



**US Army Corps  
of Engineers**®  
Walla Walla District

# Salmon Survival



The U.S. Army Corps of Engineers runs the Juvenile Fish Transportation Program in cooperation with NOAA-Fisheries, and in accordance with NOAA's hydropower Biological Opinion for salmon.

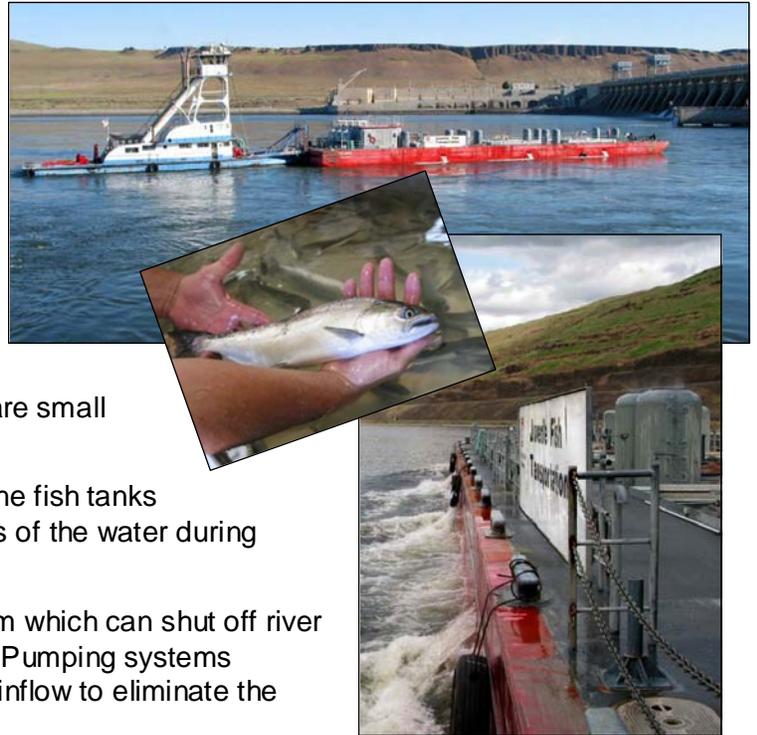
**Tools of the Trade** Barges are used when the numbers of outmigrating anadromous salmonids are highest. Trucks are used early and late in the runs when there are fewer fish.

**Trucks** ~ each trailer-tank is equipped with a recirculation and aeration system. Mini- and midi-tanks are small units that can be mounted onto pickup trucks.

**Barges** ~ a pump system circulates river water through the fish tanks on the barge, allowing the young fish to imprint the smells of the water during the trip downriver.

The barges also have a closed-circuit recirculation system which can shut off river intake completely if they encounter contaminated water. Pumping systems maintain proper oxygen saturation and de-gas the water inflow to eliminate the potential for gas bubble disease in transported fish.

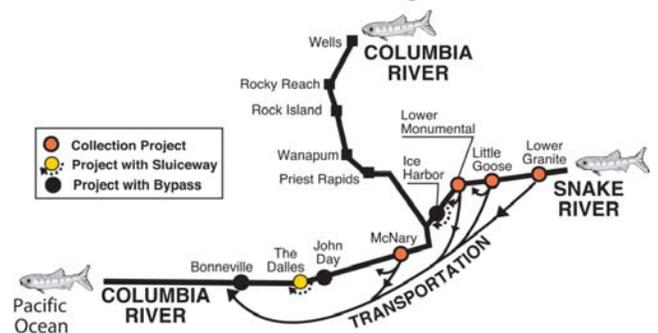
Towboats push the fish barges up and down the rivers. The trip from Lower Granite Lock and Dam to the mid-river release area near the Skamania light buoy downstream of Bonneville Lock and Dam takes between 79-96 hours.



## Fish Transportation Fleet

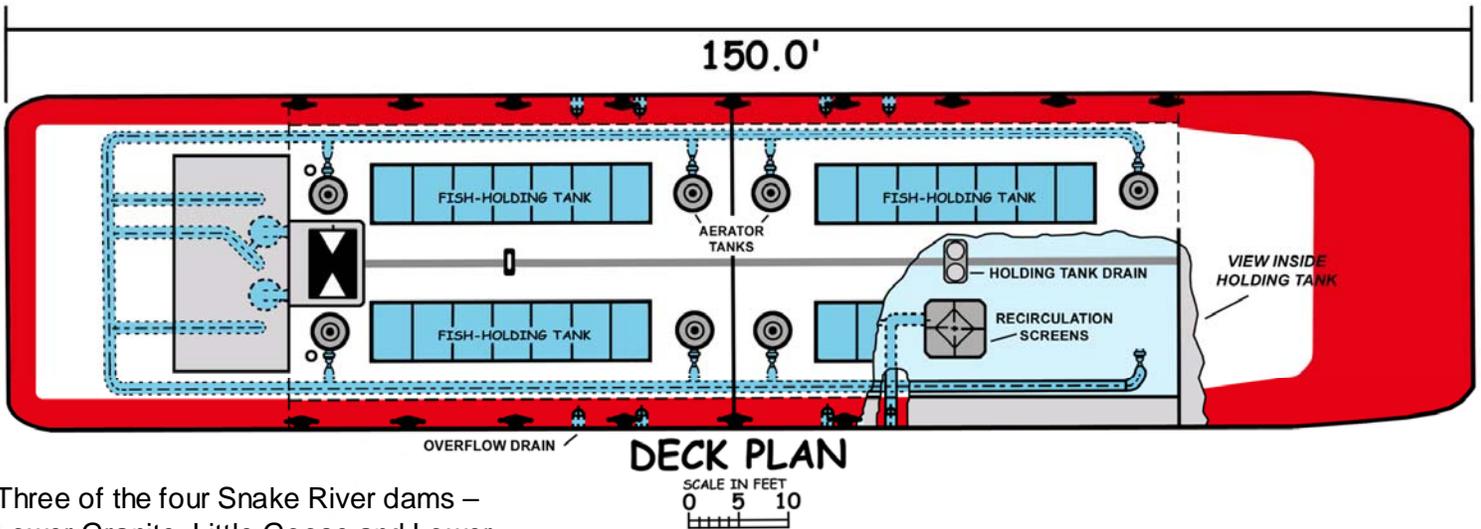
Barge	Capacity (gal)	Inflow (gpm)	Fish Capacity (lbs)
Sockeye (2127)	85,000	4,600	23,000
Blueback (2817)	85,000	4,600	23,000
Steelhead (4382)	100,000	10,000	50,000
Coho (4394)	100,000	10,000	50,000
Chinook (8105)	150,000	15,000	75,000
King Salmon (8106)	150,000	15,000	75,000
8107	150,000	15,000	75,000
8108	150,000	15,000	75,000
Truck	3,500		1,750
Midi-tank	300		150
Midi-tank	150		75

## Columbia/Snake River System Juvenile Fish Passage Routes



# 50,000-POUND CAPACITY FISH TRANSPORTATION BARGE

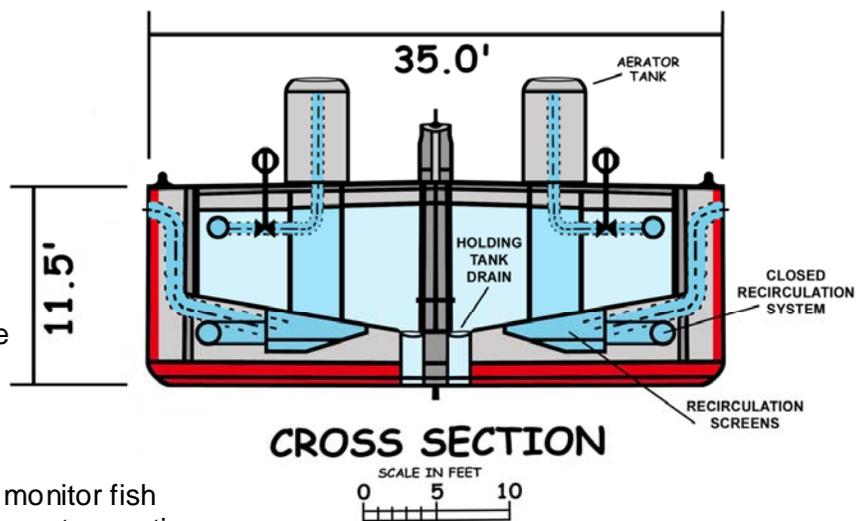
## 4,000-series – showing circulation system



Three of the four Snake River dams – Lower Granite, Little Goose and Lower Monumental – and McNary Dam on the Columbia River, have fish transport facilities.

At these four dams, juvenile fish that go through the bypass systems can be routed either directly back into the river below the dam, or to holding and loading facilities for loading into barges or trucks for transport.

Barge riders, usually biological technicians from the juvenile fish facilities, accompany each barge trip, supervising all loading and release operations, and barge operations enroute to the release area.



Throughout the trip, they monitor fish conditions, barge equipment operations and water quality (temperature and dissolved oxygen levels).

Fish releases occur at various locations between Columbia River miles 138-144 during nighttime hours to minimize predation impacts. Trucks used for transporting fish during low-number periods are typically loaded onto barges downstream of Bonneville Dam – about 150 miles from the Pacific Ocean.

Transporting fish protects them from possible turbine passage, nitrogen-saturated or contaminated river water, and bird and fish predator species. They make the trip past the dams to the estuary in just a few days.

### FOR MORE INFORMATION

Juvenile Fish Transportation Program  
[www.nwd.usace.army.mil/ps/juvetran.asp](http://www.nwd.usace.army.mil/ps/juvetran.asp)  
 Fish Recovery Efforts in the Region  
[www.salmonrecovery.gov/](http://www.salmonrecovery.gov/)  
 Walla Walla District,  
 U.S. Army Corps of Engineers  
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