



# ROADMAP TO THE PATHWAYS: THE EXISTING SYSTEM

Under this study pathway, the Corps would continue to increase spill and manipulate spring and summer river flows as much as possible to assist juvenile salmon migration in accordance with the Biological Opinion issued by the National Marine Fisheries Service. Juvenile salmon would continue to pass the dams through the turbines, over spillways, or through the fish bypass systems. Fish bypass systems divert the juvenile fish around the dam back into the river below the dam or into specialized barges or trucks for transport below all dams.

Salmon passing through the power-generating turbines are at a great risk for injury or mortality because they can be harmed or killed by severe water pressure changes within the hydraulic environment. They also can be disoriented and vulnerable to predators as

they exit the turbine chamber into the river below the dam.

Salmon pass the dam (avoiding the turbines) when water is released over the spillway. Spill has associated risks because spilling water traps air as the water plunges into the spillway basins, elevating dissolved nitrogen levels in river water. Elevated nitrogen gas levels can be harmful to fish. Spillway deflectors produce a less forceful, more horizontal spill, reducing the amount of trapped nitrogen in the water. Spillway deflectors are in use at all lower Snake River dams except Ice Harbor, where installation will be complete in 1998.

Juvenile bypass systems are designed to divert fish from turbines by using a submerged screen that directs them into a collection channel. The salmon are then either routed back into the river below the dam, or into a holding area

for loading on specially equipped barges or trucks for transport down the river below all dams. Barges, used during peak migration periods, constantly circulate river water maintained at a dissolved nitrogen level that is safe for the fish. This circulating river water enables smolts to continue to "imprint" the river, helping them return to spawn. The goal of the juvenile transport system is to increase survival rates by avoiding the hazards posed by in-river migration.

In addition to these fish passage methods, the Existing System Pathway proposes Lower Granite juvenile bypass facility improvements; extended-length screens for fish bypass collection at Little Goose and Lower Granite dams; additional barges and facilities for direct loading; turbine improvements; and dissolved gas level reduction (abatement) measures. 🌐

