

The Dalles Dam – Bay 8-9 Spillwall

Fact Sheet September 2008

Background: The Dalles Dam spillway is the primary downstream passage route for migrating juvenile salmon with about 80% of fish passing over the spillway when spilling 40% of river flow. The survival rates of fish after the 2004 construction of a spillwall between bays 6 and 7 was still considered low due primarily to predation from predator fish and birds in low flow and shallow areas on the spillway shelf and the downstream bridge islands.

Project purpose and need: The Corps is mandated to improve survival of out-migrating salmonids through the dams on the Columbia River. Fish survival data from studies at The Dalles Dam indicate that more direct conveyance from the spillway to the river's thalweg (deepest part of the channel) would likely improve dam passage survival rates for juvenile salmonids. Based on current fish passage distribution it is estimated that with the proposed bay 8-9 spillwall (*Figure 1*), overall dam-passage survival would increase by as much as 4% for both yearling Chinook and steelhead (spring migrants), and 3% for subyearling Chinook (summer migrants). The downstream end of the spillwall was designed to have a slight curve to ensure the conveyance of the water flow to the river's thalweg.



Figure 1. The Dalles Dam: Bay 8-9 spillwall and construction staging areas.

Construction. The construction of the Bay 8-9 Spillwall utilizes precast concrete cells which will be positioned to extend from the river bottom to above the normal tailwater elevation (Figure 2). These concrete cells will be filled with tremie concrete (concrete for underwater placement). The wall will also be post-tensioned utilizing rock anchors that are drilled through ducts cast into the top of the precast concrete cells, into the rock below the wall. The post-tensioning will, in effect, clamp the wall to the rock to provide stability and structural strength to the wall.

The wall will be 10 feet wide, approximately 850 feet long, with the first 200 feet being 43 feet high and the remainder being between 25 and 30 feet high. Up to 230 rock anchors will be required for the construction of this wall, with each rock anchor penetrating up to 120 feet into the rock below the wall.

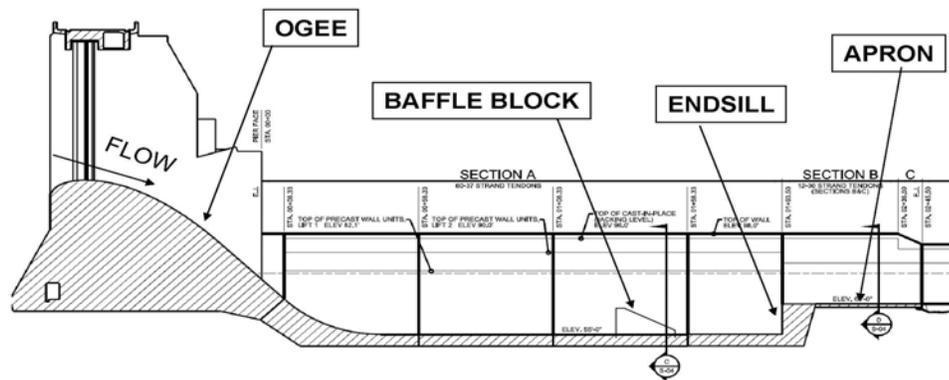


Figure 2. The Dalles Dam Spillway with Bay 8-9 Spillwall in elevation.

The contractor on-water operations intends to use several derrick barges, including the DBB Los Angeles w/ 300-ton capacity & DBB Alameda w/ 100-ton capacity, and several support tugs, flexi-floats and barges. The on-land operations includes an on-site precast yard for the concrete cells that is located on the north shore of the downstream lock approach channel just upstream of the Hwy 197 bridge.

Funding and Schedule. The contract was awarded in July 2008 for \$45,000,000 and includes a continuing contract clause with an initial award amount of \$5,000,000 in FY08. Contractor earnings in FY09 are expected to be about \$27,000,000 with the balance of the contract in FY10. The wall construction runs over two in-water work seasons (1 Oct 08 – 1 Apr 09 and 1 Oct 09 – 1 Apr 10) and is scheduled to be completed in April 2010 in time for the spill season.

Issues. The contractor's derrick barge operation may be restricted due to their draft requirements and the shallow water over the stilling basin rock shelf. The Corps and Contractor have been meeting with Reservoir Control Center and Bonneville Power Administration to discuss potential special river operations that could improve the situation for the Contractor.



Photos from 1:80 physical model at ERDC (Vicksburgh, MS) of The Dalles Dam spillwall that was used for final siting and length determination. Note that stilling basin rock floor in blue is contoured to actual bathymetry of the site. Also note DEEP dropoff into thalweg (over 200' deep) in upper photo to ensure juvenile egress into deep, fast-moving flow to avoid predator habitat.