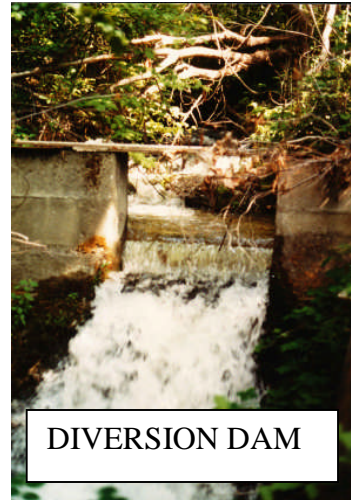


FALLS VIEW HYDRO

Joe Creek first produced electric power in the early 1930's when Wendell Marshall installed a small D.C. "Delco" generator just below the falls 1,000 feet up stream from the present Falls View Hydro. The small plant supplied electricity for lights in their home until the mid 1940's when Washington Water Power extended electricity to Lower Joe Creek Road.



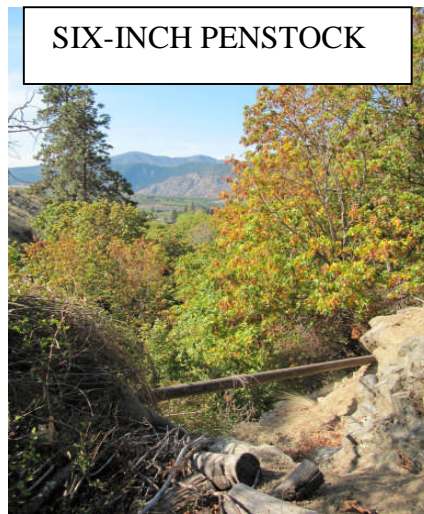
DIVERSION DAM

Elbert Hubbard introduced me to small hydroelectric plants in 1957. Hub took my father and me by boat up Lake Chelan to his cabin at Lightning Creek. Hub showed us a number of small hydro systems that were in service along the lake. They included Hub's small system at his cabin, which is the only system that is still running. It is powered by Wendell Marshall's 18" Pelton- type wheel from Joe Creek. We also saw systems at Moore's Point Hotel, Lucerne, Meadow Creek Lodge, Guy Imus home, and the Art Peterson plant at Company Creek.

Twenty five years later, in June of 1982, Elbert Hubbard turned on the switch at the Falls View Hydro sending electricity from Joe Creek into the Chelan County Public Utility District's (PUD) power grid. For the last 27 years, Joe Creek has continued to produce electricity.



SCREEN & SETTLING BASIN



SIX-INCH PENSTOCK

Falls View Hydro is powered by water from Joe Creek through a small diversion dam, a settling basin, screen and about 1,500 ft. of six-inch pipe, or penstock, that delivers the water from a small diversion dam above Joe Creek Falls to the power plant 120 feet below. The delivery pipe delivers up to 1 cu.ft./sec of water to the power plant.

The power plant consists of a small, efficient 6 inch pitch diameter Peltech impulse wheel with a two-jet system that provides flexibility for operating with different seasonal water volumes. The turbine is connected to a 5 kw 3 phase,



DUEL JET TURBINE & RUNNER



220v, A.C. induction generator. From the generator the electricity goes through a utility grade control panel and on into the PUD's electrical grid. The induction generator allows the system's cycles and voltage to be regulated by the PUD's system and eliminates the need for a

governor. The water that is available in Joe Creek limits the power output. During a good month, Falls View Hydro has produced about 2,000 kw hours.

It took me almost four years to plan and construct the power plant. First there was the water right to secure. Then I sized the system and determined what equipment and materials would be required. Finding the suppliers was difficult because there were very few people building turbines and no one had built a control panel that fit my requirements. I purchased the turbine from Bill Kitching, of Small Hydro Systems. (Bill's company has since been sold to Canyon Industries.) The generator purchased locally, was a used induction motor. Lloyd Controls constructed the control panel

to the PUD's very extensive specifications. At the time, it was the first control system of its type for a small hydro system. The UL sticker required by the PUD took almost a year to get, as the Underwriters Lab had to first develop a standard to test the panel. Micro-Hydro is much more available now than it was 27 years ago.



POWER HOUSE

While getting the pieces of the power plant constructed, I worked on the penstock. The dam, settling basin and some of the pipe was originally installed for providing water for irrigation to the Steven's homestead. In 1972, the Steven's homestead land was provided irrigation water through the new Lake Chelan Reclamation District's systems, and the old Steven's line was abandoned. I repaired and extended the existing pipeline, repaired the dam, and modified the settling basin and installed a new stainless steel screen.

Then I built the powerhouse, a 7'x 7' building to house the equipment along Joe Creek next to our home. I installed the equipment as it arrived, calling various people for advice as needed. Fortunately, everything fit and worked as designed. The first time that I turned water into the system and pushed the start button, it began producing electricity. It was not until the official dedication several months later that any of the suppliers or electrical "consultants" were on site. My welder and myself did all of the on-site construction and installation.



CONTROL PANEL

The system has performed well during its 27 years of operation. Except for parts of several years when there was low water and when we have been away from home, the plant has run almost continually. The bearings require regular greasing, the screen needs cleaning monthly – more during periods of high stream flows, belts need replacing, and I replaced the original turbine several years ago because the cups were worn through. With continued maintenance the system should last another 15 – 20 years before needing to be rebuilt.



Larry Hibbard
Falls View Orchards
882 Lower Joe Creek Rd.
Manson, Wa. 98831 USA

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