquired 65 cubic feet per second of Utah Lake water rights subject to prior rights under WRNUM 59-5257, Application No. A2316a filed July 20, 1923. This is a secondary storage right in Utah Lake.**
- 3. The Provo Reservoir Water Users Company owns water rights in the Provo River, Shingle Creek, Weber Basin through stock ownership in the Weber Water Users Association and high Uinta lakes. The Welby Jacob members (stockholders) of the company have the highest canal on the west side of the Jordan River. The company has no water rights in Utah Lake; however, in 1987, the Salt Lake County Water Conservancy District ("SLCWCD") purchased approximately 40,000 acre-feet of Utah Lake water rights from various canal companies. Using this water, they entered into an agreement with the Provo Reservoir Water Users Company whereby the SLCWCD would deliver Utah Lake water through a pumping plant located up-stream from the Turner Dam to the Provo Reservoir Canal on the west side of the Jordan River. A new company was formed called the Welby Jacobs Water Users Company and stock issued to the old Welby Jacobs members of the Provo Reservoir Water Users Company. In turn, the SLCWCD is entitled to Welby Jacob's share of the rights in the Provo Reservoir Water Users Company for culinary purposes.**

## **Salt Lake City Exchange Agreements**

**Salt Lake City had constructed the Jordan and Salt Lake City Canal as a means of increasing its water supply. Limited to City Creek and Emigration stream flows, it needed more water to meet the growing population of the City. However, Utah Lake and Jordan River water proved unsatisfactory for**

domestic purposes because of its quality. As the City sought new water supplies from the Wasatch Canyons, farmers had already appropriated the water for irrigation.

In order to gain the rights to these waters, the City exchanged its Utah Lake water for the farmer's mountain water. In 1888 the City entered into its first exchange agreement with the Parleys Water Users. The City diverted Parleys Creek water into a reservoir and pipeline at Suicide Rock at the mouth of Parleys Canyon for municipal use within Salt Lake City. In exchange, the City provided the farmers water from the Jordan and Salt Lake City Canal in



The Joint Dam located about one mile below the Turner Dam on the Jordan River is the diversion point for the Jordan & Salt Lake City Canal and the South Jordan Canal. This structure was replaced after the 1983 flood.

proportions that would ensure late season irrigation water to mature their crops. Subsequently, at the turn of the century, additional exchange agreements were made with the farmers owning Big Cottonwood Creek water rights. Eventually, by the end of the 1930s, the City entered into exchange agreements with nearly all the water owners of the canyon streams flowing along eastern Salt Lake County. In 1995 nearly 60 percent of Salt Lake City's culinary water supply came as a result of these canyon stream exchange agreements. Each exchange agreement differs, with some requiring only the exchange of irrigation water, while others require the City to exchange irrigation water, and in addition provide culinary water at City rates or a specified amount of water free of charge.

## Utah Lake Pumping Plant

The plant, located east of Saratoga at the outlet of Utah Lake, is owned by the Associated Canal Companies, consisting of the Utah and Salt Lake Canal Company, the East Jordan Irrigation Company, the South Jordan Irrigation Company, Salt Lake City and the North Jordan Irrigation Company. In the beginning each company owned an undivided one-fifth interest in pump Nos. 1,2,3 and 4; the first four named above owned an undivided one-fourth interest each in pump Nos. 5, 6 and 7, and Salt Lake City owned the 130 horse power



gasoline engine installed to meet the City's exchange obligations in the event of a power failure.

According to the "Salt Lake City 1907 Annual Report," the pumping plant was the largest plant in the United States consisting of seven Byron-Jackson 40-inch centrifugal pumps, each with a capacity of 100 cubic feet per second; five Westinghouse electric motors, of 150 horsepower each; two Fairbanks-Morse, of 150 horsepower each; one Jackson Twin Tandem gasoline engine, of 130 horsepower, and one fire pump having a capacity of 400 gallons per minute. The entire plant was capable of delivering for distribution 700 cubic feet per second, or 452 million gallons of water every 24 hours.

According to Brad Gardner, Utah Lake and Jordan River Commissioner, all of the horizontal pumps were replaced in about 1912. In 1947, pump No. 5 was replaced with a 230 cubic foot per second vertical pump. A new seventh 100 cubic foot per second pump was installed as part of 1953 Utah Lake Irrigation Company agreement.



The Utah Lake Pumping Plant, owned by the Associated Canals, is located at the outlet of the lake. In 1907 this was the largest pumping plant in the United States, capable of pumping 700 cfs or 452 mgd.



One of the pumps at the Utah Lake Pumping Plant as seen in 1995.

## 1901 Morse Decree

On January 14, 1901, litigation began in the District Court of the Third Judicial District, in an action, Salt Lake City, et al. v. Salt Lake City Water & Electrical Power Company, resulting in the Morse Decree, dated July 15, 1901.

Following are selected parts of the decree:

"That Salt Lake City, the Utah and Salt Lake Canal Company, the East Jordan Irrigation Company, the South Jordan Canal Company, and the North Jordan Irrigation Company, are entitled to a decree awarding to them, subject to the limitations hereinafter set forth, the right to the use of all the balance of the waters of the Jordan River, for municipal, irrigation, culinary, and domestic purposes, to the extent of the capacity of their several canals, and the right to impound and store all of the waters of said river in Utah Lake, and to have their title thereto quieted."



Intake view of the Utah Lake Pumping Plant as viewed in 1989.

"Subject to these limitations and conditions contained in the agreement of compromise entered into in 1885, between Joseph W. Cooledge and others and said city and canal and irrigation companies, the said city and canal and irrigation companies, shall have the right at all times to shut off, impound, and store the entire flow of the Jordan River, and hold and save the same for further use to the extent which, in their judgment, their interests may require; and as between themselves, the said city, the Utah and Salt Lake Canal Company, the East Jordan Irrigation Company, the South Jordan Canal Company, and the North Jordan Irrigation Company, shall have an equal right to the use of all such water, to the extent of the capacity of their several canals, and while there is sufficient water for that purpose, may each take the full quantity of water their respective canals will carry, and when the water is insufficient to fill all the canals to their maximum capacity, then the city and canal and irrigation companies shall be entitled to an equal division thereof; provided, that if by such division one-fifth of the water should exceed the capacity of any of the canals, such excess may be used by such remaining canals as have the capacity to take the same, in equal proportions...."

"Beneficial use shall be the limit of rights."

## **Supplemental Decree of March 12, 1902**

**"IT IS HEREBY ORDERED, ADJUDGED AND DECREED, That the four Canal Companies and the City are entitled to use all waters of Jordan River and Utah Lake which are not necessarily required and used by parties to whom water has been awarded in said decree, as prior appropriators, or to store and impound the same in Utah Lake, as provided by and according to the terms of said decree and under the conditions therein set forth, and the Commissioner is hereby ordered and directed not to permit, at any time, any water to flow down the channel of said Jordan River below the impounding dam, which is not necessarily required and actually used by said prior appropriators, for the purpose of their several appropriations, or by said City or Canal or Irrigation Companies."**

## **Supplement Decree of May 31, 1906**

**" On a petition by the North Jordan to transfer to the Utah and Salt Lake Canal during the season of 1904 part of its decreed right, the commissioner refused to make the transfer, claiming that the North Jordan Canal Company had no right to make the transfer, and if the North Jordan Canal could not use all the water decreed to it that the unused portion should be equally distributed among the other canals." From 1901 to 1904, four pumps had been installed to pump water from the common reservoir belonging to them (the five canals), to wit, Utah Lake, and the cost of installation of the four pumps had been borne jointly and equally. The five companies, excepting the North Jordan had later installed a fifth pump, the water from which had been distributed to the City and Canal Companies excepting the North Jordan."**

**The court granted the right to install a sixth pump when the water was insufficient to supply the irrigation demands. The court granted the North Jordan Canal Company the right to join in the fifth and sixth pumps provided they paid one-fifth of the cost of said installation.**

## **Decree, December 13, 1906**

**Sets out the quantity of water decreed to the five canals as follows:**

<b>Utah &amp; Salt Lake Canal Company</b>	<b>246 cubic feet per second</b>
<b>East Jordan Irrigation Company</b>	<b>170 cubic feet per second</b>
<b>Salt Lake City Corporation</b>	<b>150 cubic feet per second</b>
<b>South Jordan Canal Company</b>	<b>142 cubic feet per second</b>

**The Booth Decree, Dated June 5, 1909**

In the Supreme Court of the State of Utah

**Salt Lake City et. al v. James A. Gardner and A.J. Events**

The decision centered on the installation of the pumps at the outlet of Utah Lake and the irrigation requirements of the canal companies specifying a 3.0 acre-foot duty applied to the land then under irrigation. Also, it quantified Salt Lake City's rights in Utah Lake at 36,000 acre-feet.

The following represents select portions of the decree as it related to Salt Lake City's water rights in Utah Lake:

" That in the year 1902, in order to secure a greater flow of water from said Utah Lake than the natural gravity flow during years of less than normal precipitation, and to control and regulate the flow therefrom in any season to such quantity as from time to time during the varying irrigation seasons should be necessary for their use, plaintiffs installed pumps at the head of the Jordan River, the outlet of said lake and added to the number thereof until in the year 1905 a total of five were installed, each having a rated capacity of one hundred cubic feet of water per second, and at the time of the trial of this action seven had been installed, all having a total rated capacity of seven hundred cubic feet of water per second, and by means of said pumps the volume of the flow of water from said lake during the irrigation season when the level of the lake is at or below Compromise Point, has been, and can be controlled so as to meet and satisfy the needs and necessities of plaintiffs, as their needs may vary at different times during the same irrigation season."

" That the combined carrying capacity of plaintiffs' canals, as herein before described, is 828 cubic feet of water per second, but plaintiffs have not used or taken into their canals that quantity of water except at times during the early part of the high water season."

"That in order to supply a volume of 828 cubic feet of water per second, flowing naturally through said Jordan River, the waters of Utah Lake must stand at an elevation of over one foot above Compromise Point, as herein before described, and the volume of the flow from said lake through said

river diminishes as the elevation of the level of the water in said lake recedes, until, at the elevation of Compromise Point the discharge from said lake through said river is of the volume of 505 cubic feet of water per second. That whenever the level of the lake is above Compromise Point plaintiffs' pumps are not available, and the quantity for use in plaintiffs' canals depends upon the volume of the gravity flow, and when the elevation of said lake is at or below Compromise Point, if said pumps are used at all, all of the water taken into plaintiffs' canals must be drawn from said lake by and pass through plaintiffs' pumps."

"That prior to the installation of said pumps the greatest quantity of water available from said Utah Lake and said Jordan River during the irrigation season of any year for plaintiffs' use and the use of the owners, of rights to the use of water of said lake and river, prior to the rights of said plaintiffs, was 160,482 acre-feet, the same being equivalent of a continuous flow of approximately 445 cubic feet of water per second during a period of 150 consecutive days, and average yearly quantity of the flow of said river during the irrigation season, available for the use of the plaintiffs, was a quantity equal to 111,360 acre-feet, the same being the equivalent to approximately 307 cubic feet of water per second, flowing continuously for a period of 180 days."

"That the greatest quantity of water used by plaintiff, Salt Lake City, during any one year since the installation of said pumps has been 13,500 acre-feet, the same being equivalent of a flow of 37.5 cubic feet of water per second for a period of 180 consecutive days."

"That a quantity of water equal to 3 acre-feet per acre measured at the head-gates of plaintiffs' respective canals is a sufficient quantity of water to irrigate the lands of plaintiffs, and an aggregate of 147,000 acre-feet measured at the respective head-gates of plaintiffs' canals, other than the plaintiff, Salt Lake City, is a sufficient quantity of water to properly irrigate the 49,000 acres of land which have been brought under irrigation by said plaintiffs, when the volume of the flow of said 147,000 acre-feet can be controlled and applied to the land, as it can be by plaintiffs, at such times and in such quantities as the necessities of proper irrigation requires, which necessities vary with the varying climate conditions of different irrigation seasons."

"That 36,000 acre-feet, measured at the head-gates of its canal, and used in such volumes as from time to time may be necessary through the irrigation season is a sufficient quantity of water to satisfy all the needs and necessities of the plaintiff, Salt Lake City."

## **Utah Lake Irrigation Company & The Utah Lake Distributing Company**

In 1908, the Utah Lake Irrigation Company (Company) filed an application to appropriate 135 cubic feet per second of water from April 1 to October 31 of each year. This

right was certificated on January 27, 1931 and corrected on May 8, 1944. The Company constructed a pumping plant on the west side of Utah Lake and pumped water in two branches of a conveyance system. The lower branch served the Company's Utah County stockholders and the upper branch its Salt Lake County stockholders. However, during the 1934 drought, the Associated Canal Companies constructed a new pumping plant at Pelican Point and dug a canal through the Company's facilities, rendering the pumping plant useless. The Company's water rights were junior to those of the Associated Canal Companies.

When the Provo River Project was developed, the Company subscribed to 15,200 shares of the 100,000 shares available. As part of the project, the Bureau of Reclamation in the late 1940s constructed a turbine and pump facility at the Jordan Narrows to deliver the Company's water to the two branch ditches. Water released from the newly constructed Deer Creek Reservoir was delivered to the Narrows through the Provo Reservoir Canal.

In 1952, the Utah Lake Distributing Company acquired the rights of the Company. On December 16, 1952 the Utah Lake Distributing Company, as a means of resuming the use of 70 cfs and an additional 65 cfs under the Company's filings, entered into an agreement with the Associated Canal Companies to pump their junior Utah Lake water rights into the Jordan River through the Utah Lake Pumping Plant, not to exceed 70 cfs.

In an effort to enlarge the water supply, the Utah Lake Distributing Company entered into an agreement with the Metropolitan Water District of Salt Lake City (MWD) in 1958. The Company would receive up to 135 cfs of irrigation water delivered to its two branch ditches. The MWD would bear the expense of delivering said water in return for, and in exchange of, the Company's 15,200 shares of Provo River Project water. MWD could pump the specified water from the Jordan River or deliver Provo River Project water through the turbine and pump at the then newly constructed pumping plant up-stream from the Turner Dam. Under the agreement MWD would also bear the cost of pumping at the Utah Lake Pumping Plant, constructing a facility at the Narrows with back-up power generating capability and all the costs associated with the 15,200 shares of Provo River Project water.

Under this arrangement, MWD acquired an additional 15.2 percent of the Provo River Project, increasing its ownership to 61.7 percent. This increased the M & I supply available to MWD.

## **The Central Utah Project**

**The Central Utah Water Conservancy District (CUWCD) was formed in 1967 to construct projects that would ultimately capture a portion of Utah's share of the Colorado River.**

**Utah Lake is a key feature in the development of the municipal and industrial water (M& I) supply for the Wasatch Front. Water diverted from the Uinta Basin that would otherwise flow into the Colorado River is conveyed through a collection system to the enlarged Strawberry Reservoir.**

**In order to bring this water to the Wasatch Front, it is released through Syar Tunnel, then flows to the Spanish Fork River, finding its way into Utah Lake. This water replaces water in Utah Lake that can be stored up-stream on the Provo River in Jordanelle Reservoir which is located northeast of Heber City. This stored water in Jordanelle is later released for treatment and distribution to municipal water users in Utah and Salt Lake Counties.**



**Central Utah Project Jordanelle Dam located northwest of Heber City.**

**In an effort to enhance the water supply for the Bonneville Unit of the project, CUWCD purchased 25,000 acre-feet of MWD's Utah Lake and 57,073 acre-feet of Kennecott water rights in the lake.**

**Through this transaction, Salt Lake City acquired additional municipal water in Little Dell and the CUWCD was able to convert the Utah Lake water into M & I water supply in Jordanelle Reservoir. Since urbanization had eliminated much of the farmlands, the exchange and sale of water to the CUWCD converted irrigation water to municipal water that was needed by the growing Salt Lake County population.**

## **1992 Utah Lake Water Distribution Management Plan**

The Utah Lake Management Plan was prepared in response to significant growth along the Wasatch Front and major changes in the water usages in the drainage basin since the Morse and Booth decrees adjudicated the water rights. The 1935 Provo River Project imports water from the Weber and Duchesne basin, and stores surplus flood flows on the Provo River. The 1986 Central Utah Project began storing water in Deer Creek as a result of the Deer Creek-Strawberry Exchange. Diversions between the basins or sub-basins in 1992 amounted to over 300,000 acre-feet annually. As an introduction to the plan, the State Engineer stated, "...it appears that some direction is needed to better clarify the relationship between water rights in the basin; particularly between storage rights in Utah Lake and storage rights on the upstream tributaries." He further stated, "In simple terms, we need to begin to manage the water rights on the Provo River, Spanish Fork River, Utah Lake, Jordan River and other sources in the basin as one system."

The Plan protects the primary storage rights of Utah Lake, including Salt Lake City, the Utah and Salt Lake Canal Company, South Jordan Canal Company, East Jordan Irrigation Company, North Jordan Irrigation Company, Salt Lake County Water Conservancy District, CUWCD and Kennecott Utah Copper Corp. It dedicates the first 125,000 acre-feet of active storage capacity in Utah Lake to the above named primary storage rights.

The remaining 616,700 acre-feet of active storage in Utah Lake, up to the compromise level, which may be stored in Utah Lake or in upstream reservoirs (subject to call by Utah Lake water rights), shall be used to supply the annual diversion requirements of both primary and secondary storage rights.

The Essence of the Plan is as follows:

1. Early priority direct flow rights on the Jordan River, with priority dates of approximately 1850, have first call on water. Usually accretionary flow in the Jordan River is sufficient to satisfy these rights; however, if necessary, these rights may call for water from Utah Lake.



2. The annual diversion entitlement for both primary and secondary rights in Utah Lake, as set forth as follows, and are based on the irrigated acreage set forth in the Welby-Jacob memorandum decisions and a duty of 5 acre-feet per acre. The exceptions are (a) the rights owned by Salt Lake City Corporation, and the portion of such right acquired by the Central Utah Water Conservancy District (CUWCD) where the decree diversion entitlement is used and, (b) the secondary rights purchased by the CUWCD from Kennecott where the quantity of water set forth on the certificates is used.

**Primary Storage Rights**

Utah and Salt Lake Canal	35,319 af
SLCWCD	10,335 af
South Jordan Canal	24,355 af
SLCWCD	5,385 af
East Jordan Canal	40,465 af
SLCWCD	7,935 af
North Jordan Canal	5,350 af
SLCWCD	10,499 af
Salt Lake City	10,500 af
CUWCD	25,000 af
<b>Total Primary Rights</b>	<b>175,558 af</b>

**Secondary Storage Rights**

Utah Lake Distributing Co.	39,727 af
SLCWCD	3,439 af
Draper Irrigation Co.	10,500 af
SLCWCD	2,000 af
CUWCD	50,739 af
<b>Total Secondary Rights</b>	<b>112,739 af</b>

3. When Utah Lake is lowered to a capacity of approximately 128,300 acre-feet, or 9.2 feet below compromise, it is no longer possible, at present, to deliver water (verbal communication, Brad Gardner, Utah Lake Jordan River Commissioner). Therefore, active

storage will be defined and maintained by users of the lake as those waters between -9.2 feet and compromise.

4. In order to protect the primary storage rights during consecutive years of drought, it proposed that 125,000 acre-feet of active storage capacity in Utah Lake be dedicated solely for the use of the primary rights when all other active storage has been depleted. Such storage is hereafter referred to as "primary storage". The remaining 617,000 acre-feet of active storage up to compromise capacity will be referred to as "system storage" and is addressed in the following paragraph.

5. When system storage has been depleted, all secondary rights shall cease diversions. The primary storage is allocated to various companies in the following percentages and will be available on demand:

Utah and Salt Lake Canal	20.1%
South Jordan	13.8%
East Jordan	23.1%
North Jordan	3.0%
Salt Lake City	6.3%
SLCWCD	19.5%
CUWCD	14.2%

6. All storage rights will be allowed to store water under their respective priority dates and are subject to the following conditions and criteria:

6.1) Storage rights junior to Utah Lake may store water before Utah Lake reaches compromise. However, this water will be considered as system storage and as such will be subject to call to satisfy rights served from Utah Lake. System storage water will not be used for any purpose but to satisfy water rights in Utah Lake.

6.2) Whenever the total system storage, stored in the various reservoirs (including Utah Lake), exceeds the values in Figure 2, Utah Lake rights are considered to be satisfied. Therefore, any excess system storage may be converted to "priority storage." Priority storage is stored water considered as legal storage under a reservoir's water right. Water is

converted from system to priority storage according to the priority dates of the respective rights, and in accordance with any other restrictions applicable to a particular water right.

6.3) Any time the storage level in Utah Lake drops below the primary storage level, storage rights with later priority dates will not be allowed to store water. Junior rights shall not store until primary storage in Utah Lake has been restored.

6.4) Calls on system storage by Utah Lake rights will be limited to the lesser of either the quantity of upstream system storage or the amount needed to satisfy the diversion entitlement and bring Utah Lake up to the primary storage level.

## **General Adjudication**

On May 19, 1936 Salt Lake City and the Canal Companies filed the Salt Lake City et. al v. Tamar Anderson et. al lawsuit naming over 2000 plaintiffs. The lake had suffered during the drought of the first half of the thirties, and the complaint alleged that "...many thousands of acre-feet of water to the use of which the plaintiffs were and are entitled, were, during each of the years 1934 and 1935, wrongfully and unlawfully diverted by the defendants claiming water rights...and said wrongful and unlawful diversions of water have been continued and are now being continued by said defendants." The lawsuit further alleged that the plaintiffs were wasting water during a drought period by flooding land with excessive and unnecessary amounts of water.

The suit called for an adjudication of water rights because of the large number of defendants. The Court ordered the State Engineer to conduct a general adjudication of the water rights in the Utah Lake and Jordan River Drainage; however, this has yet to be accomplished. It is generally believed that the State Engineer has not had the resources available to undertake such a large endeavor. There has been some progress made, but it will be many more years before the task is completed.

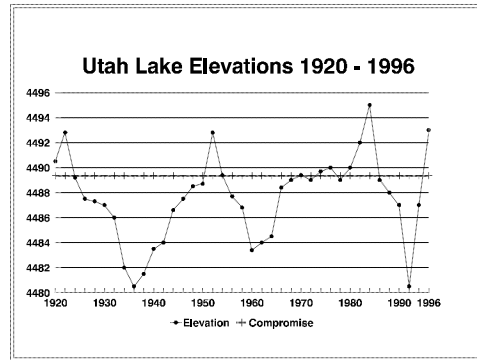
## **Drought Years**

The history of Utah Lake has periods of both flooding and periods of drought. When flooding occurs, conflict develops between the landowners in Utah County and the water

users in Salt Lake County. When drought occurs, the water users in Salt Lake County suffer for the lack of water to irrigate their crops, and Salt Lake City is forced to meet its exchange agreement obligations from other sources of supply. Since 1920, the lake has experienced three flooding periods and likewise, three drought periods.

Flooding occurred in the 1920s, 1950s and 1980s;

drought in the 1930s, 1960s and 1990s. During the drought of the 30s, culminating in 1935, and during the 90s, culminating in 1992, the lake dropped below the pumps at the Utah Lake Pumping Plant, leaving the canal companies without water.



In 1934 farming was a major business in Salt Lake County. The drought of this era was devastating to the area's economy. Salt Lake City and the farming community recommended to Governor Blood that the construction of Pelican Point Pumping Plant and conveyance canal be a "Drought Relief Project," and made eligible for state drought relief funds from the Utah Emergency Relief Administration. Gaining approval, the project moved forward at a rapid pace. It was completed by August 2, 1934, saving over one million dollars in lost crops. The pump plant and 12,000 foot conveyance channel cost \$183,000, of which \$150,000 was funded by the State Drought Relief funds.



The Pelican Point Pump Plant was constructed in 1934 as part of a drought relief project. The plant was located along the west side of Utah Lake where the water was deeper. An 8-mile canal conveyed 52.3 cubic feet per second of water to the Associated Canal Companies in Salt Lake County, saving over a one million dollars in crops during this drought year.

Circa 1934

The most recent drought event of 1992 left the level of the lake 9.2 feet below compromise elevation, rendering the pumps useless. The Associated Canal Companies, including Salt Lake City dredged the inlet to the Lehi Pumping Plant at the outlet of the lake. However, on August 23, 1992 the water level dipped below the point that the lake could be pumped. This interrupted the flow of water to the various canals. For the irrigation companies this meant lost crop production; however, for Salt Lake City it

meant that it could not fulfill its exchange obligations with Utah Lake water. Beginning on August 23, Salt Lake City began releasing up to 38 cubic feet per second of drinking water into exchange irrigation ditches to meet its contractual obligations. The City's 280,000 culinary customers were asked to reduce their consumption by 20 percent in order to deliver irrigation water under the exchange agreements.

The lake will always be subject to flood and drought cycles. The State Management Plan will protect the primary water right holders against the extremes of drought events.

### **Today - The Importance of Utah Lake**

Utah Lake has long played a significant role in the development of Salt Lake County. It has provided water through the various canals to irrigate thousands of acres of land and provided the exchange water for Salt Lake City to enter into agreements with east valley farmers to use their canyon water for municipal purposes. Its importance has not diminished through the years, and today with the need for more municipal water along the Wasatch Front, it's the hub of water development and speculation. Impacted by the Provo River Project in 1935, the Central Utah Project in 1967, the Deer Creek Strawberry Exchange in 1986 and the Welby-Jacob Exchange with the Salt Lake County Water Conservancy District in 1988, the demand on the lake has never been greater.

During the 1990s, the State of Utah has experienced a strong economy and growth in population. The demand for water in both Utah and Salt Lake Counties has created greater need for new water supplies. Within Salt Lake County, as farmland is subdivided, the Utah Lake water used for irrigating this land is no longer needed for agricultural purposes. However, there is a growing need for municipal water to serve the new urban population in both Utah and Salt Lake Counties. As a result of this change in land use, the value of the water rights in Utah Lake has risen sharply over the past decade. Water that sold for a nominal \$15.50 per acre-foot in 1986 is selling for over \$300 per acre-foot in 1996. The State Engineer has closed Utah County for new appropriations and is requiring either a surface or Utah Lake right to allow a change application for a well in this fast growing area. This, along with the fact that irrigated land is going into subdivisions, has created a market-

driven water transfer environment where developers need water and farmers are willing to sell it in fear of losing it through forfeiture.

Secondary water systems provide water for lawn and garden watering, saving the higher quality drinking water for additional growth. However, the quality of this water for sprinkler irrigation has created some problems with ornamental shrubs, trees and flowers as they are sensitive to the high levels of salinity in the Utah Lake water. Treatment methods are currently being developed to make this water suitable for sprinkler irrigation.

In the future treatment technologies will allow the direct treatment and delivery of Utah and Jordan River water to meet the drinking water needs of thousands of new customers who will reside along the Wasatch Front.

Salt Lake City has critical interests in Utah Lake:

1. Salt Lake City has decreed water rights in Utah Lake and ownership of stock in the East Jordan Irrigation Company. It is part owner in the Lehi Pumping plant, Turner Dam and Joint Dam and has management responsibilities as a member of the Associated Canal Companies. These rights provide the means for exchanging Utah Lake water for water in Parleys, Mill Creek, Big and Little Cottonwood streams, providing 60 percent of the water supply within the City's service area.
2. Salt Lake City formed the Metropolitan Water District of Salt Lake City in 1935 to participate in the Provo River Project and the Deer Creek Reservoir. The 1958 agreement with the Utah Lake Distributing Company allowed MWD to acquire an additional 15,200 shares of Provo River Projects rights. This water is available to Salt Lake City as part of its preferential rights to MWD's water supply.

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