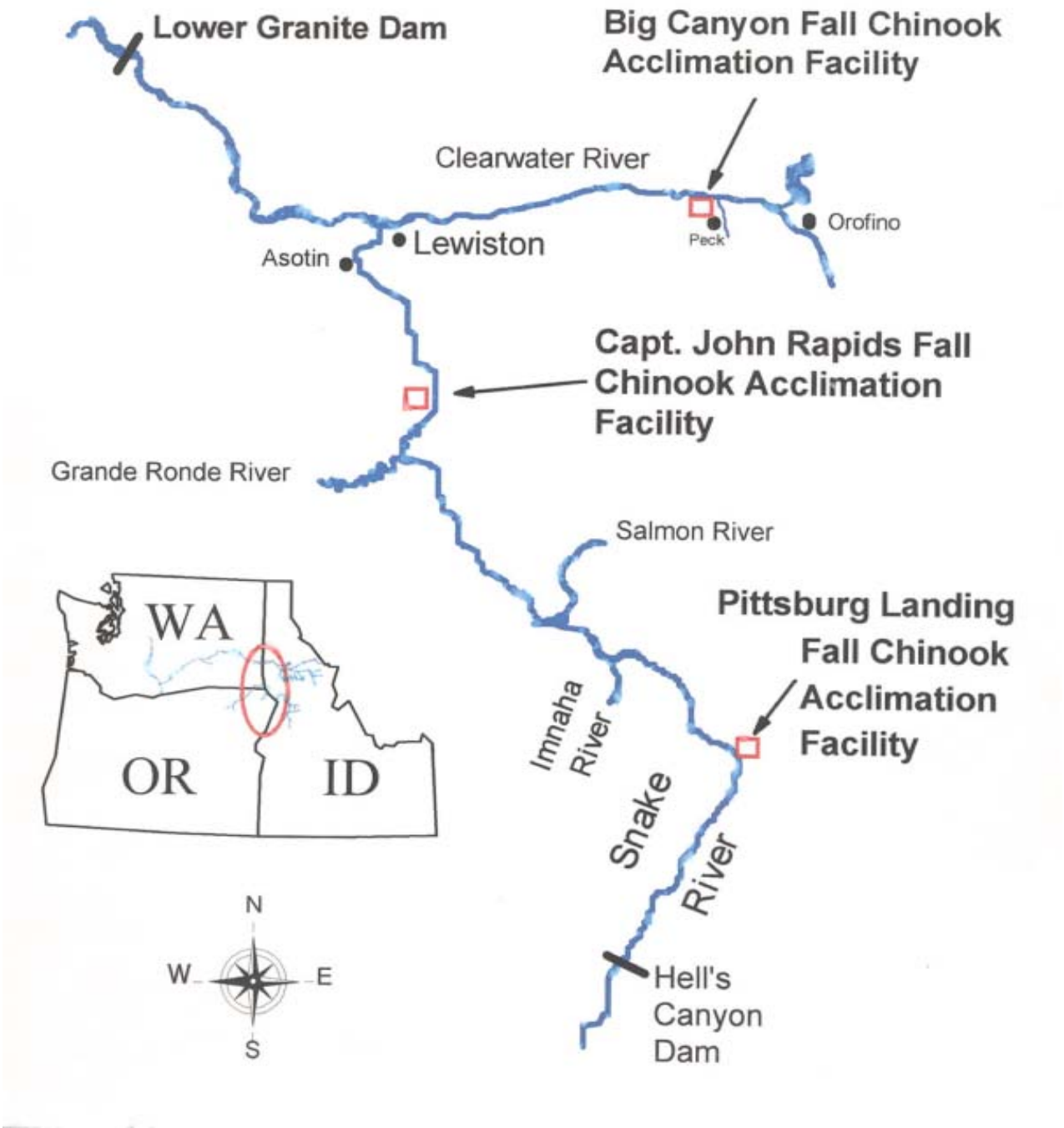
Fall Chinook Acclimation Project Summary

ABSTRACT

Fisheries co-managers of *U.S. v Oregon* supported and directed the construction and operation of acclimation and release facilities for Snake River fall Chinook from Lyons Ferry Hatchery at three sites above Lower Granite Dam. In 1996, Congress instructed the U.S. Army Corps of Engineers (USCOE) to construct, under the Lower Snake River Compensation Plan (LSRCP), final rearing and acclimation facilities for fall chinook salmon in the Snake River basin to complement their activities and efforts in compensating for fish lost due to construction of the lower Snake River dams. The Nez Perce Tribe played a key role in securing funding and selecting acclimation sites, then assumed responsibility for operation and maintenance of the facilities. In 1997 Bonneville Power Administrative (BPA) was directed to fund operations and maintenance (O&M) for the facilities. Two acclimation facilities, Capt. John Rapids and Pittsburg Landing, are located on the Snake River between Asotin, WA and Hells Canyon Dam and one facility is located on the Clearwater River at Peck. The Capt. John Rapids facility is a single pond while the Pittsburg Landing and Big Canyon sites consist of portable fish rearing tanks assembled and disassembled each year. Acclimation of 450,000 smolts (150,000 each facility) begins in March and ends 6 weeks later. When available, an additional 2,400,000 fall Chinook sub-yearlings may be acclimated for 6 weeks, following the smolt release.

The project goal is to increase the naturally spawning population of Snake River fall chinook salmon upstream of Lower Granite Dam. This is a supplementation project, in that hatchery produced fish are acclimated and released into the natural spawning habitat for the purpose of returning a greater number of spawners to increase natural production. Only Snake River stock is used and the Lyons Ferry hatchery propagating the stock is the designated gene bank source. This is a long-term project, and will ultimately work towards achieving delisting goals established by National Marine Fisheries Service (NMFS). In 2002, returning adults will represent a complete brood year of juvenile releases from all three acclimation facilities. Progeny (which would then be listed fish) from those returns will be returning for the next five years, to begin the delisting cycle.

Site Map


Lower Granite Dam
Big Canyon Fall Chinook Acclimation Facility
Clearwater River
Peck
Orofino
Asotin
Lewiston
Capt. John Rapids Fall Chinook Acclimation Facility
Grande Ronde River
Salmon River
WA
OR
ID
Pittsburg Landing Fall Chinook Acclimation Facility
Imnaha River
Snake River
N
W
E
S
Hell's Canyon Dam

PROJECT GOALS

The immediate goal of the project is a concerted effort to ensure that the Snake River fall chinook salmon above Lower Granite Dam do not go extinct. Long-term goals of the project are:

1. Increase the natural population of Snake River fall chinook spawning above Lower Granite Dam.
2. Sustain long-term preservation and genetic integrity of this population.
3. Keep the ecological and genetic impacts of nontarget fish populations within acceptable limits.
4. Assist with the recovery of Snake River fall chinook to remove from ESA listing.
5. Provide harvest opportunities for both tribal and non-tribal anglers.

This is a long-term project that will ultimately work toward achieving the de-listing goals established by NMFS. The Proposed Recovery Plan for Snake River Salmon established a numerical de-listing goal for Snake River fall chinook as an eight-year (approximately two-generations) geometric mean of at least 2,500 natural spawners in the mainstem Snake River annually.

FACILITIES

Pittsburg Landing

Assembly of the acclimation site begins in February each year with the transport of equipment and material from an offsite storage area. Water pumps are rented from a Portland, Oregon contractor and gravel is hauled from a nearby burrow pit to level the fish rearing tanks.

Water supply: Water is pumped directly from the Snake River by four 4-inch diesel pumps. Each pump has a portable water intake screen that is placed into the river and connected to the pump by120 feet of 6-inch plastic hose. Each pump provides 450 gpm of water and operates 24 hours each day throughout the six-week acclimation period except for oil checks and servicing. A 1000-gallon fuel tank, placed within a spill containment barrier, supplies fuel for the pumps. The water is pumped to one of two12 foot-high water distribution/degassing towers to remove nitrogen gas, before flowing through a series of downsizing pipes to the rearing units.

Rearing Units: The rearing units consist of 16 circular aluminum tanks, 20 feet in diameter and 4 feet deep. The tanks are transported from the storage area by a 20 ft. flatbed lift-truck and placed on a 12-inch layer of level compacted gravel placed in a circle of connected plastic containment blocks. The tanks, made in two pieces and bolted together, drains from the center of the tank through an 8-inch pipe placed in a plywood manhole running under the tank. The tank is fitted with vertical 12-inch circular perforated aluminum screen and the water depth controlled by an 8-inch center PVC standpipe. The rearing water enters the tank through a 4-inch pipe located on the edge on the tank and directed in a manner to facilitate a circular motion to aid the movement of fish waste and mortality to the center screen. Water flow is controlled by a 4-inch gate valve located on the incoming line and maintains flows at l00 gpm. The water discharge line is connected from the tank to the river by an 8-inch flexible plastic pipe, which is also used to release the fish.

The USFS agreed, in 1998, to allow the Nez Perce Tribe to leave assembled fish rearing tanks and related equipment at a storage site near the fish acclimation site. This agreement resulted in reduced equipment fatigue and cut assembly and disassembly time by half.

Alarm system: A 24-volt alarm system constantly monitors water levels in each rearing tank and each of the two water distribution towers. An enunciator panel that provides a visual and audio alarm when a low water level is detected monitors the alarm system. The alarm control box and enunciator panel is located near the staff-housing trailer.

Big Canyon

The Big Canyon Fall Chinook Acclimation Facility is located on Nez Perce Tribal Allotment 992 and the site of a Clearwater River boat launch facility that was leased to the Idaho Fish and Game Department. The fish acclimation equipment is assembled on a gravel parking area that has been improved by the addition of gravel and grading.

The Big Canyon facility uses identical or similar equipment to that of Pittsburg Landing. The rearing tanks assembly has been changed over the years to include a single row of tanks that sit flat on the gravel surface. The center drain line is located in a trench dug under the tank thus eliminating the need for 12-inch gravel pad that was previously used. This method can only be used where the proper elevation is available to facilitate water

discharge to the river.

The COE has agreed to furnish electric pumps to replace the diesel units that are rented each year. The electric pumps should provide the same performance as the diesel pumps while reducing rental and maintenance costs, allowing a onsite staff reduction and eliminate the risk of a major fuel spill. No date for the pump replacement has been established.

The FCAP project has a lease agreement with the Nez Perce Tribe that allows the fish rearing tanks and water distribution tower to remain assembled at the site the entire year.

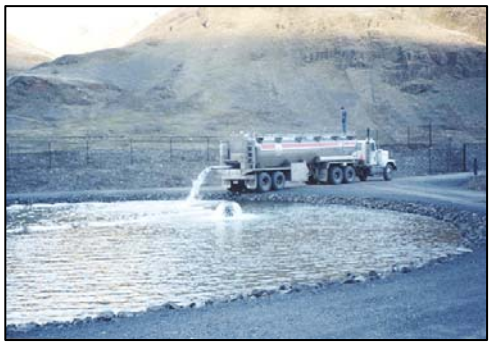
Capt. John Rapids

The Capt. John Rapids Fall Chinook Acclimation Facility is a single 150'X50' in-ground pond that is supplied with Snake River water by two independent submersible electric pumps. The pumps and intake screens are designed to be placed into the river and then removed following fish acclimation each year. The pump intake screens are provided with an air backflush system to remove debris and an alarm system is available to monitor flows and other water parameters.

FACILITY OPERATION

Assembly of the temporary acclimation facilities begins in January each year and testing of the facility completed by the last week of February. Fish acclimation begins at Capt. John Rapids in February and at Pittsburg Landing and Big Canyon in March. Pittsburg Landing is disassembled in April and Big Canyon in June. Four portable diesel water pumps provide water for Pittsburg Landing and Big Canyon. Captain John Rapid's facility is a single large pond 17 miles south of Asotin, WA, on the Snake River. Two 1,000 gallon/minute submersible pumps provide water from the river for acclimation.

Staffing: Facility operators are on site 24 hours to monitor the pumps and alarm system and live on-site in a travel trailer.



Fish transport: WDFW and NPT fish distribution vehicles share fish transport to all the acclimation facilities. Lyons Ferry Hatchery personnel provide schedules and facilitate loading and enumeration of the fish. Fish transport permits are requested and received before fish are distributed.

Up to 150,000 fall chinook salmon are transferred from Lyons Ferry Hatchery on or about March 0l of each year at a size of approximately 12 fish per pound. The fish will be reared in sixteen 20 ft. aluminum tanks located on a gravel parking area near the river at Pittsburg Landing and Big Canyon and in a 150' by 50' pond at Capt. John Rapids. River water will be pumped into the acclimation units and discharged back into the river.

The fish will be reared and acclimated in the temporary facilities for six weeks before release into the Snake and Clearwater Rivers in April at a size of approximately 10 fish per pound, or 160-170 mm fork length. If sub-yearlings are available, up to 500,000 are transferred to each facility at 90 fish per pound for rearing and acclimation for six weeks before release into the river in June at 60 fish per pound. If additional sub- yearlings are available, a second group of up to 500,000 are acclimated at Big Canyon and Capt. John Rapids sites. Priority release sites for sub-yearlings are: 1. Big Canyon, 2. Capt. John Rapids and 3. Pittsburg Landing.

Fish culture: Staff personnel perform daily scheduled fish culture duties that includes checking and recording oxygen levels in the rearing units three times each day, feeding the rearing units three times each day and picking fish mortality twice each day. Staff also observes fish behavior for abnormalities and assist in fish health checks and the fish-marking program. The fish are fed a semi-moist pellet manufactured by BioProducts of Warrenton, Oregon.
Fish culture methods are the same as per IHOT guidelines and consistent with WDFW fish culture techniques at Lyons Ferry Hatchery. The NPT-DFRM Production Division Director reviews any changes to standard procedures and other agencies are consulted if necessary. Environmental precautions are necessary to handle diesel and oil for the portable water pumps. Fish health protocols are as per AFS Blue Book, IHOT and Nez Perce Tribe fish health protocols.

Fish health: Fish health services are provided by contract with the USFWS, Dworshak Fish Health Center (DFHC). The contract provides diagnostic and pathogen survey services for all fall Chinook juveniles and smolts transported to the fish acclimation facilities. The services include a fish health check before transfer, bi-weekly exams during acclimation and a pre-release exam. Other health checks are performed as requested.

Acclimation and release: The fish will be acclimated for a minimum of six weeks unless environmental conditions or fish health require an earlier release. The extended acclimation time at each site will provide natal homing of adults to the appropriate spawning habitat and diminish the likelihood that Lyons Ferry Hatchery fall chinook will stray into other Columbia Basin populations.

Release will occur during rising water conditions, at the same time or slightly preceding fall chinook salmon releases at Lyons Ferry Hatchery, and at night to minimize predation by birds or other fish.

PROJECT HISTORY

1996
Operation of the Pittsburg Landing Acclimation Facility (Project 199801005) began with a total of 114,000 fall chinook yearling acclimated and released.

Adult fall chinook salmon passage over Lower Granite Dam: 1308 adults – 424 jacks

1997
Pittsburg Landing and Big Canyon (Project 199801008) acclimation facilities were operated with 345,000 yearlings and 253,000 sub-yearlings acclimated and released. Pittsburg Landing released 147,000 yearlings and Big Canyon 198,000 yearlings and 253,000 sub-yearlings.

Funding for operations and maintenance provided directly from BPA starting in 1997.
Adult fall chinook salmon passage over Lower Granite Dam: 1451 adults – 504 jacks

1998
Pittsburg Landing, Big Canyon and Capt. John Rapids acclimation facilities operated with 336,000 yearlings acclimated and released. Pittsburg Landing released 142,000, Big Canyon 61,000 and Capt. John Rapids 133,000.

Adult fall chinook salmon passage over Lower Granite Dam: 1909 adults – 2002 jacks

1999
All three acclimation facilities operated with 530,000 yearling and 670,000 sub-yearling fish acclimated and released. Pittsburg Landing released 143,000 yearlings, Big Canyon 230,000 yearlings and 347,000 sub-yearlings and Capt. John Rapids 157,000 yearlings and 323,000 sub-yearling fish.

Adult fall chinook salmon passage over Lower Granite Dam: 3384 adults – 1863 jacks

2000
All three acclimation facilities operated with 397,000 yearlings and 2,182,000 sub-yearlings acclimated and released. Pittsburg Landing released 135,000 yearlings and 399,000 sub-yearlings; Big Canyon 131,000 yearlings and 890,000 sub-yearlings; Capt. John Rapids 131,000 yearlings and 893,000 sub-yearlings.

Adult fall chinook salmon passage over Lower Granite Dam: 3602 adults – 7112 jacks

2001
All three acclimation facilities operated with 327,000 yearlings and 1,732,000 sub-yearlings acclimated and released. Pittsburg Landing released 104,000 yearlings and 374,000 sub-yearlings; Big Canyon 113,000 yearling and 856,000 sub-yearlings; Capt. John Rapids 102,000 yearlings and 501,000 sub-yearlings.