

VIII. CONSTRUCTION AT MAJOR PROJECTS

Federal projects Non-Federal projects

Modification of dams and facilities as well as the construction of new features is a constant activity at dams. In this chapter only those construction activities that pertain directly to the operation of the projects or have a major impact on the operation of the facility are reported here.

A. FEDERAL PROJECTS

1. Boise Project

A contract in the amount of \$119,494 was awarded for drumgate raise at Black Canyon Dam.

2. Columbia Basin Project

Construction was completed on a contract for \$855,830 to fill eight of the Grand Coulee drumgates with fire retardant EPS foam.

3. Crooked River Project

Two contracts were awarded for work at Ochoco Dam and Reservoir. The first, for \$166,917, was to design, furnish, assemble, and test a complete barge supported pumping station for dead pool pumping of the Ochoco Reservoir. The second, for \$611,855, was for replacing and rehabilitating toe drains and constructing flumes and inspection wells.

4. Lewiston Orchard Project

Work is substantially complete on a contract for furnishing and installing inspection wells, measuring flumes, vaults, fishscreen tank, a sump pumping unit, a tank dewatering pumping unit, and heating and ventilating system at Reservoir A Dam.

5. Yakima Project

A contract was awarded for \$950,000 for furnishing, installing and testing Supervisory Control and Data Acquisition (SCADA) System for operation and control of the Umatilla Basin Phase II Water Exchange System with the master station at the Umatilla Field Office and monitoring stations at the McKay Dam tender office and the Stanfield Irrigation District office.

A contract was awarded for \$2,263,650 for rock scaling loose material from slope and replacing concrete in the right wall of spillway overflow section, left wall of stilling basin, and spillway chute floor at Tieton Dam.

6. Tualatin River National Wildlife Refuge - Steinborn Tract Flood Repairs

In cooperation with the US Fish and wildlife Service, a contract for erosion repairs, fishscreen modifications, and construction of fish passage weirs and sheetpile cutoff wall was awarded for \$85,000.

B. NON-FEDERAL PROJECTS

1. Swan Falls

Idaho Power Company's Swan Falls Project is located on the Snake River near Boise, Idaho. The project consists of a 440-ft-long, concrete gravity gated spillway, a 290-ft-long powerhouse section, and a 130-ft-long concrete gravity sluiceway. The maximum height of the spillway is 25 ft and impounds approximately 4,800 af. The powerhouse contains two adjustable-blade pit turbines connected through speed increasers to 13.6 MW generators. On May 23, 1998, a fault on the 138-kV transmission line resulted in a load rejection in the powerhouse. Unit 1 was on-line at the time, and the powerhouse was unoccupied. As a result of alarms, the powerhouse was inspected and it was discovered that Unit 1 had suffered catastrophic damage. Apparently, water hammer occurred upstream of the runner and water column separation occurred downstream of the runner. At some point during the incident, the runner was suddenly stopped causing damage to the gear train. The momentum of the generator and gear train was such that the shaft coupling bolts and shear pins at the shaft coupling were sheared. Considerable damage was sustained by the steel pit liner as a result of the apparent waterhammer. Damage to other components has not been determined. The generator and gear box have been removed, and the gear box has been returned to the manufacturer for disassembly and repair. The estimated completion date is June 30, 1999. Total cost estimates have not been finalized but are expected to be in the range of from \$3 million to \$5 million. Forensics investigations to determine the cause and sequence of events are underway.

2. Rocky Reach Dam

The Rocky Reach Project, licensed to Chelan County PUD No. 1, is located on the Columbia River in central Washington, seven miles north of the town of Wenatchee. The dam, completed in 1962, consists of concrete gravity, spillway, and powerhouse sections. The powerhouse contains 11 generating units with a total capacity of 1,279 MW. In an effort to reduce turbine cavitation and decrease fish mortality, the licensee initiated a turbine replacement program. This program will cost approximately \$67 million and is scheduled to be completed in 2001. To date, Unit Nos. 3 through 7 and 9 are completed. Unit No. 2 work is presently underway with a scheduled completion in mid-April 1999.

3. Cowlitz Falls

The Cowlitz Falls Project is licensed to the Lewis County Public Utility District No. 1 and is located in southwestern Washington State, approximately 30 miles southeast of Centralia, Washington. Cowlitz Falls Dam is a 120-foot-high concrete gravity dam. On February 8, 1996, a flood of record of 103,000 cfs was set for this location; the dam was completed in 1994. A number of small problems were caused. Debris build-up on the intake trashrack caused a one-week shutdown. The draft tube area filled with rock. The left bank was eroded and possibly other rock outcroppings in the tailrace area. The tailrace pool was left higher because of downstream gravel deposits. The debris barrier was partially filled with sediment. Some repairs were completed at the time. As a follow-up, work includes repairing undermining of the left edge of the Spillway No. 1 chute, by facing the wall with steel forms and filling voids with tremie concrete. Weak and eroded rock seams are to be sealed with concrete and a concrete wall will be built along the left bank to restore the access road. The wall will harden the left bank to above the flood plain, and fill a void beneath the downstream end of the left spillway training wall. Work started on September 15, 1998, and is expected to be completed by the end of 1998 at a total estimated cost of \$1,500,000.

4. South Fork Tolt River

The City of Seattle was issued a license on March 29, 1984, to install a powerplant at its existing water supply dam on the South Fork Tolt River. The existing project includes a 200-foot-high zoned earthfill dam, and an 882 acre-foot regulating basin with two saddle dams. The 16.8-MW project was completed in January 1996. Seismic upgrades to the project included strengthening of the regulating basin's south dike and the main dam's intake and spillway tower, along with the access footbridge. The work on the south dike was completed in May 1995. The

work to modify the intake and spillway tower structures began in September 1997, and is essentially complete except for the installation of a new debris barrier. The total cost for the work is approximately \$9.51 million.

5. Mt. Tabor Project

The Mt. Tabor Project includes three water supply reservoirs, namely, Reservoir Nos. 1, 5, and 6. The project is located in a highly urbanized area in the City of Portland, Oregon. During previous operation inspections, the City has indicated that Reservoir No. 5 has been losing water through leakage to the reservoir's underdrain system and has created unnecessary loads on the City's combined sewer system. Because of potential surcharges and fines for the additional load to the sewer system, the City decided to minimize leakage by relining the reservoir with a geotextile overlain by hypalon liner. Work started on September 15, 1998, and was completed on October 15, 1998 at an estimated cost of \$1,000,000.