



Fact Sheet

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Ice Harbor Lock and Dam General Model

Purpose: To evaluate hydraulic performance and document resulting flow conditions associated with proposed fish passage modifications to the Ice Harbor Lock and Dam.

Background: The powerhouse at Ice Harbor Dam consists of 6 hydropower turbines with a combined capacity of 105 kcfs. The spillway has a total width of 590 feet and consists of 10 gate-controlled bays. The horizontal apron-type stilling basin at Ice Harbor Dam is about 210 ft long with an invert elevation of 304 ft. With normal tailwater at el 344, the depth in the stilling basin was about 40 ft. One row of 8-ft-high baffle blocks and a 12-ft end sill provide energy dissipation in the stilling basin. The eight central bays have 12.5 ft long spillway deflectors at elevation 338. The two end bays have 12.5 ft long spillway deflectors at elevation 334. The interior piers were extended to the downstream end of the deflector to reduce surface turbulence and air entrainment. A splitter wall separates exterior bays 1 and 10 from the interior bays. The tailwater channel downstream of the stilling basin is generally above elevation 320 ft with the exception of a large depression located upstream of the end of the lock guide wall. Beyond the immediate vicinity of the tailrace, the river is generally shallow except for the navigation channel, which was excavated on the northern side of the thalweg, providing depths of 25-30 ft.



Facts: At the request of the U.S. Army Engineer District, Walla Walla, a 1:55 scale physical model was designed and constructed at the U.S. Army Engineer Research and Development Center by the Coastal and Hydraulics Laboratory. The model reproduces the Ice Harbor Lock and Dam, 2200- ft of the upper pool and 4300- ft of the tailrace. The model has been used to evaluate the hydraulic performance of spillway flow deflectors, behavioral guidance structures, a raised tailrace just downstream of the spillway endsill, training wall extensions and removable spillway weirs. It has also been used to design and evaluate structures for improving navigation conditions in the tailrace.

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