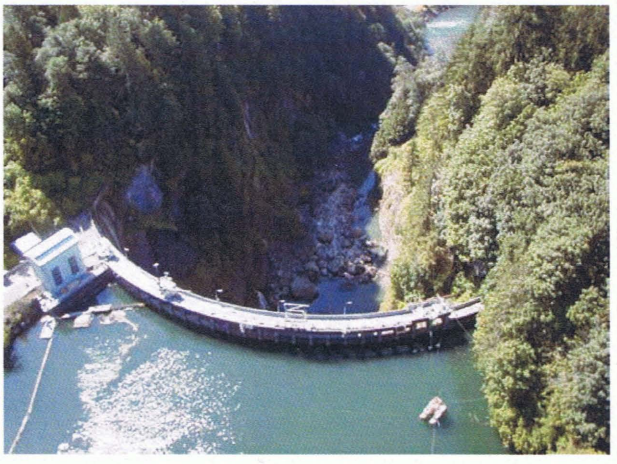
PUGET SOUND ENERGY

Lower Baker Hydroelectric Project FERC No. 2150



LOCATION

The Lower Baker River Development is located on the Baker River approximately one mile upstream from its confluence with the Skagit River and is in the Town of Concrete, Washington.

CONSTRUCTION

Construction of the initial plant began on April 15, 1924. The plant was commissioned for service on November 19, 1925. In 1927, the dam was raised 33 feet to its existing height of 285 feet. The plant was enlarged with the addition of a third generating unit in October 1960. The powerhouse was destroyed in a devastating earth slide in May 1965. The powerhouse was rebuilt and the plant was back in service in Sept. 1968, after salvaging one of the three units.

RESERVOIR

Lake Shannon reservoir covers 2,218 acres at full pool elevation 438.6 feet. The minimum operating elevation is 370 feet. However, the top of the penstock intake is at elevation 350 feet. The reservoir is 7 miles in length.

DAM

A combined gravity arch dam is 285 feet high and 550 feet long, containing 125,000 cubic yards of concrete.

TUNNEL

The 1,410 feet penstock is tunneled underground with a mile slope. The tunnel is 22 feet inside diameter and concrete lined for 905 feet and reduces to steel lined inside diameter of 16 feet for the lower 505 feet.

SURGE CHAMBER

A large concrete surge chamber is located just upstream of the powerhouse and is connected to the penstock. The chamber is 20 feet in diameter and 259 feet high, and serves as a energy relief reservoir in the event of a load rejection.

POWERHOUSE

The reconstructed powerhouse features a sloping roof, which will allow any slide activity at the site to pass over the top of the facility with no resulting damage. Enclosed in the powerhouse is a single three-phase 60 cycle General Electric generating unit, rewound by GE in 2001, rated at 85,000 KVA. The Francis-type vertical hydraulic turbine, upgraded by American Hydro Corp. in 2001, delivers 105,774 hp (79,330 KVA) at best gate and 243 feet net head. Presently, the generating capacity is limited to 71.36 MW due to transformer capacity.

FISH PASSAGE FACILITIES

Upstream migrating adult salmon and steelhead passage is provided year-round by a trap-and-haul facility located one half mile downstream of Lower Baker Dam. Fish are collected, loaded into specially designed tank trucks, and transported to the Upper Baker reservoir and/or spawning beaches. Each year, tank trucks transport an average of 9,900 salmon and steelhead to Baker Lake. Downstream migrating juvenile salmon are collected upstream of each dam by a surface collection barge (gulper) from March through August. Fish are transported daily by tank trailer and released into the Skagit River.