Victor Hall's History of LaVerkin

Electricity from hydroelectric plants near Veyo and, possibly one other location, became available about 1917. Coal oil lamps gradually became obsolete. They were kept at the ready though, since frequent electrical outages were a way of life for many years. Lamps, candles and later, flashlights were always kept handy.

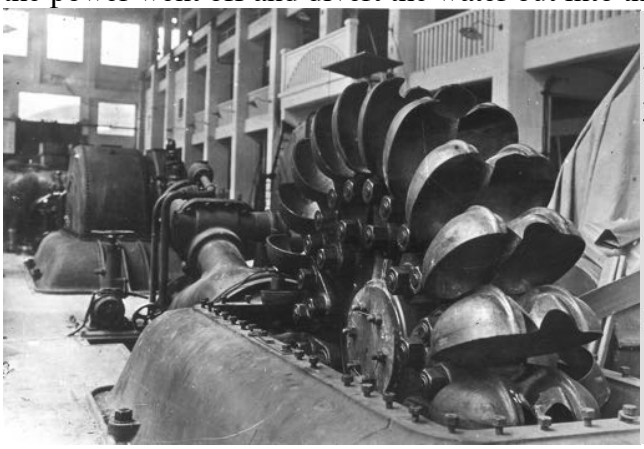
The hydroelectric plant that was in operation from 1929 until 1983, utilized water diverted from the expanded and strengthened LaVerkin irrigation canal. By combining their resources, the LaVerkin Canal Company and the Dixie Power Company were able solve the major problems that had bedeviled the canal and the tunnel. The channel was greatly enlarged so it could serve the needs of both organizations. Firm concrete lining tamed the tunnel. Unfortunately for adventuresome youth, the caverns were also sealed off. Now, as water was diverted from the river, it first went into a settling pond that allowed silt to settle out. A sluice gate facilitated flushing the settling pond as necessary. (The settling pond also made a fine "suits-optional" swimming pool. The structure over the sluice gate was a more than adequate diving platform.) Downstream from the settling pond, the canal clung to the Virgin River canyon wall, then went through the tunnel before emerging out onto the LaVerkin bench. From this point, a pipe of about forty inches in diameter conducted water to the hydroelectric plant.

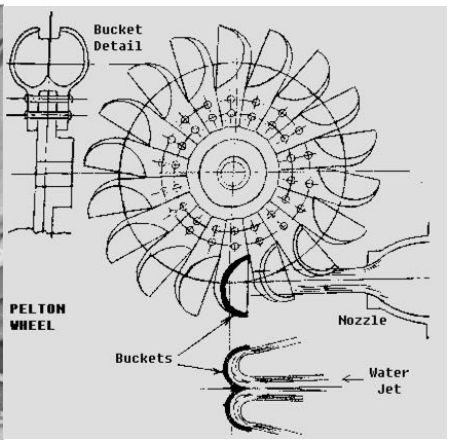
Washington County News files, provide information about the plant's birth. The first item, dated February 16, 1928, relates that the Dixie Power Company was in the process of obtaining water rights from the LaVerkin Bench Canal Company for the purpose of producing hydro-electricity. An item of July 12, 1928 states that the Dixie Power Company was applying for a permit to build an 899 kilowatt capacity hydroelectric plant at an estimated cost of $90,000.00. The laying of one thousand feet of forty-two inch wood pipe and the starting of concrete work above the tunnel made news December 12, 1928. On April 12, 1929, the paper reported that operation of the plant had begun, that full capacity awaited minor adjustments, and that Fred Brooks, whose family was then living at the plant, would be in charge.

Changes took place over the years. The wood pipe was replaced with metal, power-plant machinery was upgraded, and the plant was finally semi-automated so that it became unnecessary for someone to live on the premises.

Output of the plant was about the same as the small generator at Hoover Dam that generates power for use at the dam. It was the largest of a network of four hydroelectric plants. If all four plants were down, the LaVerkin facility had to be started first. Electricity was generated when water under high pressure was fed over a Pelton wheel (patented in 1889 by American engineer, Lester Allen Pelton) which was connected to a generator. In shape, a Pelton wheel resembles an old fashioned water wheel rather than the turbines used at Hoover Dam. Unlike the old fashioned wheels though, Pelton wheels were made of cast iron. After years of use, cracks would develop in the wheels. Victor King and, later, Winston Stratton of Hurricane had the welding skill necessary to keep the cast iron mended. They had to crawl inside the wheel to do the welding. They more than earned their pay.

If no water was running over the wheel, but electricity was coming in from other sources, the generator would act as an electric motor. The Pelton wheel was designed to run within a specific RPM range; if allowed to run too fast, it could literally throw itself to pieces. When the generator was producing electricity, the resultant friction kept the Pelton wheel at a safe speed. If, however, the generator were turned off, the Pelton wheel would soon reach catastrophic speeds. To prevent this from happening, a shunt was designed to automatically drop down when the power went off and divert the water out into the river channel.





Water flow to the wheel was sometimes interrupted by leaks in the canal. Obstructions in the pipe, or more silt than could be settled out at the settling pond, were the most common problems. During the colder winters, ice was a problem.. Particularly at night, it would form in the canal, then pile up on the intake grill. A father and his sons would work through the night pulling ice from the grill. A burning automobile tire would warm them when they had time for a break.

Sand abrasion would quickly wear out the wheel paddles. If the river was flooding, the settling pond might need to be drained three times a day, or in extreme conditions, to be shut down. The canal had to be constantly monitored for leaks. Small leaks soon became cascades that, if unchecked, could rip out hundreds of yards of canal bank. When flow was being restored, water had to be slowly ushered into the pipe. If an air bubble were allowed to form, it could seriously impede water flow.

Thunder showers were a double threat. If they happened upstream, they could load the river with silt. If they happened locally, avalanches of rock and water might tear down the canyon-side and would rip out whole sections of canal. The last major break apparently began as a small leak that grew to gargantuan proportions. By the time the problem was discovered and the water diverted, fifty feet of canal was gone. To restore it, the crew first had to rebuild forty feet of supporting bank.

Kay McMullin was chief operator of the plant from 1958 until it closed. Ordinarily, he worked alone. Maintaining flow through the canal and through the pipe was his constant year-round concern, and he got to know the canal bank well. It was no more than six inches wide in many places. Falling off the bank one way meant getting wet, falling the other meant landing on rocks ten to twenty feet below.

Walking such a bank, even on a nice day, takes getting used to. Kay walked it at night and at times he had to kick snow off to see where to step. Once he was making his way along the bank after an eight-inch snowfall. He slipped. His shovel flew out into the canyon. He dropped into the icy water. Fortunately, he had stashed emergency supplies at intervals along the canal. He retrieved some matches, got a fire going, and lived.

The plant met a sudden end in 1983. Kay returned from a vacation to find the Pelton wheel and other machinery in shambles. Lightning may have caused a power shut-off and the deflector plate may have failed to fall in place. The Pelton wheel had spun out of control to its doom. Rebuilding was economically unfeasible. The machinery and pipe were sold as scrap metal.

1949 USGS Water Supply Paper

A hydro-electric plant at LaVerkin, supplied by water from the Virgin River, carried in a tunnel through the Hurricane Cliffs, is in successful operation. The tentative plans for the construction of expensive storage reservoirs at the head of Timpoweap Canyon and at the mouth of Sink Creek present no special engineering difficulties, and at the sharp meanders of the canyon streams, at waterfalls, and at the exit of strong springs the installation of small power plants is feasible but a present not economical. For the construction of low-cost reservoirs the great fluctuation in volume, the high silt content of the streams, and the rarity of impervious rock in which dams may be anchored are obstacles not easily overcome.

1980 Allen-Warner Valley WCWCD Environmental Impact Statement

The LaVerkin Diversion is less than 1 mile downstream from the Hurricane Diversion. Water was originally diverted entirely for irrigation use near the city of LaVerkin, but is now also used for electricity generation at the CP National Utilities Company hydroelectric plant in LaVerkin. Currently, about 40 cubic feet per second are continuously diverted for electricity generation by the utility, and 10 cubic feet per second are diverted for irrigation part of the year. Total irrigation diversions are estimated to be a total 4,000 acre-feet per year (Bingham Engineering, 1977).

February 1, 1922] JOURNAL

Utah Utilities Commission Grants Rate Increase to Company

The Public Utilities Commission of Utah has granted an increase in lighting and power rates to the Dixie Power Company, operating in southwestern Utah, including St. George, Cedar City and intervening territory. The commission finds, in a majority decision, that to maintain the present schedule in effect on the Dixie Power company's system would be confiscatory. It does not, however, grant the company the full increase asked for.

For residence lighting the new rate provides a charge of 14 cents per kilowatt hour for the first thirty hours of monthly consumption; 11 cents each for the next 30 kilowatt hours, and 9 cents each for all over 60 kilowatt hours used per month.

The new commercial lighting rate is 14 cents for the first 30 kilowatt hours; 11 cents for the next 50; 9½ cents for the next 100, and 9 cents for all over 200.

A minimum charge for residence lighting amounting to $1.39 per month is allowed, and for commercial lighting the minimum charge is $2.00, both subject to a ten per cent discount for prompt payment.

CP National, formerly California Pacific Utilities Company, has contested the Utah State Engineer's decision of February 26, 1976, to grant the Washington County Conservancy District the right to divert waters for the proposed Warner Valley project. CP National contends that the water project would reduce the potential output of its Virgin River hydroelectric facility at LaVerkin. In a decision (Civil Number 5959) by the Utah Fifth Judicial Court in Washington County (April 29, 1980), the court found the proposed change applications to be "physically and economically feasible ... desirable beneficial uses," and that the water could be diverted under proposed changes "without impairing vested rights".

About 1 mile below the LaVerkin Springs, the hydroelectric power plant returns water at an average of 40 cubic feet per second, diverted at the LaVerkin Diversion for power generation purposes. The net effect of the Hurricane and LaVerkin diversions, mineralized inflow from LaVerkin Springs, and power plant return flow, is a lowering of the estimated annual flow to 115, 000 acre-feet and an increase of the average annual salinity to 1,150 mg/l.

This compares to an average annual flow of 124,000 acre feet and salinity of 490 mg/l at the Virgin, Utah gaging station (less than 5 miles upstream).

https://www.youtube.com/watch?v=3JL48B7pUEs
3 min. video walk thru of abandoned la verkin hydro plant (2013) with some gears and items still there by santiago photography