

LYONS FERRY COMPLEX ANNUAL OPERATION PLAN

For the Period of

OCTOBER 1, 2010 – SEPTEMBER 30, 2011

Prepared by:

Washington Department of Fish and Wildlife



Nez Perce Tribe



Confederated Tribes of the
Umatilla Indian Reservation



And funded by:

Lower Snake River Compensation Plan



LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

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I. INTRODUCTION

A. Facilities

Lyons Ferry Complex (LFC; See [Figure 1](#)) includes Lyons Ferry Hatchery (LFH), Tucannon Hatchery (TFH), Cottonwood Acclimation Facility (Cottonwood AF), Dayton Acclimation Facility (Dayton AF), and Curl Lake Acclimation Pond (Curl Lake AP).

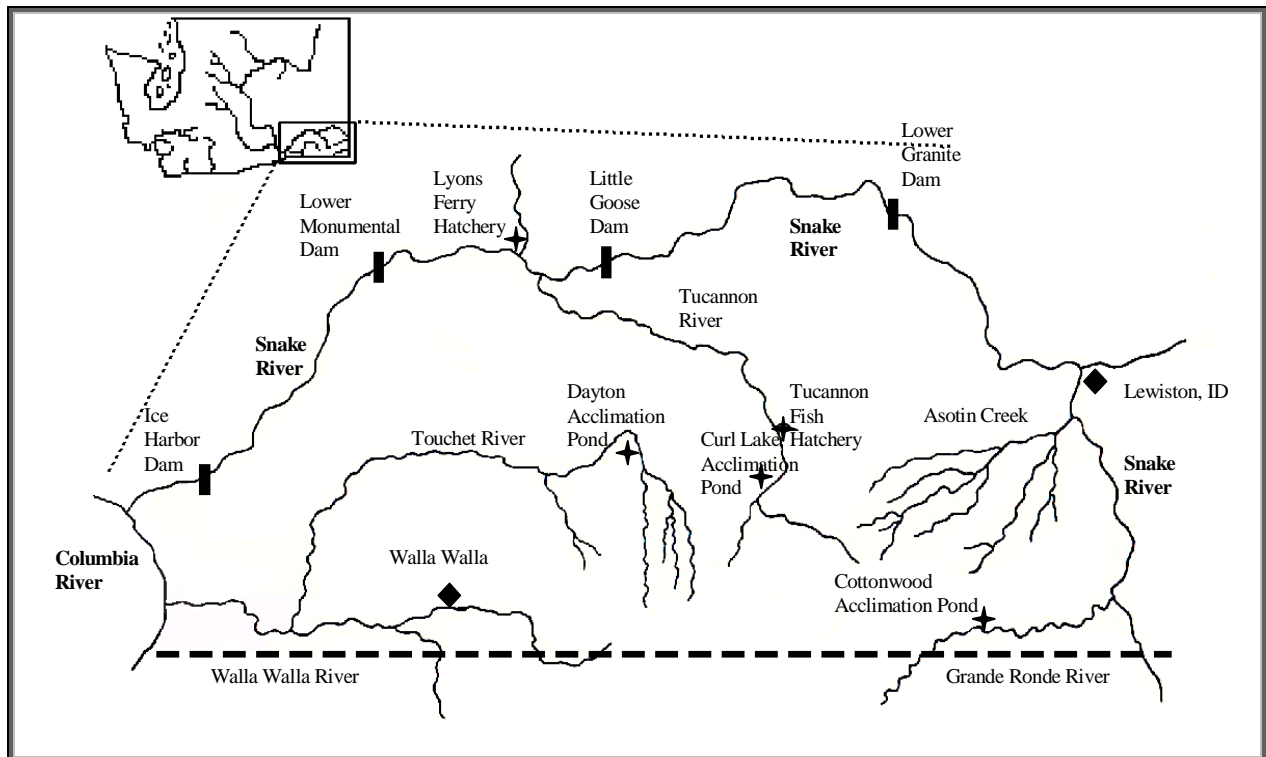


Figure 1. Map of the Lower Snake River Compensation Plan (LSRCP) LFC Facilities, and major rivers and streams in Southeast Washington.

LSRCP funded fish production in Washington began in 1983, with the construction of trout and steelhead rearing facilities at the LFH. Construction of salmon hatchery facilities and steelhead acclimation sites followed, and was completed in 1985. Major upgrades at TFH also occurred at that time, and operation of that facility has been funded by LSRCP ever since. Production at all facilities has been directed toward meeting established hatchery return goals of 18,300 adult fall Chinook, 1,152 adult spring Chinook, 4,656 adult summer steelhead; plus providing 67,500 angler days of fishing opportunity from 80,000 pounds of rainbow trout production (currently planted at 3 fish per pound (fpp)). In addition to these LSRCP hatchery production goals to mitigate for expected hydrosystem losses (approximately 48% of total desired population returns), the LSRCP hatchery program has contributed to conservation efforts to maintain and restore native populations of salmon and steelhead. Additional hatchery production of jumbo-

sized (1.5 pounds each) rainbow trout at TFH that historically was state funded is now funded by the Tri-State Steelheaders (non-profit organization).

1. Lyons Ferry Hatchery

The LFH is located along the Snake River at river mile (RM) 59.1, directly below the confluence of the Palouse River in Franklin County, Washington. Initially it was operated as two separate facilities. Washington Department of Wildlife (WDW) operated the north hatchery, producing steelhead and rainbow trout. Washington Department of Fisheries (WDF) operated the south hatchery, rearing spring and fall Chinook. A merger of the two agencies in 1994 led to a merging of the two facilities, and has since been operated by WDFW through LSRCP funding as LFH.

Facilities include two incubation buildings with office space and feed storage, plus adult fish trapping, holding and spawning structures. A visitor center provides interpretive information for guests of the hatchery. There are eight residences on-site for staff to fulfill security and emergency response needs.

The LFH rearing facilities include twenty-eight raceways at 10 ft x 100 ft x 2.8 ft and nineteen raceways at 10 ft x 88.5 ft x 3.5 ft. These raceways were covered in 2" square mesh netting in 2005 and 2006. There are three rearing lakes now covered in 2" netting (completed in 2008), holding ~ 590,000 cubic feet (ft³) of water each, approximately 1,100 ft x 90 ft x 10 ft in size. Netting has been added to these lakes and raceways to reduce predation losses. The steelhead and spring Chinook adult holding facilities include three 83 ft x 10 ft x 5 ft adult raceways with enclosed spawning facilities incorporated over the center of these ponds. With the addition of new walls in the fall Chinook adult ponds in summer 2009, there are now four 8.5 ft x 150 ft x 4.3 ft and four 10 ft x 150 ft x 4.3 ft adult salmon holding ponds, which also accommodate sub-yearling rearing when not needed for adult holding in the spring of the year. In 2005, channels were cut into two of these ponds, creating three temporary holding areas in each of the two modified ponds to accommodate marking and tagging of the subyearlings. Screens were fabricated to fit the channels. Six 3.25 ft x 16 ft x 2.6 ft fiberglass tanks were added below the north side raceways in 2006, allowing for decreased densities and improved flexibility in all stocks during early rearing. The incubation facilities include 112 full stacks (2 units of 8 trays each) of vertical incubators in the south trough room, and 88 shallow eyeing/hatching troughs and four 3.75 ft x 27.5 ft x 2 ft intermediate rearing troughs in the north trough room.

Water is supplied to LFH from the Marmes pump station, which has emergency power backup generation. Both generators were extensively serviced in the fall of 2009, which included new radiators and internal components. The Marmes pump (wells) facility has three 300 horsepower (hp) pumps, four 200 hp pumps and one 75 hp pump. The well water right for LFH is 53,200 gallons per minute (gpm), or 118.5 cubic feet per second (cfs) of flow, and water temperature is a constant 52° F.

2. Tucannon Hatchery

The TFH is located along the Tucannon River, between the towns of Dayton and Pomeroy Washington, at RM 36 in Columbia County. Fish production began in 1949 by the Washington Department of Game. In 1983, construction began to remodel the hatchery as part of a transfer of ownership to LSRCP. In November 1986 construction was complete, and LSRCP has continued to fund the operations there.

The TFH includes a combined incubation and office building, back-up power generation building, feed storage shed, shop, domestic water building, two well houses and a spring water collection building. There is also a river intake and trapping facility located upstream of Rainbow Lake, along the Tucannon River. There are two residences for staff on site to fulfill security and emergency response needs.

The TFH is supplied with three different water sources. River water is captured from the Tucannon River and ranges in temperatures from 33 to 60 ° F during use by the hatchery. The intake is located one half mile upstream of the hatchery. This water travels down an open channel into Rainbow Lake. From the outlet of Rainbow Lake the water travels through an 18" above ground pipeline to the hatchery. This pipeline was completely replaced in 2005. Rainbow Lake functions as a reservoir to provide the hatchery with cooler water in the summer months and warmer water in the winter months. It also provides a pool of water to draw from when encountering adverse intake conditions, resulting in temporary loss of water flows. An estimated 8 hours of water supply is currently available, however, a proposed dredging project will increase its capacity and supply. The water right for this source is 16 cfs. Well water is pumped from two separate sources to an aeration tower, and then gravity fed to the rearing units and the domestic pump building. The combined well water right is 2 cfs, with well #2 running around 54 - 57° F and well #3 running a constant 61° F. Spring water is pumped from an underground collection site to the same aeration tower and gravity fed to rearing units. The water right for this source is 5.3 cfs, and has a stable temperature of 51 or 52° F.

The rearing vessels at TFH include 40 concrete 1 ft x 15ft x .5 ft shallow troughs, six concrete round ponds approximately 40 ft in diameter with a maximum of 2,660 ft³ of rearing area each, two concrete 10 ft x 80 ft x 3 ft raceways, one concrete 15 ft x 136 ft x 5 ft raceway, and one earthen rearing pond with a maximum of 136,221 ft³ of rearing space. The pond is approximately 170 ft x 200 ft x 6.5 ft in size.

3. Cottonwood Acclimation Facility

Cottonwood AF is located along the Grande Ronde River at RM 28.7, directly above the confluence with Cottonwood Creek in Asotin County, Washington. Construction was completed in February 1985.

This facility includes an adult trapping facility on Cottonwood Creek, and a small storage building. Cottonwood AF has a concrete channel with earthen walls and holds ~357,000 ft³ of water. It has a water right of 2,694 gpm (6 cfs) for the period January 1st through July 1st. It is supplied with water from Cottonwood Creek through a gravity water supply system, with the

intake integrated into the adult trapping facility located ~ 0.10 miles above the pond. Water temperatures range from 34 to 52° F during operation of the facility. It also has a small trailer for use by staff required to be on-site at all times while the pond is in operation. It is presently used for acclimation and release of Wallowa stock summer steelhead into the Grande Ronde River.

4. Dayton Acclimation Facility

Dayton AF is located along the Touchet River at RM 53 in Columbia County, Washington. There is an adult trapping facility on the Touchet River just upstream of the acclimation pond at RM 53.3.

Construction of the Dayton AF was completed in October 1986. This pond is asphalt lined and holds ~ 200,000 ft³ of water. The water right to this pond is 2,694 gpm (6 cfs) for the period of Jan 1st – June 1st of each year. It is supplied with water from the Touchet River through a gravity water supply system, with the intake located at the newly constructed adult trapping and bypass facility just upstream of the pond. Water temperatures during operations for steelhead acclimation range from 34 to 52° F. The pond is located adjacent to the Snake River Lab evaluation office and has a storage garage for equipment and feed. It also has a small trailer for use by staff required to be on-site at all times while the pond is in operation. It is presently used for acclimation and release of LFH stock summer steelhead into the Touchet River. The new intake, trap and water supply structure serves multiple functions. During the summer months, local irrigators now collect water from the acclimation pond intake instead of pushing up two gravel berms in the river to allow for gravity diversions.

5. Curl Lake Acclimation Pond

Curl Lake AP is located along the Tucannon River at RM 41 in Columbia County, Washington. The construction of Curl Lake AP was completed in February 1985. Curl Lake AP is an earthen pond holding ~ 784,000 ft³ of water. It has a water right of 2,694 gpm (6 cfs). It is supplied with water from the Tucannon River through a gravity water supply system. It is currently utilized for acclimation of spring Chinook yearlings for release into the Tucannon River. Water temperatures at this time of year range from 34 to 48 ° F. Chinook acclimation in Curl Lake AP started in 1997. After the spring Chinook are released in early April, the pond is stocked with resident trout for fishing. It is emptied after fishing season ends October 31st each year, and recharged by hatchery staff prior to spring Chinook acclimation the following January.

6. Fall Chinook Acclimation Project (FCAP)

In addition to WDFW acclimation sites, LFC provides up to 465,000 yearling and 1,740,000 sub-yearling fall Chinook to three acclimation facilities operated by the Nez Perce Tribe (NPT): Pittsburg Landing and Captain John's Rapids on the Snake River between Asotin and Hells Canyon Dam, and Big Canyon on the Clearwater River. Size at transfer to the NPT AF's is 12 fpp for yearlings and 65 - 75 fpp for sub-yearlings. Size at release goal for acclimated fall Chinook yearlings is 10.0 fpp, and 50 fpp for sub-yearlings. Sub yearling size goals at transfer have been difficult to achieve due to increased marking, tagging and egg take strategies. Please refer to [Appendix E](#) for more details.

B. Fish Production Summary

Annual hatchery production is intended to meet LSRCP adult return goals for several species. Current production levels are set to either conserve and rebuild the Chinook populations, or to meet the adult hatchery return goals for steelhead most years while minimizing any adverse effects on ESA listed salmon and steelhead (**Table 1**). Production levels for salmon and steelhead at LFH have been approved through the *U.S. v Oregon (US v OR)* 2008-2017 Management Agreement. LFH is planning BY2010 fall Chinook production based on table *B4B* in the *US v OR* agreement (**Table 3**). Spring Chinook production is now solely comprised of a conventional hatchery smolt production program. The smolt release goal was increased to 225,000 smolts per year (as agreed to under *US v OR*, for release in 2007). LFH has utilized two steelhead stocks (Lyons Ferry and Wallowa) for mitigation objectives under LSRCP, and has tested two natural broodstocks in the Touchet and Tucannon Rivers. The numbers of fish released in 2010 were annual goals proposed in 2005, (**Table 2**) representing the program as negotiated by the co-managers.

It is important to stress that *any* change to a specific program at LFH or TFH will potentially impact the other programs, so “current capacity” values shown in **Table 1** represent rearing limits *as the programs are structured today*. Additionally, restrictions anywhere within the rearing cycle will determine program size. Restrictions can be rearing vessels, water, tagging groups and schedules, fish management decisions regarding harvest or adult return contribution and carrying capacity, etc.

Monitoring and Evaluation (M&E) has been ongoing since 1983 and 1985 for trout and salmon programs respectively. Recent emphasis has centered on meeting Endangered Species Act (ESA) permitting and recovery planning requirements. Hatchery Scientific Review Group and Hatchery Review Team (HRT) recommendations are likely to also affect production actions and management decisions in the coming years. Routine monitoring includes length, weight, K factor, external fin evaluation, tag retention and fish health examinations. Pre-release quality control checks on fin clips, tag retention, etc. is completed on all WDFW releases by WDFW staff.

Table 1. LFC production capacities (historical design versus current).

Facility	Location River (Mile)	Water Source	Species	Designed Capacity (#Fish)	Designed Capacity (Pounds)	2010 Current Capacity (#Fish)	2010 Current Capacity (Pounds)
Lyons Ferry ^a	Snake (58)	Wells	Fall Chinook	9,160,000	101,800	3,100,000	119,167
			Spring Chinook	132,000	8,800	240,000	8,000
			Steelhead	931,200	116,400	675,000	150,000
			Rainbow	260,000	84,000	265,000	46,950
			TOTALS	10,483,200	311,000	4,280,000	324,117
Tucannon ^b	Tucannon (36)	Wells, Springs, Tucannon R.	Spring Chinook	132,000	8,800	240,000	20,000
			Rainbow	210,000	39,285	198,000	45,970
			Steelhead	-0-	-0-	100,000	22,222
			TOTALS	342,000	53,335	538,000	88,192
Cottonwood AF	Grande Ronde (28.7)	Cottonwood Creek	Steelhead	250,000	31,250	200,000	44,444
Curl Lake AP	Tucannon (41)	Tucannon R.	Steelhead	160,000	32,000	-0-	-0-
			Spring Chinook	-0-	-0-	225,000	20,000
Dayton AF	Touchet (53)	Touchet R.	Steelhead	125,000	27,750	85,000	18,889

^aLyons Ferry Hatchery was designed to accommodate sub-yearling Chinook based on the traditional density factor of 0.18. However, with regards to fish health, fish quality, increased yearling production, marking strategies that have been implemented since construction, and water composition, the density factor must not exceed 0.09 for sub-yearlings and 0.14 for yearlings.

^bTucannon Hatchery was initially designed for rainbow and spring Chinook. Following facility modifications in the 1980's, and the construction of Curl Lake as an acclimation site, increased production for rainbow spring Chinook, and incorporating a steelhead conservation program, were all implemented.

Table 2. LFC plants and transfers by brood years (BY) – three-year profile.

Species	Year slated for release/transfer				
	2010 Goal	2010 Actual Plants and Transfers	2011 Goal ^a	Fish/Eggs on Hand For 2011 Goal	2012 Tentative Plan ^a
Fall Chinook					
<u>Yearling releases:</u>	<u>BY 2008</u>	<u>BY 2008</u>	<u>BY 2009</u>	<u>BY 2009</u>	<u>BY 2010</u>
LFH-on station	475,000	478,852	450,000	465,000	450,000
NPT – FCAP (transfer)	465,000	464,875	465,000	480,000	465,000
<u>Sub-yearling releases:</u>	<u>BY 2009</u>	<u>BY 2009</u>	<u>BY 2010</u>	<u>BY 2010</u>	<u>BY 2011</u>
LFH-on station	200,000	202,551	200,000	Unknown	200,000
NPT – FCAP (transfer)	1,400,000	1,448,005	1,400,000	Unknown	1,400,000
Direct- near Couse Cr (CCD)	200,000	203,162	200,000	Unknown	200,000
Direct-Grande Ronde River	-0-	-0-	-0-	-0-	-0-
<u>Eyed Egg Transfers:</u>	<u>BY 2009</u>	<u>BY 2009^b</u>	<u>BY 2010</u>	<u>BY 2010</u>	<u>BY 2011</u>
Oxbow - IPC	211,000	210,000	211,000	Unknown	211,000
Irrigon-IPC	842,000	550,000	842,000	Unknown	842,000
Irrigon - Direct – GRR	421,000	402,000	421,000	Unknown	421,000
Umatilla-ACOE	345,220	345,200	345,220	Unknown	-0-
Spring Chinook					
Conventional	<u>BY 2008</u> 225,000	<u>BY 2008</u> 172,897	<u>BY 2009</u> 225,000	<u>BY 2009</u> 227,400	<u>BY 2010</u> 225,000
**Surplus Fry Plant – BY09		<u>BY 2009</u> 52,253			
Summer Steelhead (Stock)					
	<u>BY 2009</u>	<u>BY 2009</u>	<u>BY2010</u>	<u>BY 2010</u>	<u>BY 2011</u>
On Station (LFH)	60,000	66,393	160,000	162,500	160,000
Tucannon (LFH)	100,000	104,646	-0-	-0-	-0-
Touchet (LFH)	85,000	86,737	85,000	86,500	85,000
Walla-Walla (LFH)	100,000	107,120	100,000	105,000	100,000
Cottonwood (Wallowa)	160,000	163,197	200,000	197,352	200,000
Tucannon (Endemic)	50,000	57,562	75,000	79,716	75,000
Touchet (Endemic)	50,000	56,078	50,000	64,110	50,000
Touchet (Endemic 2-yr)	<u>BY2008</u> 7,500	<u>BY2008</u> 5,599 ^b	<u>BY2009</u> 5,500	<u>BY2009</u> 6,447	-0-
Spokane Rainbow Trout					
<u>Mitigation</u>	<u>BY 2008</u>	<u>BY 2008</u>	<u>BY 2009</u>	<u>BY 2009</u>	<u>BY 2010</u>
Catchables	236,725	228,992	234,100	237,376	234,935
Jumbo's	1,000	1,047	1,000	1,056	1,000
IDFG transfer-fingerlings	160,000	156,637	156,000	155,000	160,000
Kamloops/IDFG Catchables	50,000	53,585	4,950	4,697	4,950
Jumbo's – NPT's	NA	NA	1,650	1,700	1,650
<u>State Program</u>	4,000	4,137	-0-	-0-	-0-
Jumbo's – TSS organization	NA	NA	4,000	4,000	4,000
Legals	200	200	-0-	-0-	-0-

^a Based on the US v. Oregon table B4b.; ^bNPT contributed approximately 300,000 eggs to help meet egg transfer goals for BY09 (LFH shortage).

II. SNAKE RIVER FALL CHINOOK

The fall Chinook production program at LFH is the cornerstone of a highly coordinated and integrated artificial program for Snake River fall Chinook, implemented through the LSRC program, the Idaho Power Company (IPC) Hells Canyon Settlement Agreement, and the Nez Perce Tribal Hatchery (NPTH). Broodstock for the program at LFH are collected at Lower Granite Dam (LGR) and at LFH.

The *US v OR* 2008-2017 Management Agreement included two tables that determined priority release locations and numbers for fall Chinook production at LFH; production priorities contained in Tables *B4A* and *B4B*. A policy decision has been made to use *B4B* from that agreement. For this AOP, LFH is planning BY2010 fall Chinook production based on table *B4B* (**Table 3**).

The LFH was initially designed to release 9.16 million fall Chinook subyearlings (**Table 1**) at around 90 fpp. Currently this facility produces 1.8 million subyearlings at approximately 50-75 fpp, and another 900,000 yearlings at 10-12 fpp. Additionally, this facility traps and spawns returning adult fall Chinook to meet egg take needs elsewhere, which includes providing over 1,000,000 eggs annually for the IPC program. Marking and tagging will occur there as well. An additional 400,000 fish will be released into the Grande Ronde River in Washington as subyearlings by ODFW. The co-managers will coordinate release timing and location. This production was historically conducted at LFH, however co managers recognized the opportunity to shift the program to Oregon, reducing densities and creating some flexibility at LFH. Both facilities are funded by LSRC, so budgets were adjusted accordingly, and the co managers have agreed to this change in production.

Table 3. Revised production table listing Snake River fall Chinook salmon production priorities for LFH per the UsvOR Management Agreement, Table B4B, for Brood Years 2008-2017.

Priority	Production Program				
	Rearing Facility	Number	Age	Release Location(s)	Marking
1	Lyons Ferry	450,000	1+	On station	225K AdCWT 225K CWT
2	Lyons Ferry	150,000	1+	Pittsburg Landing	70K AdCWT 80K CWT only
3	Lyons Ferry	150,000	1+	Big Canyon	70K AdCWT 80K CWT only
4	Lyons Ferry	150,000	1+	Captain John Rapids	70K AdCWT 80K CWT only
5	Lyons Ferry	200,000	0+	On station	200K AdCWT
6	Lyons Ferry	500,000	0+	Captain John Rapids	100K AdCWT 100K CWT only 300K Unmarked
7	Lyons Ferry	500,000	0+	Big Canyon	100K AdCWT 100K CWT only 300K Unmarked
8	Lyons Ferry	200,000	0+	Pittsburg Landing	100K AdCWT 100K CWT only
9	Oxbow	200,000	0+	Hells Canyon Dam	200K AdCWT
10	Lyons Ferry	200,000	0+	Pittsburg Landing	200K Unmarked
11	Lyons Ferry	200,000	0+	Direct stream evaluation Near Captain John Rapids	200K AdCWT
12	DNFH/Umatilla	250,000	0+	Transportation Study ^a	250K PIT Tag only
13	Irrigon ^b	200,000	0+	Grande Ronde River	200K AdCWT
14	DNFH/Umatilla	78,000	0+	Transportation Study ^a	78K PIT tag only
15	Irrigon ^c	200,000	0+	Hells Canyon Dam ^d	200K AdCWT
16	Irrigon ^b	200,000	0+	Grande Ronde River	200K Unmarked
17	Irrigon ^c	600,000	0+	Hells Canyon Dam ^d	600K Ad only
TOTAL	Yearlings	900,000			
	Subyearlings	3,528,000 (of which 328,000 are for Transportation Study)			

^a USACOE Transportation Study wild surrogate groups direct stream released into the Clearwater and mainstream Snake River

^b for logistical purposes, fish are reared at Irrigon in lieu of Lyons Ferry. (LSRCP);

^c for logistical purposes, beginning in 2010, fish are reared at Irrigon in lieu of Umatilla

^d Pending production priority requests to PAC

A. Fish on Hand

Brood Year 2009

On August 1, 2010, LFH had an estimated 950,000 (BY09) juvenile Snake River fall Chinook on hand. The program goal is to provide 465,000 yearlings to NPT acclimation sites and 450,000 yearlings for release at LFH in the spring of 2011. 30,000 of the onstation yearlings were PIT tagged in late August. An additional 10,000 yearlings will be released on-station at LFH, along with an additional 12,000 yearlings for Big Canyon and 10,000 yearlings for Pittsburg Landing. These extra fish were all CWT only. The PIT tags detections will be used to document the magnitude of the return as the fish are coming up the Columbia River. We will also use the PIT tag data to estimate recapture rates at the adult trap at LFH in addition to estimating smolt-to-adult return estimates.

Table 4. BY 2009 Snake River fall Chinook tagging, transfers and proposed releases.

Site	Proposed Transfer	Proposed Release	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
LFH	N/A	460,000	10	1+	225K AD CWT 235K CWT only	27,778	April 2011
Capt. John Rapids	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Feb - 2011 (transfer)
Pittsburg Landing	162,500	160,000	12	1+	70K AD CWT 90K CWT Only	19,000	Mar - 2011 (transfer)
Big Canyon	162,500	160,000	12	1+	70K AD CWT 90K CWT Only	19,000	Mar - 2011 (transfer)

B. Trapping

Brood Year 2010

The trapping goal is generally 3,000-4,000 (which includes approximately 1,400 females) adults and 150 jacks based upon stray rates and pre-spawning mortalities encountered in 2009 (Appendix A), and we anticipate that the majority of the females needed for brood will be trapped at Lower Granite. Refer to [Appendix B](#) for goal. These numbers are all based on a 12% trap rate. This goal is the total number of fish that will need to be trapped to meet egg take goals through priority 17 (Table 3). These goals are exclusive to stray culling requirements to assure the stray rate proportion does not exceed 5%. Collection occurs at LFH and LGR. In effect, trapping is estimated for LGR, and then the remaining numbers of fish needed to meet egg take goals are trapped at LFH. Excess adults trapped at NPTH may be used to supplement LFH production shortages of LGR and volunteer adult returns.

1. Lyons Ferry Hatchery

Trapping at LFH begins on September 20th, and continues throughout the spawning season, generally ending by late November or early December. All Snake River fall Chinook that voluntarily enter LFH may be retained for spawning. Once the number of fish needed to trap at LFH is estimated, a trapping schedule will be set to reflect the number of fish that need to be trapped weekly, based upon fall Chinook counts at Lower Monumental Dam. When the weekly target is met, no more fish will be retained until the following week. If the hatchery trap is run for steelhead collection and no fall Chinook are needed at the time, the fish will be recycled back to the river. The trap will be operated daily to allow detection of PIT tag returns to Lyons Ferry. This will be pass-through trapping, only. An array will be installed in the trap flume to detect PIT tagged fish returning to the hatchery. Refer to Lyons Ferry trapping protocol ([Appendix C](#)). Coho salmon are occasionally identified at LFH during fall Chinook trapping and spawning operations. WDFW does not propagate coho salmon in the Snake River, but will contact NPT representatives for proper disposition of these fish. This year, all coho will be returned to the river.

2. Lower Granite Dam

Trapping at LGR may begin as early as August 18 if river water temperatures are less than 70 ° F. Trapping has occurred at a predetermined sampling rate up to 12% of each hour, twenty-four hours per day. Collected fish are divided between the LFH and NPTH (usually 70:30 ratio) as agreed upon annually, with a predetermined hauling schedule shared between both facilities to meet this need. This hauling schedule is adjusted accordingly for meeting the established ratio. The goal will focus on females in calculating the 70:30 split. The trapping/sampling protocol is described more completely in Appendix B.

C. Spawning

Brood Year 2010

Spawning will occur weekly, generally on Tuesdays and Wednesdays, starting the third or fourth week in October. It will continue until late November or early December, as necessary to meet egg-take goals. All recovered CWTs will be read or elastomer tags identified during spawning to ensure separation of LFH origin fish from unknown fish. Hatchery and wild origin determinations based on scale analysis will be used for untagged fish.

LFH origin fish (determined by CWT, VIE, or scale analysis) will be retained for broodstock. Up to 30% natural origin Snake River fish will be incorporated into the broodstock. Stray (non-LFH origin) hatchery fish as determined by CWT will be culled if not needed by other Columbia Basin hatcheries.

Strays may be included in broodstock up to 5%. This limit may be adjusted if necessary to meet production goals and if approved by the co managers. If not needed, strays will be destroyed. It is suggested that unmarked/untagged fish from LGR be used preferentially over unmarked fish at LFH, as they are more likely to be of Snake River origin. This action will be examined on an annual basis. It is the intent of WDFW to minimize use of out-of-basin fish in the broodstock.

All CWT's will be analyzed prior to matings for determining age structure. We will continue to increase the percentage of four and five year old fish in the broodstock to offset the higher harvest rate of these fish in lower river fisheries. This was agreed to by all the co-managers. Also, the goal for BY2010 is to reduce the number of "true jacks" (i.e. one-salt fish) in the broodstock. Fork length criteria for broodstock will be adjusted in season to reflect accurate size at age estimates.

Our mating protocol will minimize hatchery stray incorporation into Lyons Ferry Hatchery broodstock while incorporating potentially as many wild fall Chinook as possible. Mating will occur in a 1 female x 1 male cross but may increase to a 3-4 females x 1 male cross for older aged males. If a male is used multiple times he must be used on at least one older aged female. A mating matrix is listed in [Appendix D](#). Because the spawning population is large (>1,000), increasing genetic diversity is not presently a concern. Larger, older aged males above 75 cm (3 and 4 salt) will be split and used on multiple females if needed.

We will mate true jills to adult males. We desire to minimize the numbers of jills in our broodstock so they will be incubated separately until we can determine if production goals can be met by older aged females. If broodstock can be met without using jills, we will cull the progeny of jills prior to seasons end.

Fertilized eggs will be water hardened for one hour in 100-ppm iodophore, and incubated in vertical stack incubators. Progeny from below-low enzyme linked immuno-sorption assay (ELISA) females are used for the yearling programs¹. Disposition of eggs from females yielding moderate or high titers during ELISA sampling is determined by co-managers as appropriate. These eggs are used for subyearling programs, or may be culled. Progeny of females not ELISA sampled are only used for subyearlings.

Assuming full production of **Table 3**, IPC will receive 1,053,000 eyed eggs (842,000 for Irrigon Hatchery + 211,000 for Oxbow Hatchery). The Umatilla Hatchery will no longer receive fall Chinook eggs for the IPC program due to an increase in their spring Chinook program beginning in 2010.

ODFW's Irrigon Hatchery will receive up to 421,000 eyed eggs to meet a release goal of 400,000 subyearlings into the Grande Ronde River and the Umatilla Hatchery will receive 345,000 eyed eggs for the USACOE Transportation Study. These transfers are listed in **Table 6**.

There is the potential that surplus Snake River origin fish may be available at the broodstock collection stations once egg take goals have been met. These fish will be top caudal clipped and returned to the river to continue their upstream migration, or out-planted above LGR Dam. All LGR origin adults with CWT must be retained for sampling. **Table 5** lists the areas that have been identified for each broodstock facility as suitable for disposition of surplus adults.

¹ See **Section X. FISH HEALTH** for a description of this criterion.

Table 5. Identified Areas for fall Chinook juvenile and Adult out planting as presented in the June 1, 2006 Draft SRFMP.

Facility	Out plant Locations		
	Adults/jacks	Fry	Subyearlings
Lyons Ferry Hatchery	-Tucannon River -Grande Ronde River -Mainstem Snake River	-Tucannon River -Mainstem Snake River near LFH -Mainstem Snake River above LGR	-Mainstem Snake near Captain John Rapids -Big Canyon -Grande Ronde River -Mainstem Snake downstream of Clearwater River
NPTH	-Lower mainstem Clearwater River, below North Fork	-Lower mainstem Clearwater River	-Lower mainstem Clearwater River

D. Rearing

Brood Year 2010

Eggs are reared in the vertical incubators, and are treated with formalin to reduce fungus on a daily basis. They are shocked at eye-up around 550 temperature units (TU's), and handpicked shortly thereafter. After eggs are picked, folded Vexar sheets are added to each tray for substrate. Formalin treatments stop just before hatch, and after complete yolk-sac absorption by hatched fry (at around 1900 TU's), they are transferred to raceways for rearing. Head troughs providing well water to the incubators are alarmed, and visual inspections of flow through the trays along with head trough levels are conducted daily.

LFH production fry are moved to outside raceways at ~1,600 fpp. In addition to standard raceways, adult salmon holding raceways are also utilized for subyearling fall Chinook rearing. By utilizing these larger ponds, densities in other raceways are dramatically reduced. Chronic Bacterial Gill Disease has occurred in recent years at LFH, although no detection was present in the BY2009 program. The current density index for fall Chinook subyearlings at or smaller than 100 fpp is monitored not to exceed 0.09. Density values can increase on a sliding scale to a maximum value of 0.14 for yearlings at 10-12 fpp. These density index goals were developed to improve fish quality and survival.

Beginning in spring 2011, only the yearling fall Chinook fry for the NPT acclimation facilities (FCAP) will be administered the 28-day Aquamycin feed treatment to reduce potential for Bacterial Kidney Disease. The yearling fall Chinook treatment for the on-station release at LFH will be discontinued. This decision is due in part to the adult sampling protocols that are controlling the risk of an outbreak of BKD, minimizing stress associated with the treatment, and concerns in the drop-outs occurring in the fry.

E. Tagging, Transfers, and Releases

Brood Year 2010

In addition to the eyed egg transfers identified in Section D., this section outlines the anticipated subyearling and yearling production for BY2010 assuming full production of Table 3. All tagging, transfers, and releases are listed in Table 5.

A total of 200,000 subyearlings are 100% coded-wire tagged and adipose fin clipped in April for release from LFH into the Snake River in early June. Captain John Rapids Acclimation Facility receives 500,000 subyearlings in May, as does Big Canyon Acclimation Facility, from LFH. Both groups are comprised of 100,000 CWT, 100,000 AD+CWT, and 300,000 unmarked fish. Pittsburg Landing will receive 400,000 subyearlings in May. This group is comprised of 100,000 CWT, 100,000 AD+CWT, and 200,000 unmarked fish. An additional 200,000 subyearlings, 100% AD+CWT, will be direct stream released into the Snake River near Couse Creek, downstream from Captain John Rapids.

All marking and tagging is completed by WDFW in March and April, prior to transfer. PIT tagging may occur prior to and/or post transfer to acclimation sites. These fish are acclimated and released in June by NPT.

ODFW will also direct stream release 400,000 subyearlings into the Grande Ronde River near the Washington border. This group of fish is identified as priorities 13 & 16 (**Table 3**). They will be transferred to Irrigon Hatchery from LFH as eyed eggs, reared and tagged there, then released into the Grande Ronde River in Washington in early June. 200,000 fish will be AD+CWT marked (*priority 13*), and 200,000 will be unmarked and untagged. The co-managers will coordinate exact release location and timing.

A yearling release of 450,000 fish from LFH directly into the Snake River at 10 fpp is programmed for 2012. All of these fish will be marked and/or tagged during July-August 2011 (half AD+CWT, and half CWT only), and transferred into Lake Two. A portion of these fish may also be PIT tagged (as many as 30,000) at the same time to better estimate escapement of adults through the hydro system to LFH, LGR, and the Tucannon River (**Table 6**). Fish will be released over a 4-day period from the rearing pond into the Snake River during the period of April 12-15, 2012, depending on river flows and dam spills. Due to the unscreened bypass study of lamprey at the McNary Dam thru 2012, releases shall be coordinated as to not jeopardize survival of juveniles migrating through potentially exposed turbines. Since all three lakes share a common release structure, the fall Chinook release must be coordinated with steelhead releases.

Three yearling groups of 155,000 will be marked and/or tagged at LFH in July-August 2011 (AD+CWT; CWT only; and up to 45,000 PIT tags), then transferred to Captain John, Big Canyon, and Pittsburg Landing acclimation sites (at ~ 12 fpp) for final rearing and release by NPT in April 2012 at a target of 10 fpp. Prior to transport, 19,000 will be PIT tagged for each group for emigration timing and survival through the hydro-system. This tagging will be coordinated with the COE transportation study. This will be the final year of the transportation study. The IPC sub-yearling program for Oxbow and Irrigon receive eggs from Lyons Ferry in December. These fish will be reared, marked and tagged in Idaho – Oregon, prior to releases in May.

Table 6. Proposed BY 2010 Snake River fall Chinook tagging, transfers and releases.

Site	Transfer Goal	Release Goal	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Oxbow (IPC)	211,000	200,000	Eyed Eggs	0+	100% AD CWT	15,408	Dec 2010 (transfer)
Irrigon (IPC)	842,000	800,000	Eyed Eggs	0+	200K AD CWT 600K AD Only	15,408 34,669	Dec 2010 (transfer)
Umatilla/DNFH research	345,000	328,000	Eyed Eggs	0+	Unknown	328,000	Jan – Feb 2011 (transfer)
LFH	N/A	200,000	50	0+	100% AD CWT	-0-	May – Jun 2011
Grande Ronde Direct - Irrigon	421,000	400,000	Eyed Eggs	0+	200K ADCWT 200K Unmarked	15,408 15,023	Jan – Feb 2011 (transfer)
Capt. John	500,000	100,000 100,000 300,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	38,521	Mar – Jun 2011
Big Canyon	500,000	100,000 100,000 300,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	38,521	Mar – Jun 2011
Pittsburg Landing	400,000	100,000 100,000 200,000	50 50 50	0+ 0+ 0+	CWT Only AD CWT Unmarked	30,816	Mar – Jun 2011
Direct near Capt. John	200,000	200,000	50	0+	100% AD CWT	15,408	June 2011
LFH	N/A	450,000	10	1+	225K AD CWT 225K CWT Only	28,000	April 2012
Capt. John	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Feb - 2012 (transfer)
Pittsburg Landing	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Mar - 2012 (transfer)
Big Canyon	155,000	150,000	12	1+	70K AD CWT 80K CWT Only	19,000	Mar - 2012 (transfer)

F. Research

The ACOE request for up to 345,000 eyed eggs from LFH for use in the in-river/transportation study will conclude with BY2010. The fish will serve as surrogates for natural fish. Eggs for this study will be shipped to the Umatilla Hatchery for incubation and rearing, then transferred to Dworshak National Hatchery for final rearing and direct stream released into the Clearwater and the Snake River. All of the fish would be PIT tagged prior to release, as funded and contracted by the ACOE. PIT-tags will be divided between all subyearling production releases in the Snake River basin, acting to represent the hatchery component of the in-river/transportation study. The LFH portion of these fish will be PIT tagged at LFH, as contracted and funded by the ACOE, and coordinated with hatchery staff. This is the fifth and final year of the five-year study.

The co-managers recognize that acclimation prior to release is expected to provide fish performance advantages, however current facility limitations within the basin preclude acclimation of all subyearling groups. A direct versus acclimated study is being conducted by the USFWS, WDFW and NPT to scientifically evaluate the merit of direct stream releases of fall Chinook subyearlings versus acclimated releases. Data collection on adult returns will continue through 2015. This study will provide managers with performance comparisons between CJR acclimated and directly released LFH reared subyearling fall Chinook including: (1) passage date at LGR, (2) travel time to LGR, (3) survival from release to the tailrace of LGR, (4) growth and condition measured from release to LGR, (5) smolt-to-adult return rates (SAR's) measured from release to LGR, and (6) spawner fidelity to the Snake River. LGR will be the primary evaluation point for accomplishing all of these objectives with the exception of objective 6.

III. TUCANNON SPRING CHINOOK

The Tucannon River Spring Chinook supplementation program is solely comprised of a conventional in-river broodstock source. Returning adults trapped at the TFH are collected as broodstock and transported to LFH for holding. The conventional release goal was increased to 225,000 beginning with the 2006 brood year.

A. Fish on Hand

Brood Year 2009

On August 1, 2010 LFH had an estimated 227,000 (BY09) juvenile spring Chinook on hand. These fish will be transferred to TFH in October from LFH, and released as yearlings at 9 fpp and 15 fpp from Curl Lake AP into the Tucannon River in April 2011. On April 23, 2010, a surplus of 52,253 fingerlings at 69 fpp were planted in Russell Springs, a small rearing channel adjacent to the Tucannon River (RM 32). These fish were marked for potential vertebrate detection utilizing a TM-200 (3%) medicated feed treatment for 4-days prior to release. All fish were adipose clipped and untagged.

B. Tagging, Transfers, and Releases

Brood Year 2009

In September 2010, the BY09 progeny will be 100% CWT/VIE (½ purple and ½ blue non-fluorescent) tagged with no fin clip (**Table 7**). There are 110,000 tagged fish for one group (“bigs”), and 115,000 for the other group (“smalls”). Each size group for the evaluation study will be marked with a separate tag code, along with separate colored elastomer tags. The elastomer tags will be helpful to identify the different fish size groups when sampled, prior to release and during migration.

Both fish groups will be transferred to TFH in October for final rearing and release. At TFH, both groups are reared in concrete round ponds or raceways on river water, except when well water is added mid-winter to maintain water temperatures near 40⁰F. Checks for elastomer and CWT retention are conducted prior to transferring the fish to Curl Lake AP in February. For 2011, the target release goal is 110,000 @ 9 fpp & 115,000 @ 15 fpp (225,000 total). All fish will be released from Curl Lake AF in March or April.

Table 7. Proposed BY 2009 Tucannon River spring Chinook tagging, transfers and releases.

Site (Type)	BY09 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Curl Lake AP (Conventional)	112,500	115,000	15	1+	100% CWT VIE	2,500- 12,500	Mar – Apr 2011
Curl Lake AP (Conventional)	112,500	110,000	9	1+	100% CWT VIE	2,500- 12,500	Mar – Apr 2011

C. Spawning

Brood Year 2010

The egg take goal for BY2010 is 272,000 green eggs. It has been established that 85 females and 85 males are needed to meet the egg take goal. Preferably, a 50:50 ratio of natural origin and hatchery origin adults will be utilized in the broodstock. The proportion of jacks utilized for spawning is generally less than 5%. As of August 1, 2010, all broodstock needed for the BY2010 egg take goal have been collected. Spring Chinook adults, trapped at TFH will be spawned during September 2010 at LFH. A 2 x 2 spawning matrix protocol is followed as approved by WDFW Evaluation staff. Fertilized eggs will be water hardened in 100-ppm iodophore for one hour. All spring Chinook carcasses are frozen after spawning, and hauled to the upper Tucannon River for nutrient enhancement, if viral samples test negative. Any extra female broodstock will be released in the Tucannon River above the Rainbow Lake intake.

D. Rearing

Brood Year 2010

The production estimate for BY2010 is 225,000 smolts. Eggs are treated with formalin daily to reduce fungus and reared in vertical incubation trays. At eye-up, they are shocked, handpicked, and substrate is added to each tray. Upon complete yolk-sac absorption (~1600 fpp), they are normally transferred to outside raceways for introduction to feed and final rearing at LFH. However, this year they will be initially reared indoors in shallow troughs. The intent is to bring all the various takes together by size before they are combined into the larger vessels. This should help with controlling the coefficient of variation during the rearing cycle.

A prophylactic aquamycin treatment is used to control BKD. This treatment lasts 28 days, and is typically applied in May and June through feed with 3.0% aquamycin.

Six intermediate fiberglass tanks were purchased and installed in 2006, giving culturists greater early-rearing space for all programs. This not only reduced densities, it also allows individual spawn groups to be grown together in size before mixing in outside raceways, as mentioned above. It also means fish are moved to the raceways at a much larger size, possibly increasing survival to release. Staff also installed an in-line site tube in the venturi vacuum hose, which allows culturists to physically observe the hose to make sure no fish are accidentally vacuumed during routine pond cleaning. Finally, staff have researched various screen seals, and are now using one type for all stocks, proven to be most effective during rearing.

Increased PIT tagging may be incorporated while the VIE tags may be reduced or eliminated. PIT tags up to 25,000 for program is proposed

E. Trapping

Brood Year 2011

Trapping for the Spring Chinook broodstock program is conducted exclusively at the TFH adult trap, located just upstream of the hatchery and adjacent to the Rainbow Lake intake. Up to 170 fish (85 wild and 85 hatchery adults) will be collected for broodstock, while remaining adults and one-ocean fish are counted and released upstream. One-ocean age (jacks: <55 cm) fish will be included in the brood at a rate not to exceed 15% of the adult males during low run years. The discussion to reduce jack passage is ongoing and will be re-evaluated per the HGMP. The priority will be to collect natural and hatchery origin broodstock to meet program goals. WDFW may also retain all of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the Tucannon River Fish Hatchery adult trap each year if the total annual adult returns to the trap is less than 105 fish. If the total annual adult returns to the trap are 105 fish or more, WDFW is authorized to retain up to 70 percent of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the trap each year and must release at least 30 percent of the adult, ESA-listed, Snake River spring/summer Chinook salmon that return to the trap above the hatchery weir for natural spawning. Adults collected for spawning are transferred by truck to LFH for holding. All adults are injected in the dorsal sinus at transfer with oxytetracycline and erythromycin. Females only are re-injected with erythromycin every 30 days until spawning begins. Adults will receive formalin treatments every-other day to control fungus and decrease pre-spawning mortality.

F. Research

In an effort to compare returns based on release size, release numbers will be split in half at marking and reared to two different release sizes. For this five year study (06-10 BY's), one group will have a target release size of 9 fpp and the other will be at 15 fpp. Studies and practical experience at other facilities suggests a larger release size may increase survival rates. The need to explore monitoring alternatives on adult movement above Lower Granite Dam to increase the population is being evaluated. Pending discussion with LSRCP, this study may be modified to include increased PIT tags while reducing VIE tags.

Beginning May 1st, 2010, adult fish were trapped and released at Lyons Ferry utilizing a pass through PIT tag array for monitoring potential success of Tucannon Spring Chinook trapping. The PIT tag data will be shared with the co-managers on impacts to other stocks returning to the basin simultaneously. This information should also provide an option for future trapping of Tucannon Spring Chinook in low return years and to identify adults by-passing the Tucannon River. The trapping activity will be evaluated day-to-day for success and/or potential negative impacts to other stocks. The May 2011 trapping activity will be the second year of this strategy agreed upon by the co-managers as a pilot study on spring Chinook collection at LFH

IV. SUMMER STEELHEAD - GENERAL

The LFC currently uses three stocks of steelhead in the Snake River basin, (LFH, Tucannon, and Wallowa) and two stocks in the Walla-Walla basin (Touchet and LFH). The LFH and Wallowa stocks are both non-endemic stocks that were originally collected from outside their respective release points. The Wallowa stock was originally collected by the Oregon Department of Fish and Wildlife from Lower Snake River dams (likely comprised of both A- and B-run fish from Oregon and Idaho), and then released in the Wallowa River in the Grande Ronde Basin. The LFH stock was derived primarily from a combination of Wells (upper Columbia River) and returning Wallowa stock fish to LFH. The Tucannon and Touchet stocks are both native to their respective streams, though each has had some degree of genetic introgression from the LFH over the years. All of these stocks are collected from a variety of traps located throughout SE Washington (see each stocks description below for specific trapping locations).

The NMFS 199 Biological Opinion ruled that continued use of Lyons Ferry and Wallowa stocks were causing jeopardy to listed ESU Steelhead populations. It was recommended by NMFS to convert to endemic stock populations where possible. The Touchet and Tucannon endemic broodstock program began with the 2000 BY, with the original goal of collecting 16 pairs for spawning. Adjustments have been made to the broodstock collections because fecundity and survival values were higher than originally estimated.

The original evaluation was to utilize adult traps on the Tucannon and Touchet rivers to evaluate the returns and determine success of each program (smolt-to-adult survival rates of the endemic program compared to Lyons Ferry stock releases). However, adult traps have been only partially successful in trapping fish due to high stream flow events. As such, we are now using PIT tags to evaluate each program (smolt-to-adult returns). PIT tags have been incorporated into each endemic stock group since 2004. Returns to date from PIT tags indicate that smolt-to-adult survivals to Bonneville Dam of the endemic stock groups have increased (Touchet = 0.45% (2004-2007 release years), Tucannon = 1.0% 2004-2007 release years). Release size goals were generally not met during the first 3-4 years of the program. The Tucannon endemic program was increased to 75,000 smolts for Brood Year 2010. Concurrently, the Lyons Ferry Steelhead releases into the Tucannon River were re-located to direct releases from Lyons Ferry. The final plant of 104,646 Lyons Ferry stock into the Tucannon River occurred in April 2010.

V. LYONS FERRY SUMMER STEELHEAD

The LFH stock program was initiated to provide sport fishery opportunities for summer steelhead in the Snake River, its tributaries, and also includes off-site mitigation in the Walla-Walla Basin. Releases of the LFH stock into the project area have been very successful and adult returns have been reduced in recent years because of ESA concerns. Because of these concerns, it was determined by formal review that the releases of the LFH stock into the Tucannon River be discontinued. To sustain the level of production that is necessary to achieve mitigation goals, the on-station releases at LFH will be increased by 100,000 for a total of 160,000 in the interim.

A. Fish On Hand

Brood Year 2010

On August 1, 2010 LFH had 391,793 (BY10) LFH stock summer steelhead juveniles on hand. These fish were marked in late August into Lake #1 and will be planted as yearlings into the Snake, Touchet, and Walla-Walla Rivers in 2011. The egg take goal was previously reduced in 2009 to 460,000 eggs (106 females) from 520,000 (121 females) because of the higher egg and fry survival over the previous three seasons. Excess Lyons Ferry summer steelhead will be transferred to WDFW's Ringold Hatchery in the middle Columbia River in May 2010 to supplement a shortage in its program. Because LF summer steelhead stock is a derivative of the Wells stock, managers are considering supporting this request, with the exception that a portion be tagged (CWT). All fish are for harvest purposes and will be adipose clipped.

B. Tagging, Transfers, and Releases

Brood Year 2010

In August, all LFH stock summer steelhead were adipose fin clipped, with all but the individual tag groups transferred to Lake #1. Three tag groups were retained in separate rearing ponds following the LV+CWT marking in September. This new marking strategy was initiated by the hatchery staff to help reduce fish handling, stress, and minimize Lake drawdown activities for discharge purposes. In mid-winter, the mark groups will receive PIT tags, as determined by WDFW evaluation and Fish Management staff (**Table 8**). In February 2011, about 87,000 fish will be transferred to Dayton AF. They are reared for approximately 2.5 months, with volitional release into the Touchet River completed by the end of April. In mid-April, 100,000 are trucked to the Walla-Walla River for direct stream release. Finally, due to the discontinuation of the Tucannon River releases, an increase of 100,000 smolts, for a total of 160,000, are released directly from LFH into the Snake River in mid-April.

Table 8. Proposed BY 2010 LFH stock summer steelhead tagging, transfers and releases.

Site	BY10 Goal	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
LFH on station release into the Snake River	140,000 20,000	4.5	1+	AD Only ADLV CWT	2,000 2,000	April 2011
Dayton AF release into the Touchet River	65,000 20,000	4.5	1+	AD Only ADLV CWT	2,000 2,000	Transfer to Dayton AF in February 2011, release in April 2011
Direct stream release into the Walla Walla River	80,000 20,000	4.5	1+	AD Only ADLV CWT	2,000 2,000	April 2011

C. Trapping

Brood Year 2011

The LFH stock adults are trapped on-station from volunteers that swim into the fish ladder. The LFH trapping goal is to operate between September 20th and November 15th, which provides adequate adults for the program. Trapping protocols have been set to collect 1,650 fish (~200 fish/week over the time period cited). Fish are held in large adult holding raceways adjacent to the trap until sorting and spawning. All retained steelhead will be sorted in late November each year. Fish not needed for broodstock or CWT recoveries will be returned to the Snake River for the active fishery.

D. Spawning

Spawning will occur in January-February on a weekly basis. Spawning protocol calls for a 1:1 male to female spawner ratio, with each male only being used one time. Due to lower IHN virus detection and improved egg survival over the past few years, 106 females will be spawned to produce approximately 460,000 green eggs. This amount is lower than previous egg goals of 520,000. Eggs or fry excess to projected program needs will be destroyed or planted as fry in area lakes or transferred to other programs as agreed to by co-managers. All carcasses from spawned fish will be buried on site. All unspawned fish that were retained for broodstock are sacrificed to obtain coded-wire tag or run information. WDFW is looking at using more 2-salt fish in the Lyons Ferry broodstock beginning with the 2011 brood. There has been a shift over time in the age composition of returning Lyons Ferry stock adults. Utilizing more 2-salt fish in the broodstock may eventually, but not necessarily, return more older age fish in the future. This may provide a benefit to the local fishery by returning more older/larger fish.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). Once virology sampling has confirmed no viruses are present, the eyed eggs are shocked, handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, the fry are introduced to feed, and transferred to outside raceways at approximately 500 fpp in April. The untagged groups are reared in these raceways until marking and transfer to Lake # 1 in late summer.

F. Research

At this time, there is no direct research associated with the LFH stock summer steelhead at the hatchery (i.e. time or size at release studies, growth studies, etc.). However, starting in 2008, all LFH stock release groups received PIT tags (roughly based on proportional release size and expected number of adults returning). Returns from these PIT tags groups will be analyzed separately or as an aggregate to estimate total returns for mitigation accounting purposes.

VI. TOUCHET SUMMER STEELHEAD

The Touchet River summer steelhead is considered an endemic program, meaning all production is derived from natural parentage broodstock. These adults are trapped on the Touchet River at the Dayton AF intake structure and transferred to LFH for holding and spawning. Their progeny are planted in the North Fork of the Touchet River as yearlings each spring.

A. Fish on Hand

Brood Year 2010

On August 1, 2010, LFH had approximately 62,000 (BY10) Touchet River summer steelhead juveniles on hand. These fish will ultimately be direct stream released into the Touchet River at Baileysburg Bridge, roughly 1.5 miles upstream from the Dayton AF, in April 2011.

Brood Year 2009

On August 1, 2010, LFH had 6,447 (BY09) Touchet River summer steelhead 2-year smolts on hand. These fish were retained for a study on survival of 2-year smolts. The fish will be released with Brood Year 2010 smolts into the Touchet River at Baileysburg in spring 2011.

B. Tagging, Transfers, and Releases

Brood Year 2010

In January, all Touchet River endemic stock steelhead are CWT, with no external fin clips. They are reared in the raceways until release in April or May at Baileysburg Bridge on the North Fork of the Touchet River. Prior to release, evaluation staff PIT tags 5,000 fish in this group (**Table 9**). This will allow for continued data gathering, as these fish are currently not marked for harvest in the sport fishery. The use of PIT tags is an alternate means to calculate smolt-to-adult survivals for program evaluation.

Table 9. Proposed BY 2010 Touchet summer steelhead smolts tagging, transfers and releases.

Site	BY10 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Touchet River	50,000	60,000	4.5	1+	100% CWT	5,000	April 2011

Brood Year 2009

In February 2011, the 2-year smolts will receive PIT tags for monitoring survival during migration following release in April. These fish received a separate coded CWT during the tagging event for all Brood Year 2009 in February 2010, for monitoring survival (**Table 10**). The two year smolt study will be discontinued and not to include BY 2010 smolts. 5,000 fish from BY2009 will be PIT tagged in the spring of 2011, and released with the one-year smolts from the 2010 brood year.

Table 10. Proposed BY 2009 Touchet 2-year summer steelhead smolts tagging, transfers, and releases.

Site	BY09 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Touchet River	5,500	6,447	4.5	2+	100% CWT	5,000	April 2011

C. Trapping

Brood Year 2011

Trapping of BY11 Touchet River endemic stock begins in January or February (depending on seasonal weather) at the Dayton AF adult trap, located adjacent to the pond intake, and is generally completed by mid-April. WDFW evaluation staff checks the trap daily, transferring only a portion of unmarked adults to LFH based on broodstock needs. All trapped LFH stock fish are transferred to Dayton Juvenile Pond to remove them from the river and provide additional fishing opportunities.

Current survival estimates indicate that 15 spawned females should provide enough eggs to meet the smolt production goal. Therefore, WDFW evaluation staff target collecting 16 females and 20 males for the broodstock (natural origin), with all other wild fish passed upstream for natural spawning. Hatchery fish (endemic origin) are passed above the trap to spawn naturally in the Touchet River. We will spawn a minimum of three (3) females, or the progeny will be released as unmarked/untagged fry.

D. Spawning

Based on fecundity survival estimates, LFH typically spawns 15 females to provide 65,000 green eggs for the program. Up to 75,000 smolts may be reared full cycle and planted as yearlings in the spring. Fish in excess of 75,000, will be planted into the Touchet River as fingerlings in the fall. Spawning usually occurs in March and April. A Matrix type spawning protocol is employed to increase the effective breeder population (N_b), due to the relatively small founding population for this program. The intent of this protocol is to spawn two males with each female, increasing genetic diversity and successful fertilization of eggs. If not enough males are ripe to achieve this goal; 1:1 spawning is employed. A minimum of three spawned females are needed for each production cycle to occur.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). Once virology sampling has confirmed no viruses are present, the eyed eggs are shocked, handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to intermediate raceways at around 500 fpp in June. They are transferred again to outside raceways at roughly 200 fpp in July. In January, these fish will be size selected into two rearing groups (larges and smalls). By sorting into different size groups, culturists can adjust growth rates to minimize size variance at release. Additionally, a number of non-traditional fish culture techniques are being employed on this stock to ensure release size goals are met. Staff have recently investigated the use of chillers, or misting incubators, for retarding egg development, which should improve size variability in the core program. This strategy has not been implemented, however, and is pending more discussion.

F. Research

Over the last few years, evaluation staff have annually PIT tagged portions of the Touchet River endemic stock group (by size) prior to release. PIT tags are being used to document smolt-to-adult survival rates. Results to data show that the group that is released per program goals and release time, have survived nearly twice the rate as those released later and sometimes at a smaller size. This, and trapping data, suggests this could be a continual problem in the Touchet River stock. The proposal to conduct a two-year smolt program on a portion of the population to see if they can survive better was implemented for Brood Year 2008. The study proposed to retain 10-20% of the 2009 population, as was performed for the Brood Year 2008 population. These fish will again be reared in other rearing containers currently not being used for the other priority stocks at LFH. This will be the second and final year for this study to determine if these fish would have improved survival based on an additional rearing year.

VII. TUCANNON SUMMER STEELHEAD

The Tucannon River summer steelhead is considered an endemic program, meaning all production is derived from natural parentage, or from 1st generation hatchery endemic stock fish. The adults for this program are collected at Tucannon FH, and their progeny planted in the upper Tucannon River as yearlings.

A. Fish on Hand

Brood Year 2010

On August 1, 2010, 79,716 (BY10) Tucannon River summer steelhead juveniles were on hand at LFH. The program goal was increased to 75,000 smolts per co-manager agreement in March 2010. This increase is a component of the long-term goal of expanding the use of the endemic stock for both conservation and mitigation purposes. A structure was built by hatchery staff in 2009 for deterring adults from jumping the sheet pile adjacent to the fish ladder. Clear vinyl

panels were hung on a moveable aluminum cross beam four feet above the sheet pile cap. This diversion structure contributed to the increased success of adult steelhead trapping for Brood Year 2010, and in 2009, as well.

Following the low return of Brood Year 2008, managers agreed that should low production numbers (i.e. less than 8,000 fish at smolt release, ~3 females at trapping) occur in the future, the fish will not be reared full term, but released as parr/fingerlings in the upper Tucannon River. Less than 8,000 fish production would not allow enough fish for evaluations to occur.

B. Tagging, Transfers, and Releases

In September, all Tucannon River endemic steelhead are CWT tagged, with no external fin clips at LFH (**Table 11**). In February of 2011, these fish are moved to the TFH where they are reared until release as yearlings in April or early May. Releases have been roughly five miles upstream of the TFH, just below the Curl Lake intake structure. Prior to release, evaluation staff will PIT tag 10,000 fish in this group. This will allow for improved data gathering because these fish are currently not marked for harvest in the sport fishery. The use of PIT tags is an alternative means to calculate smolt-to-adult survivals for program evaluation..

Table 11. Proposed BY 2010 Tucannon River summer steelhead tagging, transfers and releases.

Site	BY10 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Tucannon River	75,000	75,000	4.5	1+	100% CWT	10,000	April 2011

C. Trapping

Brood Year 2011

Current survival estimates indicate that 18 spawned females should provide enough eggs to meet the smolt production goal. Therefore, we will collect 20 females and 20 males (natural and hatchery origin) for the broodstock. Managers have agreed for 2011 that no more that 10% of the broodstock would be hatchery endemic origin. As in the past, all hatchery origin fish (LFH stock) collected at the TFH adult trap will not be passed upstream. Instead they will be marked and released downstream (or taken back downriver below Marengo if the lower trap is moved upstream) to spawn naturally. All endemic and wild fish captured at the TFH will be passed upstream for natural spawning.

D. Spawning

Based on fecundity, survival estimates, and potential IHN positive females, LFH typically spawns 18 females to provide 90,000 green eggs for the program. Any excess fish over 10% of the program goal (75,000) will be tagged and planted in the upper Tucannon River in the fall as

fingerlings. Spawning has occurred from February to early April. Matrix spawning is employed, due to the relatively small founding population for this program. The intent of this protocol is to spawn two males with each female, increasing genetic diversity and helping ensure successful fertilization of eggs. If not enough males are ripe to achieve this goal; a 1:1 spawning matrix is employed. As stated above, a minimum of 3 females spawned is needed to continue with production for that year.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). Once virology sampling has confirmed no viruses are present, the eyed eggs are shocked, handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to intermediate raceways at around 500 fpp in June. They are transferred again to outside raceways at roughly 200 fpp in July. In September, they are size-selected during marking and split into two raceways. By sorting into two size groups, culturists can adjust growth rates to minimize size variance at release. Additionally, a number of non-traditional fish culture techniques are being employed on this stock to ensure release size goals are met.

F. Research

At this time, there is no direct research associated with the Tucannon River endemic stock summer steelhead at the hatchery (i.e. time or size at release studies, growth studies, etc.). As indicated above, PIT tags along with CWTs, will give us juvenile migration and SAR data. Further, PIT tags will allow for the continued monitoring of Tucannon River steelhead that migrate and remain above Lower Granite Dam. We have evidence that Tucannon River steelhead spawn in Asotin Creek and Alpowa Creek, but may be detected in other locations with increased monitoring efforts from other Agencies.

VIII. WALLOWA SUMMER STEELHEAD

The Wallowa stock program was initiated to provide a fishery for summer steelhead in the Grande Ronde River (for both Oregon and Washington anglers). The program was increased from 160,000 to 200,000 smolts per co-manager agreement in March 2010. Even though it is meeting return goals to the project area, it was determined that the adult return goals to the Snake River basin were not fulfilling the mitigation goals to the Columbia River Basin.

A. Fish on Hand

Brood Year 2010

On August 1, 2010 LFH had 197,352 (BY10) Wallowa stock summer steelhead juveniles on hand. Due to extremely low flows in Cottonwood Creek in spring 2010, eggs were collected from Wallowa summer steelhead adults returning to the Big Canyon acclimation facility in Oregon. 100% virology sampling was performed and no detection of IHN was present in Brood Year 2010. All of these fish will be marked, tagged, and moved to Lake #3 in early September.

In early February 2011, these fish will be transferred to the Cottonwood AF. After acclimation at the Cottonwood AF, they are released as yearlings at 4.5 fpp into the Grande Ronde River in April.

B. Tagging, Transfers, and Releases

Brood Year 2010

In September 2010, these fish were all adipose fin clipped, with 20,000 receiving left ventral clips and a coded wire tag (**Table 12**). After marking and tagging, they are transferred to Lake #3 at LFH. In February 2011, they are transferred to the Cottonwood AF for final rearing and release into the Grande Ronde River. A total of 6,000 juveniles will be PIT tagged prior to release in April. 2,000 of those PIT tags will be used as part of the Comparative Survival Study (CSS) for steelhead production above Lower Granite Dam. (Fish Passage Center). Up to 8,000 more fish may be PIT tagged for expanded evaluation of straying in the Grande Ronde Basin, pending approval by LSRCP. If the 8,000 additional tags are approved, then the Fish Passage Center has indicated they will supply another 3,200 tags to be used in the CSS study.

Table 12. Proposed BY 2010 Wallowa stock summer steelhead tagging, transfers and releases.

Site	BY10 Goal	Expected at release	Size (fpp)	Age	Mark/CWT/ Elastomer	PIT Tags	Transfer/Release Date
Cottonwood AF on the Grande Ronde River	180,000 20,000	175,000 20,000	4.5	1+	AD Only ADLV CWT	-0- 4,000 + 2,000	Transfer to Cottonwood AF in Feb, release in April 2011 2,000 PIT tags are part of the CSS study from the Fish Passage Center

C. Trapping

Brood Year 2011

Trapping of returning Wallowa stock adults occurs on Cottonwood Creek (a small tributary to the Grande Ronde River) beginning in March each year. This creek also supplies water to the Cottonwood AF. Trapping occurs from March through April. Because of potential low egg survival and/or IHN virus (both of which have been experienced in the past), about 55 complete spawned females are needed to provide 240,000 green eggs for the program of 200,000 smolts. The preference will be to half-spawn 100 females if adult returns are available. This will provide for better genetic variability. Unmarked steelhead are not retained for spawning, but passed upstream to spawn naturally. All spawned carcasses will be returned to LFH for burial, if spawned at Cottonwood Creek. A strategy to haul live adult broodstock to LFH for holding in 2010 to address the IHN concerns in Cottonwood Creek was not implemented due to low flows. No broodstock were collected in 2010. However, staff will incorporate this strategy in 2011 if conditions allow. If low water flows in the creek do not allow returning adults access to the trap, two alternate strategies may be employed. First, the acclimation pond outlet creek can be modified to allow adult capture there. Second, collection of broodstock at Big Canyon or the

Wallowa Hatchery may occur. All surplus hatchery origin adults are removed from the creek at the trap to reduce the potential impacts of IHN to the spawning population and to juvenile hatchery fish being held in the AF. Options for disposition of excess fish (Wallowa Stock HGMP) include 1) killed to collect Coded-Wire tags, 2) offered to local food banks 3) offered to Tribal members for subsistence consumption, or 4) killed outright to prevent hatchery swamping of natural origin spawners. Each of these will be explored annually for best use of the excess fish.

D. Spawning

Spawning generally occurs in late March and early April on a weekly basis. All fish are spawned at the Cottonwood Creek trap site, or, at LFH, with the gametes transported to LFH for fertilization, incubation, and rearing. A 1:1 male to female mating ratio will continue to be employed whenever possible (see research section below). Second, excess adults from ODFW's Wallowa Hatchery may be used to provide eggs for this program, as occurred in 2005, 2009, and 2010. Eggs/fry excess to projected program needs will be destroyed or planted in area lakes.

E. Rearing

After spawning, fertilized eggs are water hardened in 100-ppm iodophore. They are incubated in down-welling iso-incubation buckets (one fish per bucket). Once virology sampling has confirmed no viruses are present, the eyed eggs are shocked, handpicked and weighed down in hatching baskets suspended over shallow troughs. After hatch and swim-up, they are introduced to feed, and transferred to outside raceways at roughly 500 fpp in June.

F. Research

From 2006-2009, evaluation staff conducted a study examining the effect of partially spawning females in the broodstock. Data collected in 2009 were similar to previous years, with the majority (85%) of partially spawned fish depositing their eggs in the stream post release. This compares to 87% in 2006, 75% in 2007 and 67% in 2008. A final summary report from all four years is expected to be complete. 2009 was the final year of the study. Pending approval and PIT tag acquisition, WDFW will expand its PIT tagging efforts in the Wallowa stock program at Cottonwood. Expanding PIT tagging will be used to estimate total returns to the basin, and to evaluate the impacts of straying from this hatchery program into the Grande Ronde River or other nearby basins. Additional PIT tag arrays in the Grande Ronde River are planned for deployment (Joseph Creek, mainstem Grande Ronde River) over the next couple of years.

IX. SPOKANE RAINBOW TROUT

Rainbow trout are reared and planted in both southeast Washington and Idaho, to meet LSRCP mitigation goals in both states for lost fishing opportunity as a result of construction and operation of the lower Snake River dams. A small, privately funded program at the TFH rears rainbow to 1½ pounds each, providing a unique fishing opportunity in local lakes.

A. Fish on Hand

Brood Year 2009

On August 1, 2010 LFH and TFH had a combined total of 260,068 Spokane stock rainbow trout on hand. LFH also had 4,700 triploid Spokane stock rainbow trout on hand. These catchable sized fish are will be shipped to IDF&G in October 2010. This new program, along with 1,650 diploid jumbo trout for the Nez Perce Tribe in spring 2011, replaces the Kamloops stock rainbow trout that was previously reared at LFH. The Kamloops stock program was discontinued in 2009. Please refer to **Table 13** for planned transfers and releases.

B. Tagging, Transfers, and Releases

In past years, LFH received approximately 52,000 Kamloops stock rainbow trout from TFH in July of each year, as mentioned above. In October, IDFG transported and planted the entire population (usually around 50,000 fish) in Idaho Rivers, at 15 fpp, or 3,333 lbs. For 2010, a modification in the program from 50,000 fingerlings to 4,950 catchables and 1,650 jumbos at the current pounds of production was implemented by the co-managers. The fingerling outplants into the Clearwater basin were discontinued by Idaho due to a lack of creel data supporting the program.

No Spokane stock rainbow trout are tagged or fin clipped at LFH. From the raceways, IDFG receives 160,000 fry and transports these fish to designated Idaho waters in April or May, at around 60-80 fpp (**Table 14.**). About 97,500 Spokane stock rainbow trout catchables (2.5 fpp) and 1,000 jumbos (1.5 lbs each) are planted by LFH drivers into various lakes in southeast Washington. Planting begins in February and is completed in March. In 2009, the total catchable plant allotment was reduced by 1,700 (approx. 97,500 total) and the jumbo plant allotment was increased by 500 (1,000 total).

At the TFH, approximately 137,500 Spokane stock rainbow trout are planted into various lakes in southeast Washington as catchables (3.5 fpp, avg.). Planting typically begins in April, and is completed sometime in July. The jumbo trout (usually around 4,000) are planted February through May each year, supplementing catchable plants.

Table 13. Proposed BY 2009 Spokane rainbow trout tagging, transfers and plants.

Facility	BY9 Goal	Expected at release	Size (fpp)	Lbs.	Age	Mark/CWT/Elastomer	PIT Tags	Transfer/Release Date
Lyons Ferry	4,950	4,700	3.0	1,567	1	None	None	Transfer to and planted by IDFG in Sept/Oct 2010
	97,000	97,000	2.5	38,800	1+	None	None	Planted in Feb-Apr 2011
	1,000	1,000	0.67	1,493	1+	None	None	Planted in Feb-Apr 2011
	1,650	1,650	1.0	1,650	1+	None	None	Transfer to and planted by NPT in Mar-May 2011
Tucannon	137,500	137,500	3.5	39,286	1+	None	None	Planted in Mar-June 2011
	4,000	4,000	0.67	5,970	1+	None	None	Planted in Feb-May 2011

Table 14. Proposed BY 2010 Spokane rainbow trout tagging, transfers and releases.

Site	Number	Size (fpp)	Age	Mark/CWT/Elastomer	Pit Tags	Transfer/release Date
Idaho Reservoirs	160,000	60 – 80	0+	None	None	Transfer to and planted by IDFG in April/May 2011
SE Washington Lakes	234,000 1,000	2.5 – 4 1.5 lbs, ea	1+ 1+	None None	None None	Planted in February through July 2012
SE Washington Lakes	4,000	1.5 lbs ea	1+	None	None	Planted in February through May 2012
IDFG	4,950	3.0	1+	None	None	Transfer to and planted by IDFG in Sept/Oct 2011
NPT	1,650	1.0	1+	None	None	Transfer to and planted by NPT in Mar-May 2012

C. Rearing

Eggs for Washington’s legal and jumbo programs, along with Idaho’s fry plants come from WDFW’s Spokane Hatchery (Spokane stock). After receiving these eggs in December and January, a small portion (1,750) is transferred from TFH to regional education programs.

180,000 eyed rainbow eggs are received at LFH in December for Idaho fry plants in May. After trough rearing, they are transferred to outside standard raceways in March. In January, LFH will receive 140,000 Spokane eyed diploid rainbow eggs for its catchable program, and 10,000 eyed triploid rainbow eggs for the Idaho program. This number of diploid eggs was increased in 2009 due to recent years of fry loss caused by cold-water disease in the stock. Early rearing is conducted in either shallow troughs or intermediate raceways, before transfer to outside standard raceways in April. The following year, they are planted at roughly 3 fpp into local southeast Washington lakes, usually in February and March.

175,000 eyed rainbow eggs (Spokane stock) are received at the TFH in January each year. Of these, 141,000 are destined for planting as catchables (3.5 fpp – 137,500 planting goal), and 4,000 are destined for planting as jumbos (1.5 pounds each). The catchable program group is started in shallow troughs, intermediate reared in outside round tanks, and final reared in the earthen rearing pond. The jumbos start in shallow troughs as well, and finish in the round tanks. The entire jumbo program at TFH is funded by the Tri-State Steelheaders organization.

X. FISH HEALTH

A. Guiding Policies

All fish production at LFH is conducted according to the co-managers Salmonid Disease Control Policy and Integrated Hatchery Operations Team (IHOT) fish health policy. Specifically, all lots of fish are monitored for fish health, all broodstock are inspected annually, strict hatchery sanitation procedures and fish culture practices (rearing criteria) are followed, and egg and fish transfer and release requirements are met. Bacterial Kidney Disease (BKD) management strategies for spring and fall Chinook salmon and Infectious Hematopoietic Necrosis (IHN) management strategies for steelhead trout stocks are employed. No management strategy for BKD specific to spring Chinook is currently employed within the LFC. 1,054 adults were sampled in 2009.

Currently, IHN in Chinook salmon is not a concern at LFH. The strains of IHN found in the Columbia River Basin have been problematic for sockeye, steelhead and rainbow trout, but not for Chinook salmon. Therefore, standard hatchery practices of egg disinfection and use of pathogen-free rearing water during early rearing have been sufficient fish health measures.

The fish health specialist will respond to all fish disease outbreaks at the request of the fish hatchery staff.

B. Monitoring

The fish health specialist will visit LFH and TFH at least once a month. Mortality records and fish in all rearing containers will be inspected. Approximately 5 - 10 fish of each species may be killed and examined at the discretion of the fish health specialist.

At spawning, all broodstock will be tested for viral pathogens. Ovarian fluid and kidney/spleen samples from at least 60 females will be tested.

C. Specific Fish Health Management

1. BKD Management – Fall Chinook

All female fall Chinook broodstock will receive a pre-spawning injection with erythromycin. All females for use in the yearling production, the IPC program and any others slated for out of state transport will be tested for BKD via ELISA. WDFW categorizes BKD-ELISA optical densities as follows:

- Below-low = < 0.11 ,
- Low = 0.11 to 0.199 ,
- Moderate = 0.20 to 0.44 ,
- High = 0.45 or greater.

Progeny of negative (below low) females will be selected for the yearling fall Chinook program. Eggs from below low and low females will be selected for shipment to Idaho and Oregon. Progeny of all low, moderate and high BKD-ELISA females and untested females may be utilized in the sub-yearling fall Chinook program.

Beginning in spring 2011, only the yearling fall Chinook fry for the NPT acclimation facilities (FCAP) will receive a 28 day Aquamycin feeding. The yearling fall Chinook treatment for the on-station release at LFH will be discontinued. It is determined that the adult sampling protocols are controlling the risk of an outbreak of BKD, along with the concerns of post treatment stress, and an increase in the number of drop-outs occurring in the fry.

2. BKD Management – Spring Chinook

All female fall Chinook broodstock will receive a pre-spawning injection with erythromycin. All female spring Chinook will be tested for BKD using ELISA assay. No segregation or culling will occur.

Spring Chinook fry will receive one 28 day Aquamycin feeding in late spring.

3. IHN Management – Summer Steelhead

All female steelhead broodstock will be tested for IHN virus via cell culture, and the IHN virus levels in the ovarian fluid will be determined.

Eggs from LFH and Wallowa stock females with high levels of IHN virus ($>10^3$) will be destroyed. Eggs from negative and low IHN virus (10^1 to 10^3) females will be reared separately.

Eggs from the Tucannon and Touchet endemic programs with high levels of IHN virus ($>10^3$) may be destroyed, reared separately, or planted into their respective streams as fry, pending agreement among the co-managers. Eggs from negative and low IHN virus (10^1 to 10^3) females will be reared separately.

If IHN outbreaks occur in any fish-rearing vessel, fish from the affected rearing container will be promptly isolated and may be destroyed.

4. Broodstock and Egg Fungus Management

All Chinook and steelhead broodstocks will be treated with formalin every other day to control external fungus. All eggs will be treated with formalin daily to control fungus. Treatments will be started 24 hours after fertilization. Treatment of chinook eggs will halt at 7 days before hatch. Steelhead egg treatments will stop when the eggs are transferred to baskets for hatching. Rainbow trout are received eyed and are not treated with formalin.

XI. COMMUNICATION

The list of people on the following table (**Table 15**) are either directly involved in the operation of the LFC, or in related programs and facilities.

Table 15. Contact List.

Name	Agency	Position	Phone	E-mail
Policy				
Pete Hassemer	IDFG	Anadromous Manager	208-334-3791	phassemer@idfg.idaho.gov
Craig Burley	WDFW	Anadromous Program Mgr.	360-902-2784	BURLECCB@dfw.wa.gov
Dave Johnson	NPT	Fisheries Dept. Manager	208-621-3736	davej@nezperce.org
Gary James	CTUIR	Fisheries Program Mgr.	541-276-4109	garyjmes@ctuir.com
Production				
Becky Johnson	NPT	Production Coordinator	208-621-4629	beckyj@nezperce.org
Brian Zimmerman	CTUIR	Production Supervisor	541-429-7286	BrianZimmerman@ctuir.com
Bruce McLeod	NPT	Acclimation Facilities	208-843-7320 Ext 2403	brucem@nezperce.org
Chris Starr	LSRCP	Hatchery Coordination	208-378-5329	chris_starr@fws.gov
Dick Rogers	WDFW	LFHC Supervisor	509-646-3454	rogerrcr@dfw.wa.gov
Doug Maxey	WDFW	LFHC Supervisor	509-843-1430	maxeydwm@dfw.wa.gov
Steve Rodgers	NPT	NPTH Hatchery Manager	208-843-7384 Ext 3502	stever@nezperce.org
Heather Bartlett	WDFW	Hatcheries Division Mgr.	360-902-2662	BARTLHRB@dfw.wa.gov
Kent Hills	IDFG	Oxbow Hatchery	541-785-3459	oxbowfh@pinetel.com
Mike Key	NPT	FCAP	208-843-7320 Ext 2486	mikek@nezperce.org
Paul Abbott	IPC	Hatchery Biologist	208-388-2353	pabbott@idahopower.com
Zach Penny	NPT	Coho Recovery	208-843-7320 Ext 2430	zachp@nezperce.org
Jon Lovrak	WDFW	LFC Manager	509-646-9201	lovrajgl@dfw.wa.gov
Aaron Penny	NPT	NPTH Supervisor	208-621-3504	aaronp@nezperce.org
Curtis Chan	ODFW	Umatilla Hatchery Manager	541-922-5659	curtis.chan@state.or.us
Evaluation				
Bill Arnsberg	NPT	Fall Chinook M & E	208-621-3758	billa@nezperce.org
Debbie Milks	WDFW	Fall Chinook Biologist	509-382-1710	milksdjm@dfw.wa.gov
Jay Hesse	NPT	Research Coordinator	208-621-3552	jayh@nezperce.org
Joe Bumgarner	WDFW	Steelhead Biologist	509-382-1710	bumgajdb@dfw.wa.gov
Joseph Krakker	LSRCP	Fishery Biologist	208-378-5323	joe_kraker@fws.gov
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Steve Yundt	LSRCP	Research Program Mgr.	208-378-5227	steve_yundt@fws.gov
Jason Vogel	NPT	Research Division	208-621-3602	jasonv@nezperce.org
Stuart Rosenberger	IPC	Hatchery M&E Biologist	208-388-6121	srosenberger@idahopower.com
Joe Dupont	IDFG	Regional Fisheries Manager	208-799-5010	Joe.DuPont@idfg.idaho.gov
Management				
Glen Mendel	WDFW	Fish Management	509-382-1005	mendegwm@dfw.wa.gov
John Whalen	WDFW	Region 1 Fish Mgmt.	509-892-7861 Ext 304	whalejtw@dfw.wa.gov
Scott Marshall	LSRCP	LSRCP Coordinator	208-378-5298	scott_marshall@fws.gov
Tom Rogers	IDFG	Hatcheries Supervisor	208-334-3791	Tom.Rogers@idfg.idaho.gov
Sam Sharr	IDFG	Anadromous Coordinator	208-334-3791	Sam.Sharr@idfg.idaho.gov
Fish Health				
Sam Onjuka	ODFW	Fish Pathologist	541-962-3823	sam.onjuka@state.or.us
Steve Roberts	WDFW	Fish Health Specialist	509-892-1001 Ext 300	robersdr@dfw.wa.gov

Appendix A: 2010 Requests for Fall Chinook Production Fish/Eggs (2010 Broodyear)

2008-2017 US v Oregon	Priority under USvOR (SRFMP)	Who	Release site	Age	# for release	Survival to release or transfer (revised 9/2009)	Expanded for loss prior release (1/F)	Estim # green eggs to meet priority	SRL Calcs	Total estim eggtake which will cover needs through this priority	
	1	1WDFW	onstation	yearlings	450,000	91.4%	1.09406	492,325	91.4% mean survival, 2005-2007BY	492,325	
	4	4NPT	CJ	yearlings	150,000	155,000	91.4%	1.09406	164,108	80.9% mean survival, 2004-2000BY	984,650
	3	3NPT	BC	yearlings	150,000	155,000	91.4%	1.09406	164,108		820,542
	2	2NPT	PIT	yearlings	150,000	155,000	91.4%	1.09406	164,108		656,434
					900,000					984,650	
	5	5WDFW	onstation	subs	200,000		1.04267	208,533	95.9% mean survival, 2005-2007BY	1,193,184	
	6	6NPT	CJ	subs	500,000	507,143	95.9%	1.04267	521,333	91.2% mean survival, 2004-2000BY	1,714,517
	7	7NPT	BC	subs	500,000	507,143	95.9%	1.04267	521,333	divided 20K b/t FCAP to acct	2,235,849
	11	11WDFW	direct-Snake R. (CCD)	subs	200,000		1.04267	208,533	for loss from transfer to rel		3,080,932
	8	8NPT	PIT	subs	200,000	202,857	95.9%	1.04267	208,533		2,444,383
	10	10NPT	PIT	subs	200,000	202,857	95.9%	1.04267	208,533		2,872,399
					1,800,000					1,876,799	
	12	12DNFH/Irrigon	Transportation	eyed eggs	250,000	263,125	96.1%	1.04020	273,704	96.1% mean survival, 2005-2007BY	3,354,636
	13	13WDFW/Irrigon	GRR-direct rel	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	3,573,599
	16	16WDFW/Irrigon	GRR-direct rel	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	4,096,920
	14	14DNFH/Irrigon	Transportation	eyed eggs	78,000	82,095	96.1%	1.04020	85,396	4.99% eye-rel loss	3,658,994
	9	9IPC-Oxbow	HC Dam	eyed eggs	200,000	211,000	96.1%	1.04020	219,483	5.2% eye-rel loss	2,663,866
	15	15IPC-Umatilla	HC Dam	eyed eggs	200,000	210,500	96.1%	1.04020	218,963	4.99% eye-rel loss	3,877,957
	17	17IPC-Umatilla	HC Dam	eyed eggs	600,000	631,500	96.1%	1.04020	656,889	4.99% eye-rel loss	4,753,809
					1,728,000					1,892,360	

4,428,000	released	4,753,809 (4.8 million)	green eggs to meet needs through priority 17
number of Snake River origin females needed to spawn		1,170	(Estimated using 4,100 eggs/F)
For 2010..... Scenario #1 - presumes 100% of females for broodstock will be trapped at LGR			
1. LGR trapping		1,200	females
		1,200	Males
2. LFH trapping		0	females
		0	males

Appendix B: 2010 Fall Chinook Trapping/Sampling Protocol at LGR

by

Debbie Milks, WDFW

Bill Arnsberg, NPT

August 18, 2010

August 20, 2010

September 17, 2010

September 20, 2010

Executive summary:

At the end of the day on September 18 the trapping rate will be decreased to 10%. The mark will be changed to 1-ROP for fish hauled to the hatcheries and 1-LOP for fish released.

We will still trap enough fish to make eggtake goals and satisfy run reconstruction needs. The return has a higher percentage of females than we have seen in the past and in addition they are larger than were seen in 2009. The modification to the protocol would ensure that smaller untagged females would be released. In addition, females with wire that are also PIT tagged would be released. PIT tags will be used to determine the origin of wire tagged fish and this change to the protocol would reduce the numbers of fish we sacrifice for run reconstruction purposes. A similar change will occur with the males as well. Specific changes to the protocol are identified below.

The tagging/sampling protocol for broodstock shipped to LFH and NPTH will be the same.

If the trap is swamped with fish: Shut down trap for an hour or so but clearly identify in the data when the trap was shut down and when it was started up again. Do not shut down and stay shut down for the rest of the day because we need to have a pre and post shut down sample so we can average them to estimate what passed during the shutdown.

WDFW is providing 2 staff for helping with the broodstock collection activities at LGR. Scales sampled at the LGR Trap for LFH and NPTH broodstock will be mounted by WDFW staff at LGR.

Data collected from spring/summer chinook should be put on the same form that is used for FCH. Please note Spring or Summer under comments. If you are getting jacks suspected of being summers we will need to subsample those fish for wires as well.

Males, jacks and minijacks will all be entered on the data forms as males.

In an effort to reduce the numbers of jills and jacks hauled to the hatcheries and to reduce the numbers of fish sacrificed with wire for run reconstruction purposes the following protocol was approved by co-managers in the basin on 9/20/2010. The sub-sampling of wire tagged fish should allow for ample recoveries for evaluation purposes.

Protocol:

- 1) COLLECT & HAUL: Every other NON-PIT tagged WIRE TAGGED FEMALE and Male $\geq 80\text{cm}$ and 1 out of 4 NON-PIT tagged WIRE TAGGED Females and Males $< 80\text{ cm}$. Please give 1-ROP punch.
- 2) PASS: Every other NON-PIT tagged WIRE TAGGED FEMALE and Male $\geq 80\text{cm}$ and 3 out of 4 NON-PIT tagged WIRE TAGGED Females and Males $< 80\text{ cm}$. Pass ALL PIT tagged WIRE TAGGED FEMALES and Males (regardless of size). Please give 1-LOP punch.
- 3) COLLECT & HAUL: Every other untagged FEMALE and Male $\geq 80\text{ cm}$. Please give 1-ROP punch. Take scales on every third untagged fish that does not have a PIT tag until September 28 then increase the sampling to 100%.
- 4) PASS: Every other untagged FEMALE and Male $\geq 80\text{cm}$. ALL untagged FEMALES and Males FCH $< 80\text{ cm}$. Please give 1-LOP punch. Take scales on 1 out of 3 FEMALES and Males that do not have a PIT tag.

Appendix C: 2010 Trapping Protocol at LFH

Trap 20 fish less than 75cm and 20 fish ≥ 75 on 9/14/2010 to determine sex ratio and composition of males.

Tally females by length and return to pond.

Tally males and kill males with wire to determine age.

Begin trapping the third week of September (9/20/2010).

Schedule will be determined based on run comp of fish sampled on 9/14/2010.

FCH

71 cm or greater

-goal is 1027 fish (228 females)

-should have 25% of females by October 6 at sorting

49 -71 cm

-Collect 100 fish

-goal is to get sex comp for fish in this size range

-We are using this size range to allow us to detect onstation subyearlings because they were not PIT tagged like the yearlings.

<49cm:

-Do not trap any.

We will use PIT tag detections to estimate yearling return of BY08 fish. Since the return is minijacks is primarily (99%) onstation yearlings this will cover our data needs.

2010 Sorting Plan

LGR pond:

Work the LGR Pond containing fish ≥ 65 cm “bigs”

Count females, males

Double check number and side of operculum punches

For fish that do not have 2-ROP:

Give 2-ROP punch and make note of sex, clips, wire of that fish, and what operculum punches they had.

Work the LGR Pond containing fish <65 cm “smalls”

Count females and males

Sacrifice 30 males with wire to determine age at return by fork length

Double check number and side of operculum punches

For fish that do not have 2-ROP:

Give 2-ROP punch and make note of sex, clips, wire of that fish, and what operculum punches they had.

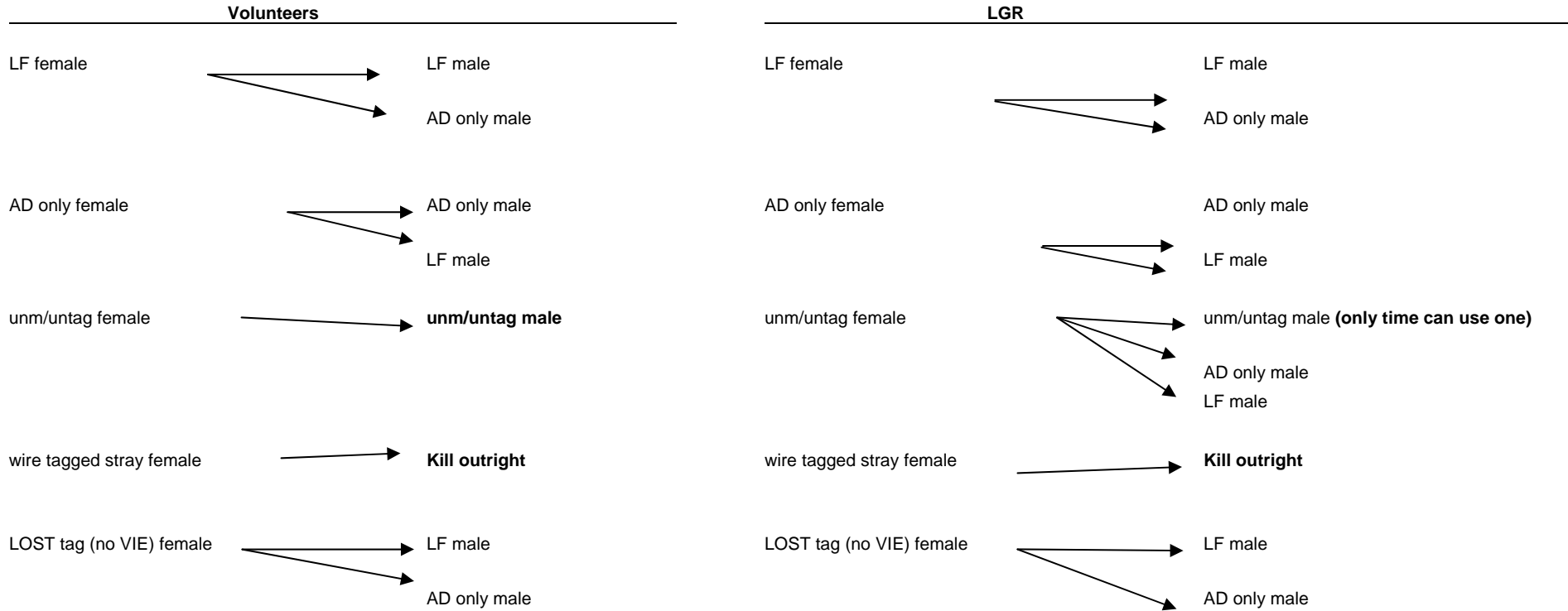
LFH pond:

This pond has a different size category because the composition at return is primarily yearlings consisting of larger sized jacks.

Count females, males (≥ 71 cm), females and males (<71cm)

Sacrifice 20 males (<71cm) with wire to determine age at return by fork length

Appendix D: 2010 Mating Matrix for Spawning at LFH (2010 Broodyear)



Incorporate jacks (1salts, >56cm) in broodstock up to 15%.

Only spawn males >75

Split age 5 males and use on two females (age will be verified by CWT)

Culling fish to reduce strays:

wire tagged STRAYS (LGR and LFH trapped)

Lost wire males will not be used in spawning.

Appendix E: FCAP Facilities

1.1 Pittsburg Landing

The acclimation facility at Pittsburg Landing consists of: 16 -20ft aluminum circular tanks; 2 aluminum distribution boxes; 4 river intake screens; ringlock flexible hose: 4" = 1,260 ft, 6" = 1,780 ft, 8" = 3,110 ft; camlock flexible hose: 6" = 2,080 ft; 1 - 500 gallon diesel storage tank; 1 - 20ft storage container; 2 - 30ft camp trailers; 1 - 1996 Chevy S-10 pickup; two alarm systems; 16 emergency oxygen systems - hoses, microdiffusers and regulators (1 per tank); a trailer mounted 4,000 watt generator light plant; one utility storage trailer; 16 camouflage nets; 2 trailer mounted hydrocyclones; miscellaneous bolts, seals, camlock fittings, etc. Equipment used at Pittsburg Landing and the other two facilities was purchased by USCOE, Walla Walla under the FY95 Congressional Add-on (Senate Report, 103-672, p7).

Water is pumped directly from the Snake River to the acclimation tanks by four, 4-inch diesel pumps. Water pumps are rented from a contractor because leasing appeared to offer the least cost over a ten-year life cycle. Each pump has a portable water intake screen that is placed into the river each year and connected to the pump by 120 ft of 6-inch plastic hose. The pumps provide 500 gpm of water and operate 24 hours each day throughout the 6-week acclimation period except for oil checks and servicing. A 1,000 gallon tank, placed within a spill containment barrier, supplies fuel for the pumps. The water is pumped to one of two 12 ft. high water distribution boxes, containing degassing towers to remove nitrogen gas, before flowing through a series of downsizing pipes to the rearing units.

The rearing units consist of 16 circular aluminum tanks, 20 ft in diameter and 4 feet deep. The tanks are transported from the storage area by a 20 ft flatbed lift-truck and placed on leveled 6-inch by 6-inch wood timbers. The tanks, made in two pieces and bolted together, drain water 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 a 6-inch center PVC standpipe.



The rearing water enters the tank through a 4-inch pipe located on the edge of the tank and is 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 100 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.

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.

Assembly of the acclimation site begins in February each year with the transport of equipment and material from an offsite storage area. In 2006, the U.S. Forest Service (USFS) agreed to a trial operation of allowing the NPT to leave half of the assembled fish rearing tanks in place and remove the other half and related equipment at a storage site near the fish acclimation site. This agreement should greatly reduced equipment fatigue and reduced assembly and disassembly time by half.

1.2 Big Canyon

The Big Canyon facility uses identical or similar equipment to that of Pittsburg Landing. The rearing tank 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 deep 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 USCOE agreed to furnish electric pumps to replace the diesel units that were rented each year. Electric pumps were installed and tested before the 2002 acclimation season. The electric pumps provide the same performance as the diesel pumps while reducing rental and maintenance costs, allowing onsite staff reduction and eliminates the risk of a major fuel spill.

FCAP Project Leader received verbal agreement from the Nez Perce Tribe that allows the fish rearing tanks and water distribution tower to remain assembled at the site the entire year. This eliminates the need for an assembly and disassembly contract and reduces equipment fatigue hence provide dollar savings to the program.

1.3 Capt. John Rapids

The Capt. John Rapids Fall Chinook Acclimation Facility is a single 150=X50= in-ground, lined pond that is supplied with Snake River water by two independent 1,250 gpm submersible electric pumps. Other facility equipment and capital construction consists of: 2 river intake screens; one camp trailer; one standby propane generator; one water well (domestic water); septic system; commercial electric service; alarm system; telephone service. The pumps and intake screens were designed to be placed into the river and then removed following fish acclimation each year but were replaced in 2001 with permanent intake screens located in the main Snake River channel. The pump intake screens are provided with an air backflush system to remove debris and an alarm system is available to monitor flows.

The pumps deposited large amounts of sand in the acclimation pond, which was removed by hand tools between each group of fish. The deposited sand created extremely poor environmental conditions for the fish during release

Negotiations with the USCOE resulted in the installation of two sand separators, two larger sized water pumps, upgrade of the electrical and pump control panels and changes in the pond water alarm system. Installation of the new equipment began in the fall of 2007 and testing indicated that the sand separators removed most of the sand load that had been deposited in previous years.

2. Operations

2.1 Fish transport

Approximately 150,000 fall Chinook salmon yearlings will be transferred from Lyons Ferry Hatchery to Captain John Rapids about February 01, at 12.5 fish per pound. Fish acclimated at Captain John Rapids are transported by WDFW one month earlier than the other acclimation facilities to make rearing space available for sub-yearlings at Lyons Ferry Hatchery. On or about 01 March, 150,000 yearlings will be transported to Pittsburg Landing and Big Canyon at 12 fish per pound. Transport to Pittsburg Landing and Big Canyon will be shared by WDFW and NPT.

Approximately 500,000 sub-yearlings will be transferred to the Big Canyon and Captain John Rapids facilities and 400,000 will be transferred to Pittsburg Landing during the first week in May. Captain John Sub-yearlings will be transported by WDFW, while Pittsburg Landing and Big Canyon transports will be shared by NPT and WDFW. Lyons Ferry Hatchery personnel provide schedules and facilitate loading and enumeration of the fish. Fish transport permits will be requested from IDFG.

2.2 Rearing

During acclimation, staff 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 Clark's fry, manufactured by Skretting of Vancouver, B.C. Fish culture methods are the same as per Integrated Hatchery Operations Team (IHOT) guidelines and consistent with WDFW fish culture techniques at Lyons Ferry Hatchery. Environmental precautions are necessary to handle diesel and oil for the portable water pumps.

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. Fish health protocols are as per AFS Blue Book, IHOT and Nez Perce Tribe fish health protocols.

2.3 Marking

Yearling and sub-yearling fish will be marked with coded wire tags (CWT), adipose fin clipped and pit tagged prior to transfer to the FCAP facilities.

2.4 Release

Yearling fish are reared and acclimated in the temporary facilities for six weeks (8 weeks at Capt. John Rapids) before release into the Snake and Clearwater Rivers in April, at a size of approximately 10 fpp, or 160-170 mm fork length. Anticipated release dates for 2011:

- Pittsburg Landing – April 12
- Captain John Rapids – April 1
- Big Canyon – April 13

Sub-yearling fish are acclimated approximately three to four weeks before release in late May or early June, at 50 fpp. Release typically occurs during rising water conditions and at night to minimize predation by birds or other fish. Anticipated release dates for 2011:

- Pittsburg Landing – May 23
- Captain John Rapids – May 24
- Big Canyon – May 25

The release of sub-yearlings from Captain John Rapids is being used to compare a direct stream release of fall Chinook from Lyons Ferry Hatchery at Couse Creek on the mainstem Snake. FCAP staff will coordinate size information and current or anticipated changes in environmental conditions as they occur. FCAP staff will coordinate with Lyons Ferry Hatchery personnel to schedule fish release from both facilities on the same day. The direct stream release study prevents any volitional release of fish from the Capt. John Rapids facility.

Emergency low water, water temperatures or facility equipment failure may necessitate an early release of fish from the facilities. The facility operator is authorized to determine when to release the fish if emergency circumstances warrant. Co-management agencies will be contacted within 24 hours with notification of an early release.

2.3 Communication

Verbal communications between FCAP personnel and co-managers is done on an as needed basis to facilitate planning, transportation and acclimation. Co-managers will be involved in any planned deviation to the fish acclimation schedule.

Fish release numbers will be reported and a FCAP fish acclimation summary will be completed by Nez Perce Tribe Research division. FCAP fish acclimation summary and other pertinent information will be presented to co-managers at the Snake River Fall Chinook Technical Group meeting.

FCAP personnel will complete and submit a project annual report to BPA in January each year.

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Appendix F: BY 2010 Fall Chinook Pit Tag Allocation (*UsvOr* agreement)

Table 1. Summary of PIT tag allocation in release year 2011 Snake River fall Chinook salmon hatchery production. Based on sample sizes of 250,000 tags for subyearling and 328,000 tags for surrogates. Applies 2008-2017 USvOR Agreement Table B4B, a 46/54 split of subyearling tags, and a 50/50 split of surrogate tags to T0 and C1 passage routes. (**Updated 9-14-2010**)

Priority	Production Program						Tagging Timeframe (tagging at rearing facilities)	Release numbers upstream of Lower Granite available for PIT tagging		Tagging Lead / Uploading
	Rearing Facility	Number	Age	Release Location(s)	PIT Tag #'s	PIT Tag #'s		Subyearlings	3,245,000	
					Transport if Collected	Bypass if Collected		Yearlings	450,000	
					TIC	BIC		Subyearling Sample Size	250,000	
								250,000 and 46 / 54 split		
1	Lyons Ferry	450,000	1+	On station	27,000	0	Aug. 23-27, 2010	28,000	WDFW/WDFW	
2	Lyons Ferry	150,000	1+	Pittsburg Landing	15,000	4,000	January 30-31	19,000	BIOMARK/NPT	
3	Lyons Ferry	150,000	1+	Big Canyon	15,000	4,000	January 29-30	19,000	BIOMARK/NPT	
4	Lyons Ferry	150,000	1+	Captain John Rapids	15,000	4,000	January 28-29	19,000	BIOMARK/NPT	
5	Lyons Ferry	200,000	0+	On station	0	0	Early to mid-April	0	WDFW/WDFW	
6	Lyons Ferry	500,000	0+	Captain John Rapids	17,720	20,801	Early to mid-April	38,521	BIOMARK?/NPT	
7	Lyons Ferry	500,000	0+	Big Canyon	17,720	20,801	Early to mid-April	38,521	BIOMARK?/NPT	
8	Lyons Ferry	200,000	0+	Pittsburg Landing	7,088	8,320	Early to mid-April	15,408	BIOMARK?/NPT	
9	Oxbow	200,000	0+	Hells Canyon Dam	7,088	8,320	Early to mid-April	15,408	IPC-IDFG/IDFG	
10	Lyons Ferry	200,000	0+	Pittsburg Landing	7,088	8,320	Early to mid-April	15,408	BIOMARK?/NPT	
11	Lyons Ferry	200,000	0+	Direct stream evaluation Near Captain John Rapids	7,088	8,320	Early to mid-April	15,408	BIOMARK?-WDFW?/NPT/WDFW	
12	DNFH/Irrigon	250,000	0+	Transportation Study ^a	125,000	125,000	Late May -early June	250,000	BIOMARK?/NOAA	
13	Irrigon	200,000	0+	Grande Ronde River	7,088	8,320	Early to mid-April	15,408	BIOMARK?-WDFW?/NPT?WDFW?	
14	DNFH/Irrigon	78,000	0+	Transportation Study ^a	39,000	39,000	Late June-July	78,000	BIOMARK?/NOAA	
15	Irrigon	200,000	0+	Hells Canyon Dam	7,088	8,320	Early to mid-April	15,408	BIOMARK?/NPT	
16	Irrigon	195,000	0+	Grande Ronde River	6,911	8,112	Early to mid-April	15,023	BIOMARK?-WDFW?/NPT?WDFW?	
17	Umatilla	450,000	0+	Hells Canyon Dam	15,948	18,721	Early to mid-April	34,669	BIOMARK?/NPT	
NPTH 1	NPTH	500,000	0+	NPTH	0	3,000	April-May	3,000	NPT/NPT	
NPTH 2	NPTH	200,000	0+	Lukes Gulch	7,088	8,320	April- May	15,408	NPT/NPT	
NPTH 2	NPTH	200,000	0+	Ceder Flats	7,088	8,320	April -May	15,408	NPT/NPT	
NPTH 3	Irrigon	500,000	0+	North Lapwai Valley	0	3,000	April	3,000	NPT/NPT	
above 17	DNFH/Irrigon	TBD	0+	Transportation Study	0	0		0	above 17	
TOTAL	Yearlings	900,000					TOTAL PIT	669,000	PIT Yrlngs.	PIT Sub-Yrlngs.
	Subyearlings	4,538,000 (of which 328,000 are for Transportation Study)							73,000	596,000