2016

ANNUAL OPERATING PLAN
for
FISH PRODUCTION PROGRAMS
in the
CLEARWATER RIVER BASIN

by

U.S Fish and Wildlife Service

Idaho Department of Fish and Game

Nez Perce Tribe

Draft January 29, 2016

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CLEARWATER BASIN ANNUAL OPERATING PLAN (AOP) 2016

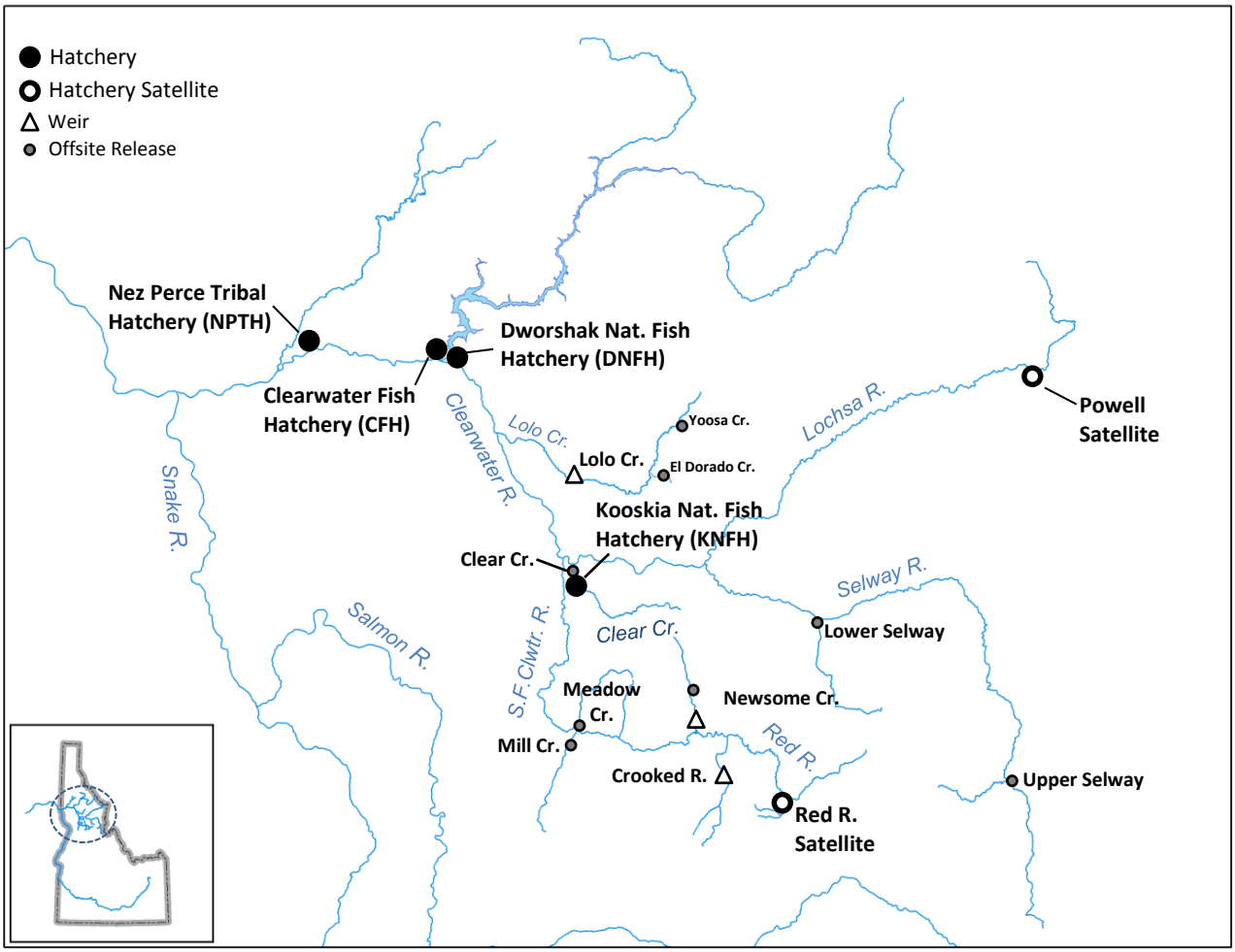
(This document has been prepared collaboratively by representatives from the United States Fish and Wildlife Service (USFWS), Idaho Department of Fish and Game (IDFG) and the Nez Perce Tribe (NPT). Each numbered section ends with a relevant agency contact names for additional information, coordination, or notification. Contact information (e.g. phone numbers and email address) are listed in Section 8, pgs. 71-73

1. STEELHEAD

The annual adult return goal for Dworshak National Fish Hatchery (DNFH) is 20,000 steelhead back to the Clearwater River. The annual adult mitigation goal for Clearwater Fish Hatchery (CFH) is 14,000 adult steelhead to the project area above Lower Granite Dam. Escapement goals to the project area above Lower Granite Dam assumed a harvest rate of about 66% on Dworshak and Clearwater hatchery adult returns in ocean and Columbia River fisheries downstream of the project area.

While annual adult steelhead returns originating from the combined production at Dworshak and Clearwater hatcheries are intended primarily for harvest mitigation, approximately 18% is intended to supplement natural spawning in portions of the Clearwater drainage. Fish intended for supplementation are released with adipose fins intact and are not intended to contribute to mark-selective fisheries. Collaboratively managed hatchery production and supplementation efforts associated with this program are consistent with the intent and protocols of the 2008-2017 US vs. Oregon Management Agreement.

Historically all broodstock for DNFH smolt releases in the North Fork Clearwater, Clear Creek, Lolo Creek and the South Fork Clearwater R. at Red House and all broodstock for Clearwater Hatchery steelhead programs were collected at DNFH and , assuming a 1:1 male to female ratio, required about 2,100 adults annually. In recent years IDFG has converted the CFH to an angler based collection of locally adapted broodstock in the South Fork Clearwater and in 2016 all or at least a portion of the broodstock for the DNFH may also be collected by the angler based program. If the angler based brood collection succeeds completely it could supply approximately 945 brood fish leaving a balance of about 1,155 to be trapped at DNFH. IDFG, USFWS and NPT co-managers will adjust brood collection at DNFH in-season depending upon the effectiveness of the angler based brood collection program for smolt releases in the South Fork Clearwater River.



Brood Year 2015 Steelhead Release Goals for 2016.

Program	Brood Collection Site	Rearing Facility	Release Site	2016 Smolt Release Goal
DNFH	DNFH	DNFH	DNFH	1,200,000
			Clear Creek	300,000
			SF CLWR, Red House	400,000
			Lolo Creek	200,000
Total				2,100,000
CFH	SF-CLWR	CFH	Meadow Creek-SF	501,000
			Red House Hole-SF	219,000
			Newsome Creek-SF	123,000
Total				843,000
Grand Total				2,943,000

Figure 1. Map showing steelhead trapping, hatchery rearing facilities, release sites in the Clearwater Basin and a table with typical current smolt production and releases by program, hatchery and release site.

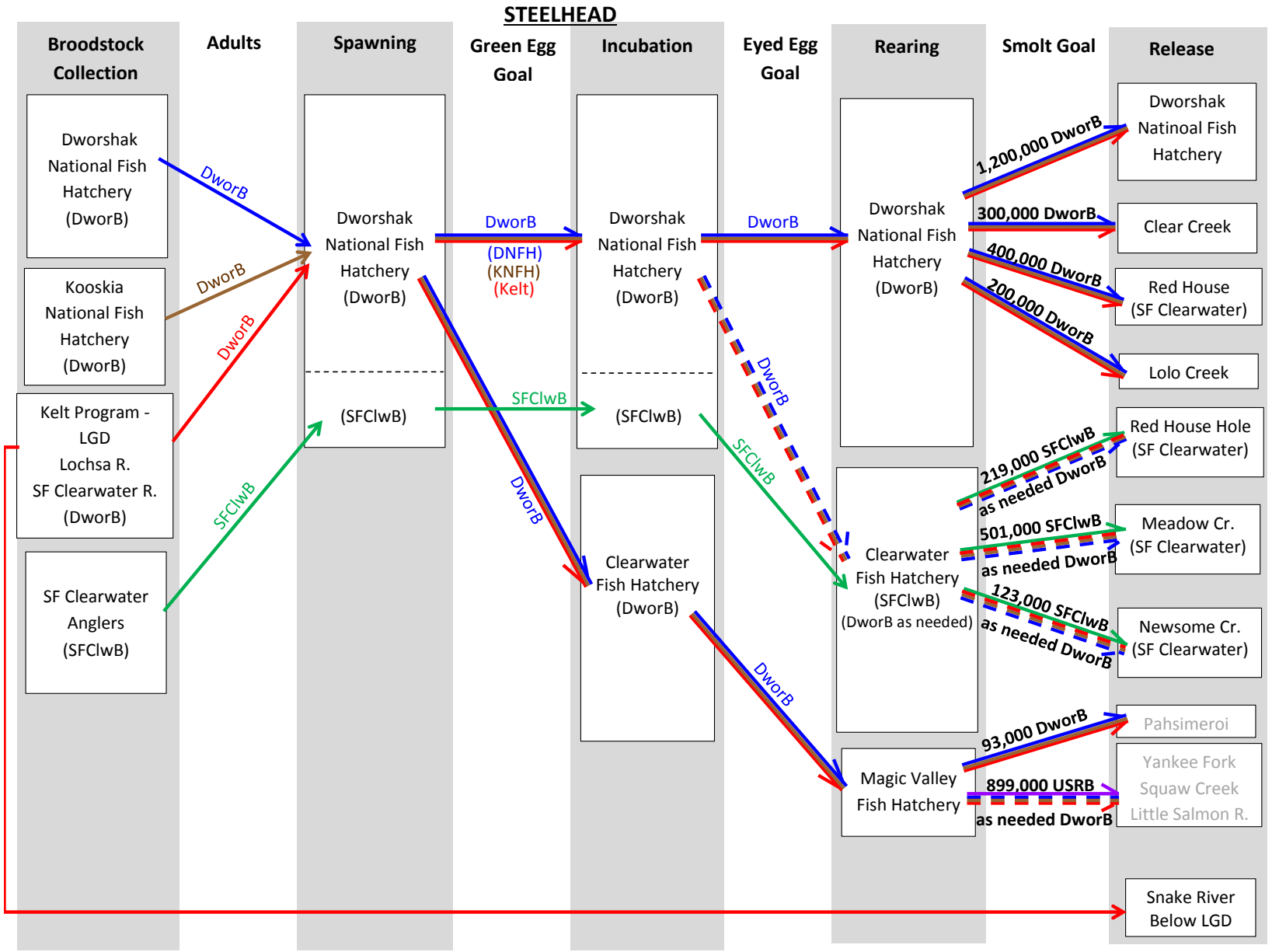


Figure 2. Flow chart of hatchery steelhead production in the Clearwater Basin showing broodstock sources, movements of gametes and releases juvenile fish.

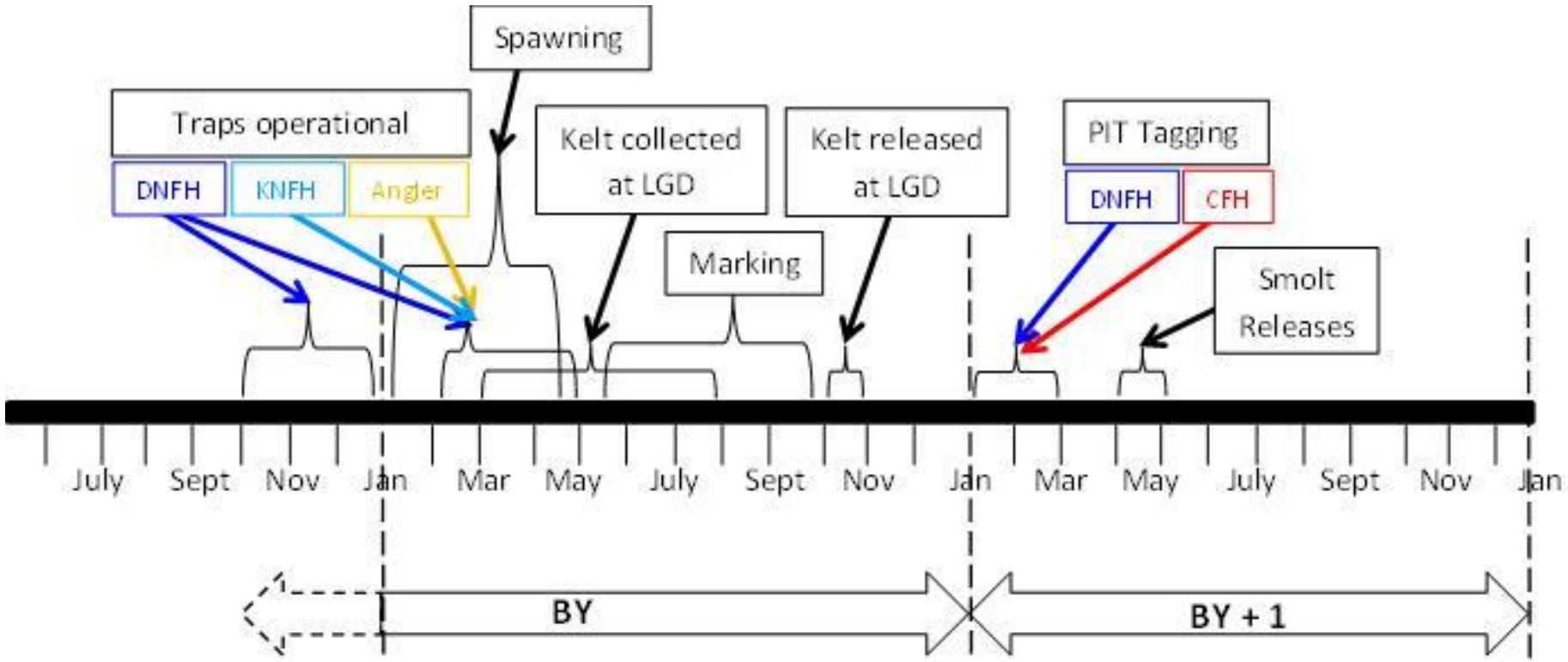


Figure 3. Timeline for hatchery production and releases of Steelhead Production in the Clearwater Basin.

1.1. Brood Year 2015 Steelhead

Annual smolt release goals by program, rearing facility and release site are summarized in ***Table 1.1a.***

1.1.1. **DNFH**

1.1.1.1. Production status

BY 15 STT were reared in 56 Burrows Ponds and two Mixed Cells. Sample counts are performed monthly on representative ponds. As of 12/31/2015 there were a total of 2.32 million steelhead on station, averaging 127 to 173 mm total length and 10.7 fpp (**Figure 1, Table 1.1a**)**.** ***Adam Izbicki//Tom Tighe***

1.1.1.2. Projected release

We plan to release smolts 4/11-4/22/2016. DNFH expects to release 1.27 million steelhead on-site at DNFH, 360,000 off-site at Clear Creek, 424,000 in the South Fork Clearwater River at Red House Hole and 243,000 at Lolo Creek. **(Figure 1**, **Table 1.1a**). The onsite release at DHFH and the offsite releases at Clear Creek and the South Fork Clearwater River at Red House will all be adipose fin-clipped and representative fraction will be coded-wire tagged. (**Table 1.1b).** Smolts releases in Lolo Cree will be unclipped and untagged. (Table 1.1b)

Weather permitting, releases into Lolo Creek (near the El Dorado Creek confluence, **Figure 1**) will occur from 4/11-4/22/16. U.S. Army Corp of Engineer (ACOE) fish transportation trucks will be used for transferring the fish from the hatchery to the release site. Nez Perce Tribal Hatchery (NPTH) personnel will coordinate snow removal efforts to the Lolo Creek site (**Figure 1**). If snow conditions do not permit release from 4/11-4/22/16 into Lolo Creek, then a decision will be made among the Clearwater River Drainage supervisors to either release all of the unclipped smolts into the South Fork Clearwater River at the Meadow Creek pullout site (**Figure 1**), or hold the fish at Dworshak Hatchery until weather permits for release into Lolo Creek. The Meadow Creek pullout location will be used because the hauling trucks are too large to maneuver in the Meadow Creek release site (**Figure 1**). The estimated average total length at release is 200 mm, or 5.8 fpp, (**Table 1.1a**). ***Adam Izbicki/Tom Tighe/Steve Rodgers***

1.1.1.3. Juvenile fish health

IHNV occurred at the 27.4% rate in the BY 15 adults. In Dec 2015 and Jan 2016, IHN virus was detected in four ponds in system 1 at low mortality levels. No reuse was used during BY 15 steelhead rearing. A 60 fish sample will be tested for viral, bacterial, and parasitic pathogens prior to release. ***Marilyn Blair***

1.1.1.4. Monitoring and evaluation

Nine CWT groups ranging from 20K to 42K each were to represent the three rearing systems and the early (fall-collected) and later (spring-collected) return groups during marking operations in June, July, August and September 2015 (**Table 1.1b**). Thirty days post tagging 500 fish from each CWT-tagged pond were checked for tag retention (BY 15 = 72% to 94%). An additional group of 42K was cwt'd after initial retentions from the first eight groups were deemed unsatisfactory.

Thirty two thousand and nine hundred PIT tags were inserted in January 2016; 1,500 for the Smolt Monitoring Program 11,400 for the Comparative Survival Study, and 20,000 for DNFH evaluation (**Table 1.1b**). At the time of tagging, one Burrows pond destined for the Clear Creek release was diagnosed with IHNV and so the 1,800 PIT tags that were to be tagged from that pond were shifted to a pond destined for the Red House Hole release. Dead fish recovered from ponds containing PIT tagged fish are scanned for tags and the ponds are swept with magnets to recover shed tags. Sample length and weights were collected at the time fish were ponded, during PIT tagging and pre-release to monitor growth and condition. PIT tag records will be used to estimate survival and travel time to the ocean post-release. ***Chris Peery / Carrie Bretz***

1.1.1.5. Remote PIT Tag Array Monitoring and Evaluations

The Nez Perce Tribe operates four remote PIT tag arrays in the Clearwater River Basin as part of the Integrated Status and Effectiveness Monitoring Program (ISEMP) and B-run Project to monitor adult salmon and steelhead abundance. The USFWS operates a single remote PIT tag array in Clear Creek (Site Code CLC). These PIT tag arrays will be operated year round and are part of a long-term monitoring effort. Information about PIT tag recapture information can be viewed online (www.ptoccentral.org). Arrays are located on SF Clearwater (Site Codes SC1 and SC2) and Lolo Creek (LC1 and LC2). Plans to install a full length PIT array on the Selway River to occur in summer of 2016. ***Jason Vogel/ Carrie Bretz***

1.1.1.6. Research Requests

FPC requested 1,500 steelhead be PIT tagged for the Smolt Monitoring Program. For 2016 releases 11,400 steelhead were PIT tagged for the Comparative Survival Study (CSS). ***Chris Peery***

1.1.2. **CFH**

Original design memorandum shows the production for CFH may be as high as two million steelhead smolts; however, the annual production target has been reduced due to limited water availability and to provide more rearing space for Chinook salmon. Historically, the steelhead smolt releases from CFH have ranged from approximately 600K to 1.04 million. Currently the release goal for CFH is 843,000 full term smolts (FTS). The reduction of FTS release number is from downstream multi agency negotiations and insufficient water to rear fish in

28 one hundred foot sections of raceways. All FTS reared at CFH are released at sites in the South Fork Clearwater drainage (Figure 1). The goal is to capture all broodstock in the SF Clearwater River by anglers in an attempt to develop a locally adapted broodstock for the SF program. To achieve that goal anglers must capture 442 adults and if that target brood is not met, DNFH backfills the shortage.

1.1.2.1. Production status

As of January 7, 2016 there was an estimated 911,373 BY 15 fish on station at CFH (**Table 1.1a**). The inventory includes fish destined for release at the Meadow Creek, Red House Hole , and Newsome Creek release sites in the South Fork Salmon River (**Figure 1, Table 1.1a**). The by mark and tag status for these for these release groups by is shown in **Table 1.1b**.

1.1.2.2. Projected release

Of the estimated BY 15 steelhead fish on station effective January 7, 2016 we project the estimated number to be released in the spring of 2016 will be 893,433 (**Table 1.1a**) . Numbers projected to be released at Meadow Creek and Red House Hole will likely be slightly greater than the stated goals for those sites (109% and 104% respectively) and the releases at Newsome Creek will be slightly lower than the stated goal (99%). The projected size of fish at the time of release is expected to match the stated goals for all three release groups (4.5 FPP, **Table 1.1a**). Adipose fin-clip and CWT fractions among each release group are in accordance with levels proscribed in the US v Oregon 2008-2017 Management Agreement (**Table 1.1b**). IDFG will contact NPT (Sherman Sprague) to coordinate Newsome Creek releases). ***Malia Gallagher/Tony Folsom/Christopher Gregg***

1.1.2.3. Juvenile fish health

100% of BY 15 females were individually sampled for viral replicating agents using ovarian fluid. 1.8% (4/216) of ovarian fluid samples were positive for IHN. Culling of eggs due to IHNV positive samples did not occur. Juvenile rearing inspections were performed quarterly by Eagle Fish Health Lab and diagnostics were performed as needed. In mid-September 2015, fish demonstrated elevated mortality due to a concomitant coldwater disease and motile *Aeromonas septicemia* infection. Fish were treated with OTC medicated feed and mortality returned to a normal level. Pre-liberation samples will be performed on 60 fish 30 to 45 days prior to liberation. ***David Burbank***

1.1.2.4. Monitoring and evaluation

The fish are sampled monthly between the 25th and 28th of the month. During months of rapid growth, fish are sampled biweekly. Pound counts are taken to track fish growth and monitor if growth is following the annual growth projections. Length frequencies are taken three times

during the final rearing cycle, during marking as fish are moved outside, at the end of October and two weeks prior to release.

A 300 fish sample from raceways which are 100% CWT will be checked for tag retention approximately three-weeks post tagging. These retention checks will satisfy marking QC/QA needs as well as release reporting requirements. In February steelhead will be PIT tagged to evaluate juvenile timing and survival from release to Lower Granite Dam for each release group and to estimate a combined adult escapement back to Lower Granite Dam. This is also a cooperative effort with the CSS study to evaluate transport and in-river SARs. Therefore PIT tags are randomly separated by code with 70% of the tags representing the run-at-large migration group and the balance (30%) returned to the river during outmigration. PIT tags are representatively distributed across release groups in proportion to the numbers of fish in each release group. ***Chuck Warren***

South Fork Clearwater Localized Stock Evaluation- South Fork Clearwater smolts will be released at Meadow Creek. Similar to other production at CFH, smolts will be PIT tagged to estimate juvenile emigration timing and survival from release to Lower Granite Dam (LGR) for each release group and to estimate adult escapement back to LGR across return years for each brood year and release group cohort. Estimates of numbers of smolts emigrating and numbers of adults returning at LGR for each cohort are used to estimate smolt to adult return rates SARs. PIT tagging is a cooperative effort between CSS and LSRCP (**Table 1.1b**). ***Chuck Warren***

1.1.2.5. Remote PIT Tag Array Monitoring and Evaluations

Information can be seen in section 1.1.1.4.

1.2. Brood Year 2016 Steelhead

DNFH collects broodstock to meet B-Run steelhead production goals for its own program and a portion of the IDFG B-Run steelhead program at the Magic Valley Hatchery. Approximately 600 females are needed to provide the eggs for these hatcheries. Fish collections via the trap exceed these numbers to ensure adequate numbers of adults are available on spawning day. Additional factors influencing the number of fish trapped and spawned include; 1) the female to males sex ratio (~2.3:1) and target 1:1 spawning ratio, 2) potential for request of additional eggs for the CFH releases in the South Fork Clearwater River if the angler based collection of locally adapted broodstock is unable to meet the broodstock goal for that program,3) potential for request of additional eggs for the MVH USRB program if a brood shortfall is anticipated at Pahsimeroi weir, 4) the prevalence of viral replicating agents in adults and culling rate variability based on the level of viral replicating agents, 5) overall egg quality, 6) preserving the run-timing from August through April, and 7) reducing juvenile IHNV infections by maximizing limited reservoir water supplies. Any fish surplus to the spawning needs are returned to the Clearwater River for the fisheries. This brood level provides ~2.1 million smolts at a 5-year average of 81% eyed egg-to-smolt survival (excludes BY09 40% survival due to IHNV) to meet the adult return goal

of 20,000 to the Clearwater River. The program goal for SF Clearwater releases stated in the 2008-2017 US vs OR Management agreement production tables includes 533,000 un-clipped steelhead. The intent of releasing un-clipped fish is to minimize harvest impacts on those fish in mark selective sport fisheries thereby increasing the probability that they have an opportunity to return to tributaries to spawn and supplement natural production.

1.2.1. **DNFH**

1.2.1.1. Projected adult return

Expansion of PIT tag detections at LGR suggest that 17,745 adult DNFH steelhead returns may return to LGR in 2015-2016 (**Table 1.2a**) which is about average for the most recent five years. Broodstock utilization has been maximized to the extent possible. ***Chris Peery***

1.2.1.2. Broodstock acquisition (weir/trap/ladder operation)

Based on a relatively strong return forecast, DNFH is planning to operate the fish ladder and trap intermittently during the BY 16 trapping season. No weekend ladder operation is planned unless necessary to meet goals. This allows for active monitoring of the fish counter during the week, and ensures excess fish are not collected. As a result, fish holding times in the hatchery are somewhat reduced, and un-trapped fish are available for tribal and sport harvest. Typically, the trap is opened anywhere from 5 minutes to a few hours, depending on run strength and timing. The number of fish collected is tracked by a counter located at the entrance of the holding pond. Currently the actual number of steelhead collected has been about 82% of the counter reading. Ladder operation may be modified in-season if weekly goals are not met.

Annually, DNFH targeted around 100 steelhead trapped and retained each month in October, November, and again in December for a total of approximately 300 steelhead retained at the end of December, to represent the early component of the return. During the fall of 2015, DNFH retained 129 adults and 23 one-ocean steelhead in October, 99 adults and 11 one-ocean steelhead in November, and 45 adults and 2 one-ocean steelhead in December; for a total of 273 adults and 35 one-ocean steelhead retained to represent the early returning fish. Insufficient numbers of females were ripe during the initial two spawn days so a third spawning session was needed. We plan to increase the number of steelhead collected in the fall to 400 in the future to resolve this problem. All excess steelhead (1,200 adults, 517 one-ocean) trapped during the fall were returned to the main stem of the Clearwater River at the Hocus boat ramp upstream of the hatchery. Spring collection for steelhead broodstock will commence in February and continue until about mid-April. Adult steelhead will also be collected from the South Fork Clearwater River in an attempt to develop a localized brood source for that component of

DNFH production. See Table 1.2a for the entire DNFH planned steelhead trapping schedule for BY 16. This plan may be modified in-season to ensure goals are met. *Adam Izbicki / Angela Feldmann*

1.2.1.3. Adult fish health status

Eighty males were injected with the hormone sGnRHa prior to spawning, using the implant form, under INAD. This was to insure that there were enough males that were ripe during the early spawns. Fish were treated up to three times per week with formalin for fungus, under a veterinary extra-label prescription. At spawning, a minimum of 60 tissues samples will be collected and assayed for viruses, bacteria, and parasites. About 30% of ovarian fluid samples from fish in each spawning session are processed individually in the laboratory (not pooled) to assay for virus. An exception to this practice occurs in the case of transfers of eggs to Magic Valley Hatchery where 100% ovarian fluid samples will be processed individually (not pooled) for virus testing from these females. ***Marilyn Blair***

1.2.1.4. Adult handling /out-planting/marking

The ladder is opened for collection of spring returns one week prior to spawn dates (**Tables 1.2a and Table 1.2b**) Any fish beyond what is needed for spawning will generally be returned to the river at the Ahsahka boat ramp. All released fish will be marked with a left operculum v-notch. Any out-planting involving the NPT will be coordinated with Mike Key. ***Carrie Bretz / Chris Peery***

1.2.1.5. Carcass disposition

The food bank will be utilized when possible for carcass disposal. Approximately 164 carcasses will be provided to local schools for fish dissections for the Hatchery in the Classroom Program. To date there have not been any requests from research groups to acquire fish carcasses for scientific study. Any non-hormone injected carcasses that are not utilized by the food bank, or for classroom dissections will be disposed at the transfer station. Any fish that have been exposed to hormone treatments (SGnRHa) will be disposed at the transfer station. ***Adam Izbicki/Angela Feldmann***

1.2.1.6. Adult sampling, monitoring and evaluation

The contribution of fish reared in Systems I, II and III in addition to the contribution of early returning fish to the fishery and broodstock composition is determined using CWTs recovered for all three age classes. Returning adults are measured and examined for gender, various clips, tags and marks, then sorted for spawning or holding. All CWT fish will be retained and utilized for broodstock to the extent possible. Remaining CWT fish will be killed for tag recovery. IDFG personnel will collect DNA samples from all spawned adults at the DNFH to develop the

Parentage Based Tagging (PBT) baseline (see **Appendix 2** for detail). ***Carrie Bretz / Chris Peery***

1.2.1.7. Spawning/egg take plans, mating protocol

Current plans are to take ~3.4 million green eggs for DNFH, and ~1.2 million green eggs for CFH. Included in this number are ~300K eggs, which may be more depending on availability of adults from the South Fork of the Clearwater River localized broodstock program. DNFH will also take ~405,000 green eggs for Magic Valley (**Table 1.2b**). A 1:1 male-female spawning ratio is achieved by trapping additional broodstock because the average trapped male-female ratio is 1:2.3. The number of eggs collected is based on historical adult survival, eye-up percentage, disease rates and smolt survival rates to meet smolt release targets (**Appendix Table 1**.). No more than 5% of broodstock will be composed of 1-ocean males. One-ocean males will be used to fertilize eggs from no more than one female. In an attempt to increase the number of larger and older-age class returning steelhead, 85 cm fork length or larger males (largest 10% of the male distribution) will be crossed with up to three females when possible. They will be retained (not killed or released) so they can contribute gametes across multiple egg takes. Also, only females 75 cm in length and larger will be used as broodstock. All CWT'd fish will be retained but broodstock collection will be minimized to the extent possible. For brood year 2016, adults collected from the South Fork Clearwater River will be used as broodstock for the projected 400,000 steelhead smolts to be released at Red House Hole, in the South Fork (Figure 1). We project approximately 93 females will be needed as brood for this release group. If insufficient South Fork adults are available, the remainder will be made up from DNFH-caught steelhead. Our goal is to maintain a minimum of 67% South Fork Clearwater River adults as brood source for the South Fork Red House release group. This year the steelhead program for DNFH releases will originate from 10 egg takes to maintain acceptable density limits and reduce fish stress in the DNFH nursery. There will be a total of 11 spawn days (**Table 1.2b**) to accomplish egg take goals for all programs. *Adam Izbicki / Angela Feldmann*

The Columbia River Inter-Tribal Fish Commission (CRITFC) and the NPT are conducting a Kelt Steelhead Reconditioning Project at DNFH through February, 2019 under a real-estate permit between Bonneville Power Association (BPA) and the ACOE. NPT staff will air-spawn 186 females for the Kelt project (**Table 1.2b**). Air-spawned fish are to be reconditioned and retained until the spring of 2017. However, depending upon survival, some of these fish may need to be released after four to six weeks in order to make room for steelhead kelts transferred from LGR or Clearwater River tributaries. A portion of the reconditioned air-spawned

fish will be euthanized to assess egg quality of reconditioned kelts. The remaining fish will be tagged and released. Co-managers will discuss and determine appropriate release locations for both DNFH ladder trapped and SF Clearwater River broodstock used for the kelt program.

Average fecundity of air spawned fish has been estimated at 12% lower than kill-spawned fish. Kelt broodstock are collected as close to spawning as possible so the kelts are in the best condition possible. Hence, brood requirements are being accomplished with 3 takes of 56-57 adult fish each.

For 2016, SF Clearwater steelhead broodstock may be incorporated into the reconditioning program if sufficient females are available. Whereas kill spawning extracts all the eggs in a female, air spawning extracts about 88% of the eggs. It is possible that IDFG may not be able to collect enough broodstock in the South Fork Clearwater River through angler capture methods to meet the CFH SF Clearwater program egg take goal if all these females are air spawned. We propose an initial cautionary approach of air-spawning 15% to 20% of the females collected from the SF Clearwater River until we assess the success of the brood collection effort.

Between 15 and 20 reconditioned kelts have matured from BY 14 and BY 15 and will be air-spawned in 2016 (**Table 1.2b**). These eggs can be incorporated into DNFH production. See Appendix 3 at the end of this document for a detailed summary of the Kelt reconditioning project. ***Adam Izbicki / Angela Feldmann / Scott Everett / Brett Bowersox***

1.2.1.8. Incubation

DNFH will incubate eggs from approximately 534 steelhead females for its program, 120 fall-return adults and 414 from winter and spring returns. After eye-up and enumeration, approximately 3.4 million green eggs will go into the DNFH program. DNFH will incubate up to 1.3 million green eggs for CFH. Green eggs for Magic Valley Hatchery will be brought to CFH for incubation (**Table 1.2b)**. Eyed eggs in excess of program needs can be provided to the Kelt Reconditioning Project, the IDFG for sturgeon projects, or out-planted to the Yankee Fork of the Salmon River or the North Fork Clearwater River upon Co-Manager approval. ***Adam Izbicki/Angela Feldmann***

1.2.1.9. Nursery Rearing

DNFH will early-rear approximately 2.4 million steelhead in its nursery until the fish reach approximately 100-150 fpp during the spring and summer of 2015. ***Adam Izbicki/Angela Feldmann***

1.2.1.10. Outside Rearing

Approximately 2.4 million steelhead will be moved from nursery tanks to outside burrows ponds from the middle of May until September 1, 2015.

Fifty eight Burrows ponds will be used for steelhead rearing. Fish will be moved from the nursery to the ponds using a Heathro Fish Pump. A marking trailer from Columbia River Fisheries Program Office will AD clip and CWT steelhead. The Burrows ponds will be initially ponded at approximately 135K fish/pond. Most steelhead will receive an adipose-fin clip to designate it as a hatchery fish, the exception being the 200,000 unclipped/unmarked Lolo Creek releases.

Early rearing occurs in the nursery on reservoir water. After the fish are moved from the nursery tanks, initial stocking will be in System I, also on reservoir water. The fish will be kept on reservoir water until they are approximately 60 fish per pound to better manage against IHN outbreaks from exposure to the river water. As density and flow levels increase in System I, the steelhead will be moved into Systems II and III using the Heathro Fish Pump in conjunction with the Vaki Micro Fish Counter to inventory these fish into ponds where they will remain until release. ***Adam Izbicki/Angela Feldmann***

1.2.1.11. Juvenile fish health

Upon ponding, juveniles will be monitored for any disease problems including parasites, viral, and bacterial pathogens once per month at a minimum. A 60 fish sample will be tested for viral, bacterial, and parasitic pathogens prior to release. ***Marilyn Blair***

1.2.1.12. Planned juvenile marking & tagging, release sites

FWS plans to CWT 180,000 steelhead total from the three systems and early return progeny. Additional steelhead will receive PIT tags; 1,500 for the Smolt Monitoring Program (SMP), 11,400 for CSS, and 20,000 for DNFH evaluation (**Table 1.2c**). ***Carrie Bretz / Chris Peery***.

1.2.1.13. Juvenile monitoring and evaluation

Nine CWT groups of 20K each will be tagged for system contribution and early return groups during marking operations in June, July, and August 2016 **(Table 1.2c)**. Thirty days post tagging 500 fish from each CWT-tagged pond will be checked for tag retention. Thirty-four thousand nine hundred PIT tags will be inserted into steelhead January 2017; 1,500 for the Smolt Monitoring Program, 11,400 for the Comparative Survival Study, and 20,000 for DNFH evaluation **(Table 1.2c)**. Dead fish recovered from ponds containing PIT tagged fish are scanned for tags and the ponds are swept with magnets to recover shed tags. Sample length and weights were collected at the time fish were ponded, during PIT tagging and pre-release to monitor growth and condition. PIT tag records will be used to estimate survival and travel time to the ocean post-release. ***Chris Peery / Carrie Bretz***

1.2.1.14. Communication

FWS puts out weekly spawning and return reports, monthly production activity reports, and annual spawning and adult return reports.

1.2.1.15. Kelt monitoring and evaluation

An additional 150 steelhead kelts will be collected at Lower Granite Dam and transferred to DNFH or NPTH. For 2016, kelts from tributaries of the Lochsa and SF Clearwater rivers will also be collected and transferred to DNFH or NPTH. Fish at DNFH will be reared in conjunction with the air-spawned steelhead (section 1.2.1.8). These fish will be on-station from March through October. Surviving LGR transferred kelts will be tagged and returned to the Snake River below LGR. ***Scott Everett***

1.2.1.16. Research Requests

- Matthew Campbell, IDFG Genetics Laboratory, has requested fin clip samples from all adult steelhead spawned at DNFH (for all programs) for a basin-wide parentage-based genetic tagging program. This involves the annual genotyping of all broodstock at each hatchery, creating a parental genotype database. Progeny from any of these parents (either collected as juveniles or returning adults), if genotyped, could be assigned back to their parents, thus identifying the hatchery they originated from and exact brood year when they were produced. ***Chris Peery / Ray Jones /Adam Izbicki/Angela Feldmann***
- The NPT, CRITFC, and University of Idaho are continuing their research on reconditioning steelhead kelts. Experiments involving treatments to reduce mortality and improve growth and re-maturation, as well as sampling fish to measure physiological responses during reconditioning will be conducted on air-spawned steelhead, as well as kelts transferred from LGR and Clearwater River tributaries (see sections 1.2.1.8 and **Appendix 3)**. ***Scott Everett***
- The Nez Perce Tribe, CRITFC and the University of Idaho request 100 eggs per air-spawned female to evaluate reproductive success in reconditioned kelts. This will require a small amount of milt from two to three males to sufficiently fertilize the eggs. ***Scott Everett***
- DNFH works with IDFG to meet requests of approximately 33 schools for Trout in the Classroom projects. These schools have requested a total of 2,500 eggs for their projects. These eggs will come from Take 4. They have also requested 164 carcasses for student dissection. ***Ray Jones/Jill Olson***

1.2.1.17. Hatchery Evaluation Team

Future Research requests will be vetted through the DNFH Evaluation Team utilizing the *Guidelines for Conducting Research and Evaluation Projects at DNFH.* The Team will review the proposal and make recommendations to the Dworshak Complex Manager for his decision.

1.2.2. **KNFH**

1.2.2.1. Projected adult returns.

No steelhead projection was made for Kooskia.

1.2.2.2. Broodstock acquisition (weir/trap/ladder operation)

The adult trap will be opened early to mid-March 2016 for BY 16 steelhead adult collection. The proposed operation is to close the trap early April after Chinook and Coho Salmon smolt releases, and bypass the water intake and Obermeyer weir during this usually high water period. We would reopen the trap mid- to late May. The trap start and end times will be adjusted as needed depended on adult returns to the basin. During this dewatered period we would open the picket (fish) weir to allow passage of steelhead. The NPT and IDFG are also interested in operation of the weir and will be kept informed. ***Chris Peery***

1.2.2.3. Adult fish health

1.2.2.4. (see adult fish health in 1.2.1.3 for DNFH)

1.2.2.5. Adult handling/out-planting/marking

All natural (unmarked) fish will be loaded onto a transport truck and taken nine miles up Clear Creek to the second bridge and released. CWT steelhead will be sacrificed for tag recovery. Adult hatchery steelhead (not taken for CWT) for out-planting will be loaded to a NPT truck at time of sorting; if a large truck is needed, we will contact NPT Mike Key for spring out-plants. If trap numbers are low, we will use a 400 gallon tank in a one ton truck for out-plants. Out-planted steelhead will be given a right operculum v-notch. Any Tribal requests for steelhead will be coordinated through Nancy McAllaster, NPT (208-843-7320 ext.2126). Other native species (bull trout, suckers, whitefish etc.) trapped will be passed upstream of the weir. ***Carrie Bretz / Chris Peery***

1.2.2.6. Carcass disposition

Any adult steelhead that expires in the trap will be frozen and transported to the local Landfill every Thursday.

1.2.2.7. Adult monitoring and evaluation

Returning adults are measured and examined for gender, various clips, tags, and marks then sorted for spawning or holding. CWT steelhead will be sacrificed for tag recovery. No steelhead evaluation is planned at KNFH at this time. ***Carrie Bretz / Chris Peery***

1.2.2.8. Spawning/egg take plans, mating protocols

NA (see DNFH section 1.2.1.7)

1.2.2.9. Incubation

NA (see section DNFH section 1.2.1.8)

1.2.2.10. Nursery Rearing - NA

1.2.2.11. Outside Rearing - NA

1.2.2.12. Juvenile fish health NA

1.2.2.13. Planned juvenile marking & tagging, release sites NA

1.2.2.14. Juvenile monitoring and evaluation - NA

1.2.2.15. Communication -

1.2.2.16. Kelt monitoring and evaluation - NA

1.2.2.17. Research Requests - NA

1.2.2.18. Hatchery evaluation tea -NA

(see DNFH section 1.2.1.14)

1.2.3. **CFH**

1.2.3.1. Projected adult returns

The projected adult return is 7,092, which is the estimated return of all year classes from smolts released into the S. Fork Clearwater River by CFH and DNFH.

1.2.3.2. Broodstock Acquisition (angler capture)

In the spring of 2016 managers will continue to create a locally adapted steelhead broodstock for 843,000 steelhead smolts to be released by CFH in the South Fork Clearwater River in 2017 (**Tables 1.2a and 1.2b**). Volunteer anglers, with guidance from IDFG staff, will catch fish in the South Fork Clearwater River for broodstock using standard hook and line angling techniques. Collected fish will be transported daily to DHFN for spawning. (**Table 1.2b**).

Approximately 1,206,000 green eggs from at least 213 females will be required to achieve the 843,000 smolt release goal (**Appendix Table 1**). Typically approximately 63% of fish collected for broodstock are females. To achieve the number of females required to meet the egg goal and a 1:1 female to male spawning ratio it is likely that as many as 670 adults will have to be collected (**Appendix Table 1**).

Clearwater Regional staff will coordinate with anglers to collect adults for spawning. Among fish caught by anglers, only hatchery origin adult fish may be retained for broodstock. Qualified IDFG regional or hatchery staff will make the hatchery origin determination based on the presence of either an adipose fin clip, a coded-wire tag, or obvious fin erosion associated with hatchery rearing. Natural origin fish as evidenced by the lack of one or more of those indicators, are released immediately. Retained hatchery origin fish are transferred to specially designed fish holding tubes. CFH staff will operate transport trucks (two 1-ton transport trucks and an adult hauling tanker) to collect fish from the holding tubes and transport them to DNFH. Adult holding and spawning will occur at

DNFH per protocol mentioned in 1.2.3.1. This will include coordination with IDFG staff for spawning, disease sampling, and testing of samples. Adults not used for broodstock will be made available to NPT for radio tagging (see section 1.2.3.6).

Pending availability of adult pairs in the angler based S. Fork Clearwater brood collection program, CFH staff will implement a strategy to increase production of SF origin smolts by whole raceway groups. The first priority is to collect enough eggs from locally adapted broodstock to rear at minimum, 420,000 FTS in six raceways for out-planting to Meadow Creek on the SF Clearwater River. If additional adults from the angler program are available additional raceways would be included to achieve, in order of priority, the entire Meadow Creek release (501,000 FTS), the entire Red House Hole release (219,000 FTS) and the entire Newsome Creek release (123,000 FTS). If three are not sufficient South Fork Clearwater origin broodstock to produce the entire 1,206,000 eggs need to achieve the CFH production goal, DNFH will trap additional adults to cover any shortfall. ***Malia Gallagher/Tony Folsom/Christopher Gregg***

1.2.3.3. Adult Fish health

All females spawned at DNFH for CFH will have an ovarian fluid sample taken and tested for viral replicating agents. All samples will be shipped to Eagle Fish Health Lab for testing; culling for INHV will not occur. Eggs will be culled from females that are positive for other viral replicating agents such as IPN, VHS and ISA. A total of 60 kidney samples will be taken to monitor for BKD using ELISA. A total of 20 head wedges will be taken to monitor for WHD. Juvenile rearing inspections will be performed quarterly and diagnostic examinations as needed by Eagle Fish Health Lab. Pre-liberation inspections will be performed on a 60 fish sample within 30 to 45 days of liberation. ***David Burbank***

1.2.3.4. Adult handling/outplant/marking

All adults collected for broodstock are transported to DNFH for holding and spawning and processing (see CFH section 1.2.2.2 and DNFH section 1.2.1.4). Adults collected for CFH for broodstock but not used will be made available to NPT for radio tagging. (see section 1.2.3.3).

1.2.3.5. Carcass disposition

All adults collected for broodstock are transported to DNFH for holding and spawning and carcass disposal (see DNFH section 1.2.1.5)

1.2.3.6. Adult monitoring and evaluation

All sampling of broodstock collected for CFH occurs at DNFH (see DNFH section 1.2.1.6)

The Nez Perce Tribe will be inserting radio transmitters into adult steelhead on SF Clearwater to determine distribution throughout the drainage. Working closely with co-managers (IDFG) local broodstock

collection (see section 1.2.3.2) to collect adult steelhead, 29 radio transmitters will be inserted into natural origin (NOR) steelhead during collection of broodstock in February and March. Additionally, the Nez Perce Tribe may employ tribal anglers to assist with capturing adult steelhead for radio tracking and broodstock collection using traditional fishing methods. ***Peter Cleary***

1.2.3.7. Spawning/ egg take plans, mating protocols

All spawning of broodstock collected for CFH occurs at DNFH (see DNFH section 1.2.1.7). Our expected first spawn date for CFH egg collection is February 23. Spawning occurs on every Tuesday. When possible, a 1:1 male-female spawning will be used. On spawning days, eggs taken for CFH and Magic Valley will be from fresh fish that have entered DNFH trap since the last spawning day or fish that were green (not ripe) on previous spawning days and returned to the holding pond (**Table 1.2b**). Co-managers have agreed that 20% of the locally adapted broodstock collected for CFH and spawned at DNFH may be air spawned and incorporated into the kelt reconditioning program (see DNFH section 1.2.1.12)

1.2.3.8. Incubation

At DNFH, the eggs will eyed, shocked and then transferred to CFH where they will be disinfected and placed in Heath egg trays. They will be picked and enumerated the next day. The eggs will then be placed in Heath egg trays for the remaining incubation period. Incubation of DNFH eggs destined for MVH production will be transferred green to CFH. ***Malia Gallagher/ Tony Folsom/Christopher Gregg***

1.2.3.9. Nursery Rearing

Once the fry are buttoned up the fry are ponded in the indoor vats and remain there until they are approximately 100 fish per pound. Each vat is loaded with approximately 45k swim-up fry.

1.2.3.10. Outside Rearing

When fry are 100 fish per pound, they are run through the marking trailer and are put into the 12 steelhead raceways outside where they will stay until release

1.2.3.11. Juvenile fish health

Once fish are ponded, the fish are monitored visually for any abnormal behavior or clinical disease symptoms. If there is a reason for concern, Eagle Fish Health is contacted for a site visit.

1.2.3.12. Planned juvenile marking & tagging, release sites

Marking plans for BY16 steelhead from CFH are found in (**Table 1.2c)**. As fish were moved outside, they received ad-clips and CWT's. Fish will remain in raceways until they are full smolt size and age, at a maximum of

4.5 to 6.0 fish per pound. Raceways are loaded with approximately 50,000 -70,000 fish. In February, approximately 18,100 fish will be PIT tagged to evaluate juvenile emigration timing and survival from release to Lower Granite Dam for each release group and to estimate a combined adult escapement back to Lower Granite Dam which will be used to estimate SARs. This tagging is also a cooperative effort between CSS and LSRCP. PIT tags will be distributed across release groups in proportion to the release group size. ***Chuck Warren***

1.2.3.13. Juvenile monitoring and evaluation

The fish are sampled monthly between the 25th and 28th of the month. Pound counts are taken to track fish growth and monitor if growth is following the annual growth projections. Length frequencies are taken three times during the final rearing cycle.

1.2.3.14. Communication -

2. SPRING AND SUMMER CHINOOK SALMON

Based on assumptions used to estimate mitigation goals for the LSRCP Chinook Salmon hatchery programs the total combined annual mitigation goal for adult Chinook Salmon returns to the project area above Lower Granite Dam from DNFH, CFH, KNFH and NPTHC is approximately 27,430 spring Chinook salmon (9,135, 11,915, 5,200, and 1,176 respectively). Original LSRCP mitigation goals to the project area above Lower Granite Dam assumed a harvest rate of about 80% for adult hatchery origin Chinook salmon from the Clearwater River in ocean and Columbia River fisheries downstream of the project area. To meet adult mitigation goals, the original annual production from Chinook Salmon hatcheries in the Clearwater drainage was approximately 1.35 million smolts. This level of production assumed that about 0.87% of smolts released would return to LGR but actual SAR's have averaged less than half of that value. To offset these below anticipated SARs, attempts have been made to increase production from Chinook Salmon hatcheries in the Clearwater drainage and annual releases now total approximately 5,800,000 smolts and 925,000 parr and pre-smolts.

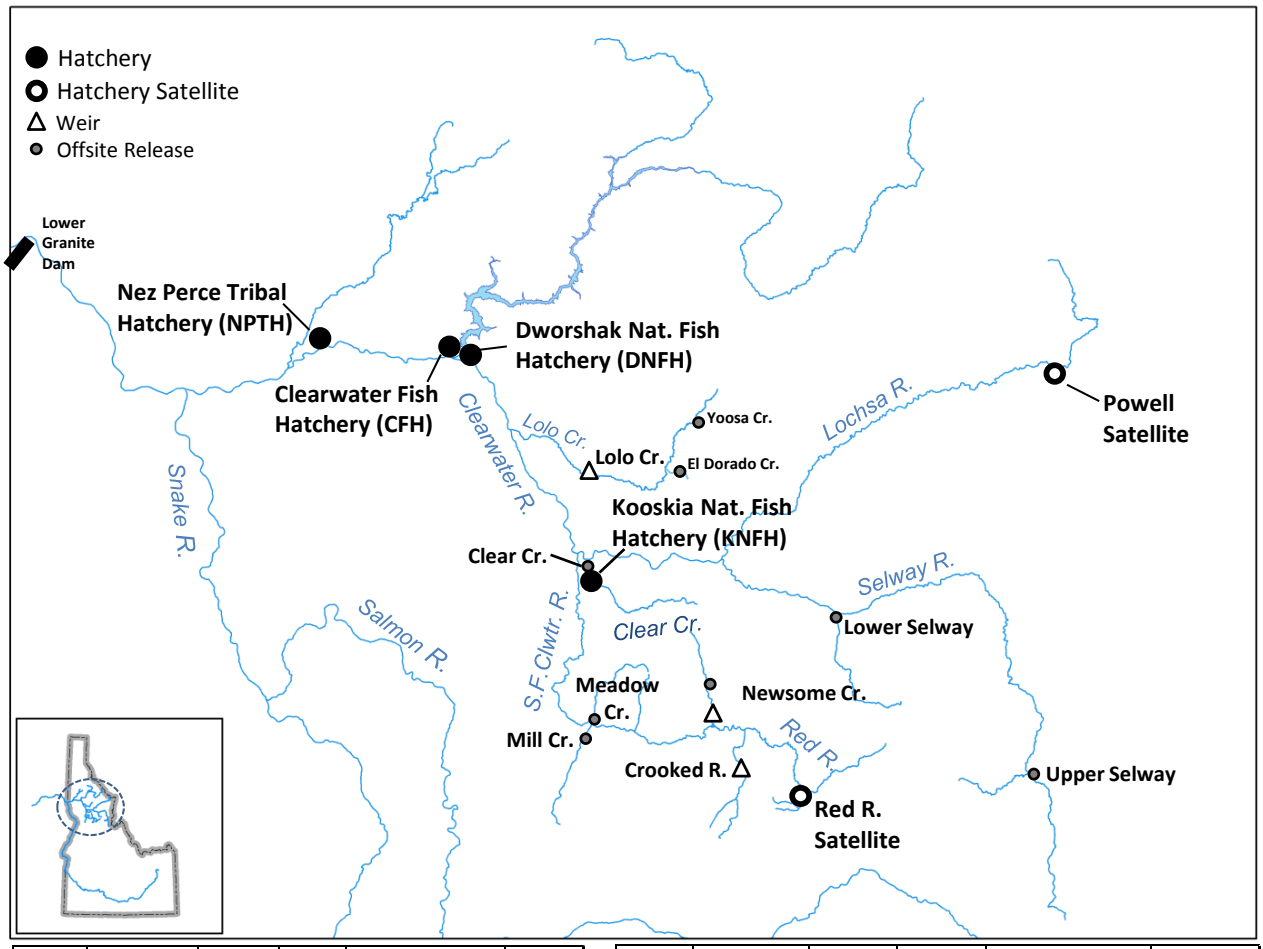
In addition to harvest mitigation, a portion (approximately 18.5% at 2014 production levels) of the combined Chinook Salmon hatchery mitigation production from DNFH, CFH, KNFH and NPTHC is intended to supplement natural spawning in portions of the Clearwater drainage . Fish intended for supplementation are released with adipose fins intact and are not intended to contribute to mark-selective fisheries. Collaboratively managed hatchery production and supplementation efforts associated with this program are consistent with the intent and protocols of the 2008-2017 US vs. Oregon Management Agreement.

Original natural populations of spring/summer Chinook Salmon in the Clearwater drainage were extirpated after the construction of Lewiston Dam in 1927. The dam was removed in 1973 and subsequent hatchery production of spring/summer Chinook Salmon in the basin was sourced from the original Hells Canyon spring run population that was also the brood source for the hatchery Program at Rapid River Hatchery in the Salmon River drainage. However, based on historic evidence, the original natural population in the Clearwater River may have had a run timing resembling that of summer run populations in the South Fork Salmon River drainage. Based on that information and a desire to diversify fisheries in the Clearwater drainage, managers initiated a relatively small 200,000 smolt summer Chinook Salmon hatchery mitigation program at the CFH beginning in BY 2009. The program replaced a comparable segment of Spring Chinook Salmon production from CFH and the original brood for the program was sourced from the hatchery returns of summer Chinook Salmon to the South Fork of the Salmon River. The original BY 09 summer run smolts were released in 2011 at Crooked River but conversions of adult returns to that trap location were poor so releases were relocated to the Powell satellite facility on the upper Lochsa River in 2014 (BY 2012). The intent is to build a program of between 600,000 to 1,000,000 smolt releases with all brood being collected from adult returns to the Clearwater Basin.

*The combined spring/summer Chinook Salmon programs in the Clearwater drainage now have broodstock needs that total about 5,748 adult Chinook Salmon trapped, specifically, 2,628 for DNFH, 718 for KNFH, 478 for NPTHC, 1,498 for CFH spring Chinook Salmon , and 426 for CFH summer Chinook Salmon (**Appendix Table 1**).*

All spring and summer Chinook Salmon broodstock are screened for Bacterial Kidney Disease (BKD) using ELISA techniques. Generally, eggs from females with optical densities

(OD) over 0.25 are culled. In the event of low adult returns with anticipated egg numbers below program goals or policy requests, hatcheries may consider rearing Chinook Salmon eggs from females with ELISA optical densities between 0.25 and 0.60 that would normally be culled. The number of these higher-ELISA progeny to be raised will be limited by the availability of sufficient rearing space to maintain low density indices and biosecurity (segregation and other measures) appropriate for rearing fish from high-titer brood. The fish will be closely monitored for BKD and antibiotic treatments used if warranted. This decision to raise fish from high ELISA-titer brood will be made prior to spawning each year. ***Marilyn Blair/David Burbank***



Hatchery Program	Run/ Life Stage	Brood Collection Site	Rearing Facility	Release Site	BY 2015 Parr/ Pre-smolt Release Goals in 2016
DNFH	SpCS/Parr	DNFH	DNFH	Selway River-Upper	300,000
Total					300,000
NPTHC	SpCS/Pre-Smolt	NPTHC	NPTH	Newsome Cr (SF Clw)	75,000
	SpCS/Pre-Smolt	NPTHC		Lolo Cr (SF Clw)	150,000
	SpCS/Parr	NPTHC		Meadow Cr (Selway)	400,000
Total					625,000
Grand Total					925,000

Hatchery Program	Run/ Life Stage	Rearing Facility	Prefered Brood Collection Site	Release Site	BY 2016 Parr/Pre-Smolt Release Goal for 2017
DNFH	SpCS/Parr	DNFH	DNFH	Selway River-Upper	300,000
Total					300,000
NPTHC	SpCS/Pre-Smolt	NPTH	NPTH	Newsome Cr. (SF Clw)	75,000
	SpCS/Pre-Smolt			Lolo Cr. (Clearwater R.)	150,000
	SpCS/Parr			Meadow Cr. (Selway)	400,000
Total					625,000
Grand Total					925,000

Hatchery Program	Run	Brood Collection Site	Rearing Facility	Release Site	BY 2015 Smolts Release Goals for 2017
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,650,000
Totals					1,650,000
KFH	SpCS	KFH	KFH	Kooskia NFH	600,000
Totals					600,000
NPTHC	SpCS	DNFH	NPTHC	NPTHC	200,000
				Lolo Creek	200,000
Totals					200,000
CFH	SpCS	Red R.	CFH	Red River	1,100,000
		DNFH		NF Clearwater (CFH)	400,000
		DNFH		Selway River-Lower	400,000
		DNFH		Clear Creek	635,000
	CFH SpCS Subtotal 3				2,535,000
	SuCS	Pow/SFSR	CFH	Powell Pond	600,000
Totals					3,135,000
Grand Totals					5,585,000

Hatchery Program	Run	Rearing Facility	Prefered Brood Collection Site	Release Site	BY 2016 Smolt Release Goal in 2018
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,650,000
DNFH Total					1,650,000
KFH	SpCS	KNFH	KFN/DNFH	Kooskia NFH	600,000
KFH Total					600,000
NPTHC	SpCS	NPTH	DNFH	NPTH	200,000
				Lolo Creek	200,000
NPTHC Total					400,000
CFH	SpCS	CFH	Red R.	Red River	1,100,000
			DNFH	NF Clearwater (CFH)	400,000
			DNFH	Selway River-Lower	400,000
			KFH/DNFH	Clear Creek	635,000
			CFH SpCS Subtotal		2,535,000
	SuCS	CFH	Pow/SFSR	Powell Pond	600,000
CFH Total					5,670,000
Grand Total					8,320,000

Figure 4. Map showing sp/su Chinook Salmon trapping sites, hatchery facilities, release sites in the Clearwater Basin and a table with typical current smolt production and releases by program, hatchery and release site.

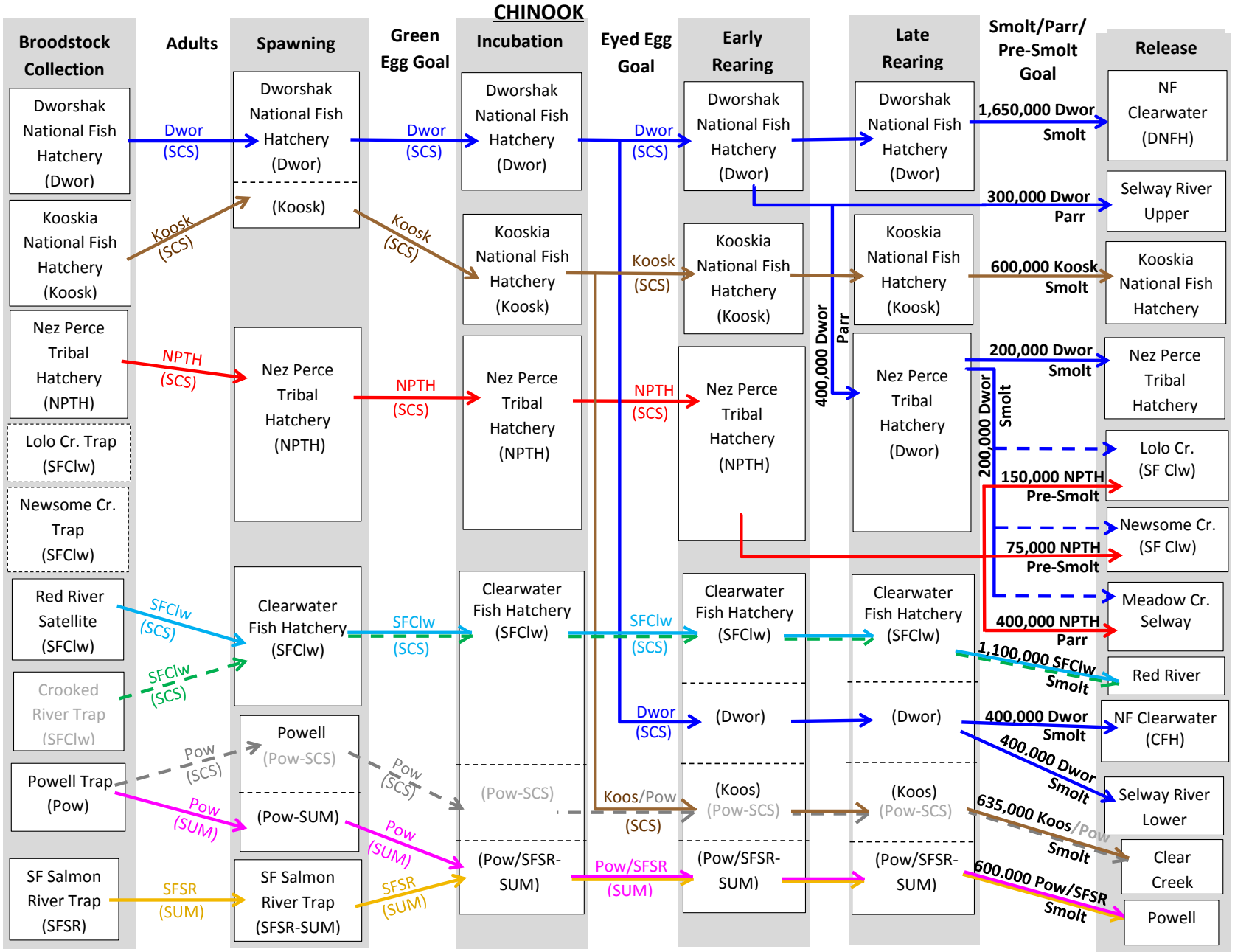


Figure 5. Flow chart of hatchery sp/sum Chinook Salmon production in the Clearwater Basin showing broodstock sources, movements of gametes and releases juvenile fish.

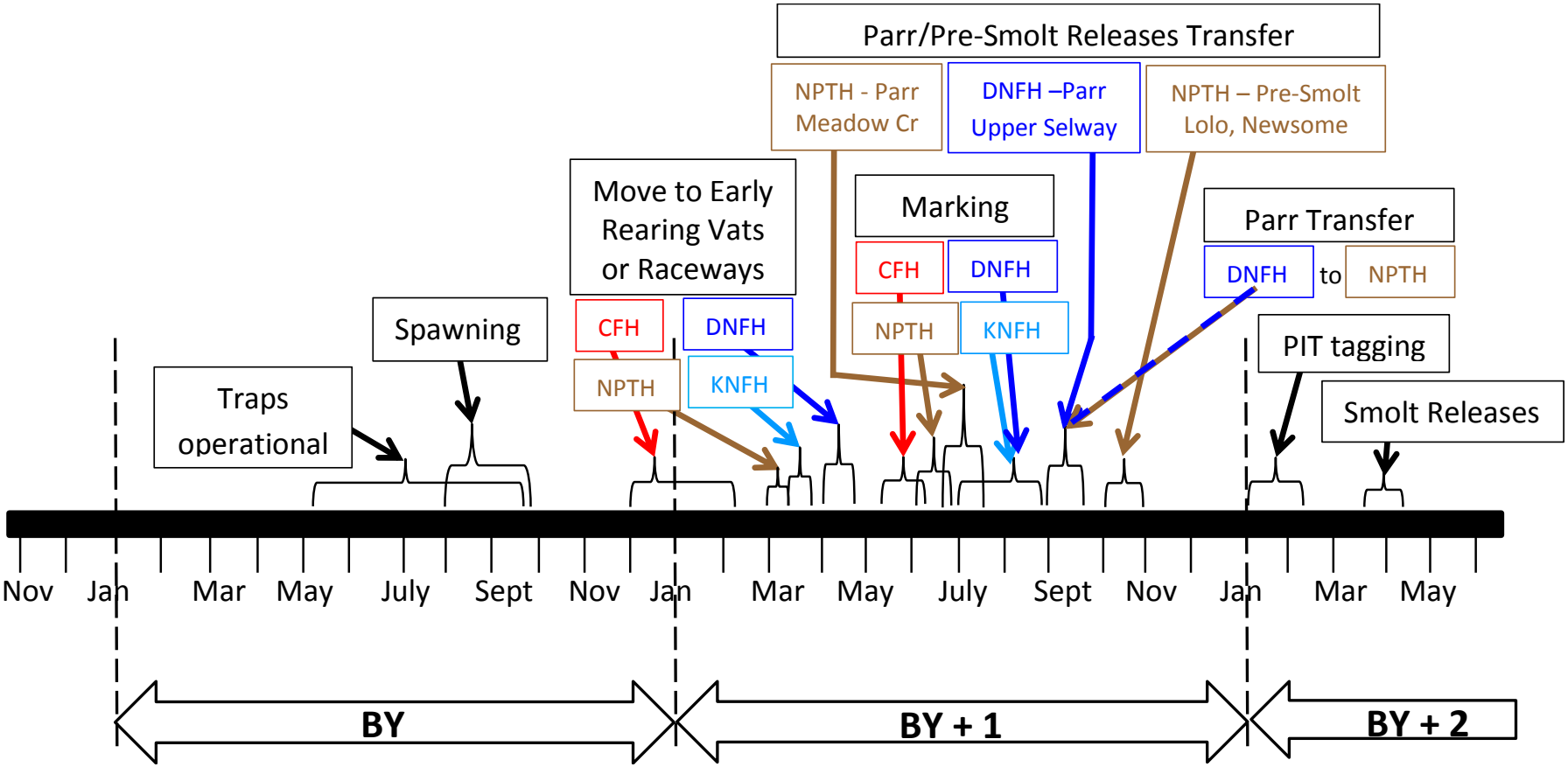


Figure 6. Timeline for hatchery production and releases of sp/Su Chinook Salmon in the Clearwater Basin.

2.1. Brood Year 2014 Spring Chinook

2.1.1. **DNFH**

2.1.1.1. Production status

On January 1, 2016 there were approximately 1,506,740 BY14 spring Chinook averaging 36.5 fpp and 115 mm total length on station. At present, these fish are on target to meet the 20 fpp release goal (**Table 2.1a**). ***Jeremy Sommer/ Casey Mitchell//Ray Jones***

2.1.1.2. Projected release/ marking and tagging status

All smolts released are adipose fin clipped and approximately 120,000 DNFH stock were marked with CWT for system contribution monitoring. (**Table 2.1b**). In late March or early April 2016, approximately 1,500,713 spring Chinook will be forced released from raceways. (**Table 2.1a**). Chinook will be released on two consecutive evenings from A and B banks with a number of environmental factors considered: flows, turbidity, and an increasing hydrograph to maximize survival during release and outmigration. ***Jeremy Sommer/ Casey Mitchell / Ray Jones***

2.1.1.3. Fish health

61.9% of the adult SCS sampled were positive for IHNV. In July, SCS juveniles in Dworshak raceway A9 were detected positive for IHN (Infectious Hematopoietic Necrosis) virus. Monthly monitoring samples for BKD are currently being taken. A pre-release exam of 60 fish will be sampled for viral and bacterial pathogens prior to release. ***Marilyn Blair.***

2.1.1.4. Juvenile monitoring and evaluation - M&E

Five hundred CWT'd fish from a single coded-wire tag group will be checked for tag retention (BY 15 = TBD) pre-release.

2.1.1.5. Research

A rearing density study is underway in the B-Bank raceways to compare adult returns from rearing density groups of 45,000 and 65,000 smolts per raceway using parental based tagging. This is the third year-class that will be part of this evaluation. ***Casey Mitchell/Carrie Bretz / Ray Jones/John Hook.***

2.1.1.6. Requests

Forty-two thousand DNFH spring Chinook salmon are PIT tagged by the FWS Columbia River Fisheries Program Office (Vancouver) for DNFH's contribution to the Comparative Survival Study (CSS). ***Casey Mitchell/ Carrie Bretz.***

2.1.2. **KNFH**

*The BY 14 smolt release goal for Kooskia Hatchery in 2016 is 600,000 (**Table 2.1a**)*

2.1.2.1. Production status

As of December 31,2015 there are 660,472 KNFH stock spring Chinook fry at KNFH weighing 18,653 lbs., 4.55 inches or 116 mm long, at 35.4 fish/lb. (fpp). The Burrows ponds were put on Clear Creek water late this year due to a water intake project, November 6, 2015 (**Table 2.1a**). Chinook will be split from Burrow's ponds to raceways in February, 2016 if densities warrant. ***Kent Hills***

2.1.2.2. Projected release/ marking and tagging status

The BY 14 smolt inventory at the end of December 2015 included approximately 55,000 smolts with adipose fins intact, 660,500 smolts that are adipose fin clipped and of the latter, approximately 110,000 that are marked with CWT for system contribution monitoring (**Table 2.1b**). Eight thousand Chinook will be PIT tagged for the 2016 release for juvenile and adult monitoring. These 8K PIT tags are combined with PIT tags inserted by IDFG into the CFH smolt releases at Clear Creek to evaluate juvenile survival, run timing and adult returns. Most of these PIT tags will be requested to be handled in a monitoring mode at the dams with the remaining in the default return to river mode. PIT tag IDs will be supplied to the IDFG, so that they may submit the Separation by Code request for the combined KNFH and CFH release groups. KNFH will direct release an estimated total of 660,190 Spring Chinook at 24 fpp in early March (**Table 2.1a**). All burrows ponds will be released to make room for an added 600,000 smolts that will be transported by the CFH to KNFH for a two week acclimation and subsequent release into Clear Creek. This is an effort to decrease the high stray rate to DNFH of the adults and enhance fishing opportunities above the North Fork. The remaining fish will be released the last week in March. ***Kent Hills***

2.1.2.3. Juvenile fish health

82.8% of adult SCS sampled were positive for IHNV. BY14 SCS have done well to date. Monthly monitoring samples for BKD are currently being taken. A sample of 60 fish will be taken and assayed for virus and bacteria prior to release. ***Marilyn Blair***

2.1.2.4. Juvenile monitoring and evaluation

(**Table 2.1b**). Prior to release, 500 marked fish from each mark group (tag code) are checked for tag retention (BY 15 = TBD). ***Carrie Bretz***

2.1.3. **CFH**

*The BY 14 smolt release goals for Clearwater Hatchery in 2016 are summarized by release site in **Table 2.1a** and the clipped and tagged components of the releases are summarized in **Table 2.1b**.*

2.1.3.1. Production status

A total of approximately 3,349,000 BY14 spring Chinook smolts at about 16 fish per pound will be distributed among five release locations (**Table 2.1a**) from mid-March to early April.

2.1.3.2. Projected release/ marking and tagging status

The final release numbers for both spring and summer Chinook Salmon is determined by subtracting monthly fish loss from the inventory at the time of Ad clipping until the date of release. Release among the five release sites are as follows (**Figure 4**):

- **Red River** - The acclimation pond will be watered up by the third week of March. Fish will be transported to Red River and placed in the acclimation ponds during the last week of March to first week of April, release adjustment will be made depending on ice conditions. At Red River non-acclimated smolts will be released directly from the pond daily at sunset. IDFG Anadromous Hatchery M&E Biologist Brian Leth recommended that we hold smolts in ponds as long as the Hatchery Manager was comfortable for the fish to be safe and then release the same day.
- ***North Fork Clearwater*** - Fish will be directly released into the North Fork from the raceways using an electric fish pump. Being a new release, it is estimated to take 2 days for the release. The first week in April is the estimated release date .
- ***Lower Selway*** - During the last week of March the NPT will help transport approximately 190,000 smolts in NPT tankers to the Selway River for release near the mouth of Meadow Creek. Selway transport should be coordinated with Aaron Penney.
- ***Clear Creek*** - Fish will be transported to KNFH and placed in acclimation ponds mid-March, depending on the release of KNFH smolts. KNFH has the ability to acclimate 600,000 smolts for up to 14days depending on weather/river conditions. CFH will assist in the release of the acclimated fish. Any overage of this amount will be direct released at the KNFH weir with non-PIT tagged fish being prioritized for the direct release. Clear Creek transport and releases will be coordinated with Kent Hills.
- ***Mill Creek***- In an effort to fill empty rearing space caused by a shortage of summer Chinook Salmon, BY2014 spring Chinook Salmon were produced to be released as smolts in 2016 in Mill Creek, a tributary to the South Fork Clearwater River. This release site was selected to evaluate the potential for increasing juvenile survival in the SFCW, since the survival of smolts released at Red River

regularly experience juvenile survival rates to LGR that are 10-20% lower than other smolt releases in the Clearwater River basin. This was a one-time release due to the empty rearing space at CFH.

- ***Selway River*** - During the last week of March the NPT will help transport approximately 190,000 smolts to the Selway River for release near the mouth of Meadow Creek. Selway transport should be coordinated with Aaron Penney and Clear Creek release coordinated with Kent Hills.

Approximately 237,200 BY14 Summer Chinook smolts are to be released on March 21 and 22 at the Powell facility on Walton Creek near the confluence with the Lochsa River (**Figure 4**). At the time of release smolts are expected to be about 16 fpp (**Table 2.1a)**. Fish will be transported to Powell pond for acclimation during last week of March. The duration of acclimation and timing of release will be adjusted depending on ice conditions.. ***Malia Gallagher*/*Tony Folsom***

In February of 2016, 61,800 spring Chinook salmon and 25,500 summer Chinook Salmon will be PIT tagged to evaluate juvenile migration timing and survival from release to Lower Granite Dam for each release group (**Table 2.1b**). PIT tagged fish in each release group will also be used to estimate an adult escapement back to Lower Granite Dam from each of the four major smolt release groups as well as to provide a tool for in-season harvest management. Among the five spring Chinook releases, the groups destined to Red River, North Fork Clearwater, and the Lower Selway sites each received 17,100 PIT tags, the Clear Creek group received 9,500 and the Mill Creek group received 1,000 (**Table 2.1b**). The Mill Creek group was an unscheduled one time only release and only received enough tags to estimate survival of the group to LGR as juvenile out-migrants. Similar to the steelhead PIT tagging, this is a cooperative effort with the CSS study to evaluate transport and in-river SARs so PIT tags are separated by code with the majority of the tags representing the run-at-large and a smaller portion being default returned to the river during outmigration. PIT tags are representatively distributed across release groups. In-ladder PIT tag arrays will be operated in the Red River trap, enabling researchers to estimate corrected PIT tag ratios in returning adult Chinook salmon returning to those that facility. ***Chris Sullivan***

2.1.3.3. Juvenile fish health

All female broodstock were tested by ELISA for Bacterial Kidney Disease (BKD). All eggs from females with an ELISA value of 0.25 OD or higher were culled. A total of 90 ovarian fluid/kidney/spleen samples for each stock were taken to look for viral replicating agents. No eggs were culled as a result of IHN positive samples. A total of 20 head wedge samples were taken to monitor for whirling disease, no positive samples were identified. Juvenile fish were inspected on a quarterly basis with no pathogens being detected. Pre-liberation disease samples will be conducted on 60 fish per stock prior to release. To date, no diagnostic

exams have been conducted and no treatments applied to any BY 14 Chinook at CFH.

- *Powell Spring Chinook Broodstock BY 14*: IHNV was detected in 0/90 (0%). ELISA sampling detected 26 Highs (7.5%) out of 347 fish sampled. Eggs from the females with high ELISA values (>0.25) were culled from the CFH Chinook salmon program.
- *S. F. Clearwater Spring Chinook Broodstock BY 14*: IHNV was detected in 0/90 (0%) of ovarian fluid samples. ELISA sampling detected 35 Highs (5.5%), out of the 633 females sampled. Eggs from females with high ELISA values (>0.25) were culled from the CFH Chinook salmon program. ***David Burbank***

2.1.3.4. Juvenile monitoring and evaluation

The fish are sampled monthly between the 25th and 28th of the month. During months of rapid growth, fish are sampled biweekly. Pound counts are taken to track fish growth and monitor if growth is following the annual growth projections. Length frequencies are taken three times during the final rearing cycle; during marking as fish are moved outside, at the end of October, and two weeks prior to out-planting. Seven weeks after marking and just prior to release 300 fish are sampled to quality check Ad clips and CWT retention.

2.1.4. **NPTHC**

2.1.4.1. Production status

- On Station - As of December 1, 2015, there were 190,990 BY14 spring Chinook averaging 46 fpp on station at NPTHC (**Table 2.1a**). These fish were transferred from DNFH in September 2015, where they were spawned and early reared prior to transfer. Target size at release is 20 fpp. Mortalities have been normal to date. ***Aaron Penney***
- Lolo Creek - As of December 1, 2015, there were 197,291 BY14 spring Chinook averaging 46 fpp on station at NPTHC (**Table 2.1a**). These fish were transferred from DNFH in September 2015, where they were spawned and early reared prior to transfer. Target size at release is 20 fpp. Mortalities have been normal to date. ***Aaron Penney***

2.1.4.2. Projected release/ marking and tagging status

- On Station- Prior to transfer and per the U.S. vs. Oregon Management Agreement, two-thirds of these fish were CWT'd only and the other one-third were CWT'd and adipose fin clipped (**Table 2.1b**). Coded wire tagging and adipose fin-clipping occurs at DNFH by USFWS during early rearing. Tags are provided by the NPT. Up to 600 fish

will be PIT tagged by NPTHC monitoring and evaluation staff prior to release for SURPH survival to LGR.. For 2016, a release of approximately 200,000 fish at 20 fpp (22.7 g) is planned **(Table 2.1a)**. The smolts will be released directly from the S-Channels into the Clearwater River volitionally from April 1 – 8, with the remainder forced out on April 8, 2016. One week prior to release, NPTHC staff will take lengths and weights on up to 200 fish. ***Aaron Penney***

- Lolo Creek - For 2016, a release of approximately 200,000 fish at 20 fpp (22.7 g) is planned **(Table 2.1a)**. Prior to transfer and per the U.S. vs. Oregon Management Agreement, 122,960 are adipose clipped only with 74,331 adipose clipped and CWT's (**Table 2.1b**). Tagging and clipping occurs at DNFH by USFWS during early rearing. Coded Wire Tags are provided by the NPT. Up to 1,000 fish will be PIT tagged by NPTHC M&E staff prior to release for SURPH survival to LGR. PIT Tags will be provided by NPT Sherman Sprague/Justin Bretz/Mike Kosinski. The smolts will be transported by NPTH and released directly into Lolo Creek. Release will be in conjunction with steelhead out-plants sometime during April 2016. One week prior to release, NPTHC staff will take lengths and weights on up to 200 fish. ***Aaron Penney***

2.1.4.3. Fish health

- On Stations - To date, no fish health issues have been discovered within this production group. A pre-release fish health exam consisting of sixty fish is conducted by the IFHC at least three weeks prior to release. Bacteriology, virology and parasitic assays will be performed. Fish may be released early or with a shortened or no volitional release period if fish health, stream conditions or other environmental factors warrant an immediate release. In the event of an early release, the pre-release fish health exam will be completed as soon as possible. ***Marilyn Blair***
- Lolo Creek - To date, no fish health issues have been discovered within this conducted by the IFHC at least three weeks prior to release. Bacteriology, virology and parasitic assays will be performed. Fish may be released early or with a shortened or no volitional release period if fish health, stream conditions or other environmental factors warrant an immediate release. In the event of an early release, the pre-release fish health exam will be completed as soon as possible. ***Marilyn Blair***

2.1.4.4. Juvenile fish monitoring and evaluation

2.2. Brood Year 2015 Spring Chinook

2.2.1. **DNFH**

2.2.1.1. Production status

As of January 1, 2016, there were approximately 2.47 million DNFH stock eggs/sac-fry incubating at DNFH which are intended for the onsite smolt release at DNFH in 2017(**Table 2.2b**) and NPT parr/pre-smolt releases in the upper Selway River and the Meadow Creek sites in the Lower Selway (**Table 2.2d**). In the spring of 2016, SCS fry at DNFH will be transferred directly from the egg trays into the A & B banks of the outside raceways. Raceways will be ponded with either 45,000 or 65,000 juveniles (100 fpp) at marking in August 2016. Dworshak is also continuing the Selway parr program of 300,000 parr and 400,000 pre smolt transfers to NPTHC. ***Jeremy Sommer***.

2.2.1.2. Nursery Rearing

NA (swim-up fry moved directly to raceways)

2.2.1.3. Outside Rearing

Swim-up fry will be ponded directly into raceways in late April. Fish will stay in their initial raceways until marking in mid-August. At marking, fish will be moved to their final raceways at final densities. This year we will be replacing the grip strut walkways on the raceways. In order to accommodate the installation, typical early ponding scenarios may be modified. Parr transfers to NPTHC will be completed by September 2nd, and Selway releases by September 16th. ***Jeremy Sommer***

2.2.1.4. Projected Releases/planned marking and tagging

DNFH will be direct releasing 1.65 million smolts into the North Fork Clearwater in the spring of 2017 (Table 2.2b). Some of the production of this brood years juveniles was derived from excess Kooskia stock adults. Kooskia NFH had collected extra adults for the Lyon's Ferry extra production program which was subsequently cancelled. The progeny of these fish will be utilized for up-river programs including all of the Selway program and some of the NPTHC Lolo group.

Approximately 120,000 DNFH stock destined to be released as smolts in 2017 will be CWT in August, 2016 for contribution monitoring (**Table 2.2c)**. All rearing will utilize Parental Based Tagging along with ad-clips and CWT to evaluate adult returns. Juveniles in excess of maximum rearing densities will remain unclipped and will be released as part of the Selway parr program in September 2016. Tagging plans also include 42,000 PIT tags for the Comparative Survival Study (CSS) (**Table 2.2c**). The CSS is looking at adult survival of transported vs. non-transported and upriver vs. downriver releases. ***Jeremy Sommer/ Carrie Bretz.***

The 300,000 Selway parr program will be released in September 2016 once the fish have reached approximately 100 fpp (**Tables 2.2a**). These parr will be transported by Mike Key with NPT transport trucks. The two 200,000 pre smolt transfers to NPTH will occur by September 2nd, 2016. ***Jeremy Sommer***

2.2.1.5. Juvenile fish health

Adult IHNV prevalence was 74.3%. Eggs from fourteen females were recommended to be culled due to ELISA O.D. levels above the 0.250 cut off level. BY15 has experienced no fish health problems to date. These fish will be monitored monthly and 60 fish will be sampled prior to release. ***Marilyn Blair***

2.2.1.6. Juvenile monitoring and evaluation

The juvenile portion of the density study, to determine optimal densities to maximize adult returns, is now complete. Adult collection data will continue to be analyzed through 2019. ***Jeremy Sommer/Ray Jones/Carrie Bretz***

2.2.1.7. Communication

FWS puts out weekly spawning reports and weekly return reports, monthly production activity reports, and annual spawning and adult return reports are also produced.

2.2.2. **KNFH**

2.2.2.1. Production status

By mid-December the majority of the estimates 830,132 eyed eggs on station (**Table 2.2b)** were hatched out. As of Jan. 1 the inventory is 782,217 **(Table 2.2c**). ***Kent Hills***

2.2.2.2. Nursery Rearing

Fry will be transported from the Heath Trays to the outside nursery on approximately March 9, depending on development (**Figure 6**). Fry will be started on feed at that time. Daily mortalities will be counted and subtracted from inventory. Monthly pathology fish health will be performed by the Idaho Fish Health Lab.

2.2.2.3. Outside Rearing

On approximately June 6, fry will be pumped into the Burrows Ponds at 110,000 per pond for final rearing.

2.2.2.4. Projected releases/planned marking and tagging

Genetic samples are collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see **Appendix 2** for detail). Current plans are to CWT approximately 110,000 in August, 2016 for

contribution (**Table 2.2c**) and 8,000 KNFH smolts will receive PIT tags in January, 2017. At least 50,000 Chinook will not be AD clipped as per the US v Oregon agreement, all others will be AD clipped in July-August, 2016. Genetic samples are collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see **Appendix 2** for detail).***Carrie Bretz***

2.2.2.5. Juvenile fish health status

Adult IHNV prevalence was 80.6%. Eggs from 18 females were recommended to be culled due to ELISA O.D. values above the 0.250 cut off level. BY15 has experienced no fish health problems to date. These fish will be monitored monthly and 60 fish will be sampled prior to release. ***Marilyn Blair***

2.2.2.6. Juvenile fish monitoring and evaluation

Prior to release 500 marked fish from each mark group (tag code) are checked for tag retention (BY 15 = TBD). ***Carrie Bretz***

2.2.3. **CFH**

2.2.3.1. Production status

As of January 7, 2016 approximately 4,182,661 spring Chinook Salmon fry and 937,135 summer Chinook Salmon fry or rearing at CFH. Based on average rearing survival over the last five years the spring Chinook and summer Salmon inventories exceed those required to achieve smolt release goals by approximately 963,777 and 169.086 fry respectively (**Tables 2.2a and 2.2b**). Co-managers decided to rear the excess summer Chinook salmon to full term smolts by utilizing rearing space originally slotted for spring Chinook Salmon. They also determined that all of the spring chinook production plus a very small portion of the 963,777 excess spring Chinook salmon could also be reared to full term smolts by spreading them equally across the remaining spring Chinook raceways without exceeding loading density protocols. The balance of the excess spring Chinook Salmon fry were released at sites in the South Fork Clearwater and the Lower Selway in mid-January 2016 (**Table 2.2a**) ***Malia Gallagher/Tony Folsom***

2.2.3.2. Nursery rearing

Once the fry are buttoned up, they are ponded in the 60 indoor vats and remain there until they are approximately 120 fish per pound. Each vat is loaded with approximately 65k swim-up fry.

2.2.3.3. Outside rearing

When the fry reach approximately 120 fish per pound, they are run through the marking trailer and then into either the 10 steelhead bank

raceways or into the 22 chinook bank raceways for final rearing. The NF Clearwater fish that are destined to be reared in the adult holding ponds are placed in the 200 foot sections on the North Bridge raceways and then pumped to the 4 adult holding ponds once all adults are removed and the ponds thoroughly disinfected.

2.2.3.4. Estimated numbers/planned marking & tagging

All releases scheduled for Red River are adipose fin-clipped. Red River acclimation pond will be watered up and screens put in place by the third week of March each year . Fish will be transported to Red River and KNFH facility and placed in the acclimation ponds during the last week of March to first week of April. Release adjustment will be made depending on ice conditions. At Red River non-acclimated smolts will be released directly from the ponds daily at sunset. Brian Leth recommended that we hold smolts in ponds as long as the Hatchery Manager was comfortable for the fish to be safe and then release the same day. The Selway release group is a combination transport effort between CFH and NPT. The newly added North Fork release will be a direct release from CFH into the North Fork. ***Malia Gallagher/Tony Folsom***

In February or March 2017, approximately 55,800 spring Chinook salmon (pending CSS funding) will be PIT tagged to evaluate juvenile migration timing and survival from release to Lower Granite Dam for each release group and to estimate an adult escapement back to Lower Granite Dam from each of the four major smolt release groups as well as to provide a tool for in-season fisheries management **(Table 2.2c)**. Genetic samples were collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline. (see **Appendix 2** for detail). ***Chris Sullivan***

2.2.3.5. Fish health status

All female broodstock were tested by ELISA for Bacterial Kidney Disease (BKD). All eggs from females with an ELISA value of 0.25 OD or higher were culled. A total of 90 ovarian fluid/kidney/spleen samples for each stock were taken to look for viral replicating agents. No eggs were culled as a result of IHN positive samples. A total of 20 head wedge samples were taken to monitor for whirling disease, no positive samples were identified. Juveniles are inspected for disease on a quarterly basis.

- Brood Year 2015 Powell Spring Chinook Broodstock: IHNV was detected in 0/90 (0%) females sampled. ELISA sampling detected 3 Highs (1.2%) out of 250 fish sampled. Eggs from females with high ELISA values (>0.25 OD) were culled from the CFH Chinook salmon program.
- Brood Year 2015 S. F. Clearwater Spring Chinook Broodstock: IHNV was detected in 7/19 ovarian fluid or kidney/spleen pools. ELISA sampling detected 15 Highs (1.7%), out of the 851 females

sampled. Eggs from females with high ELISA values (>0.25 OD) were culled from the CFH Chinook salmon program.

Pre-liberation disease samples will be conducted on 60 fish per stock prior to release. Diagnostic testing will be performed by Eagle Fish Health Lab upon request. ***David Burbank***

2.2.3.6. Juvenile fish monitoring and evaluation

The fish are sampled monthly between the 25th and 28th of the month. During months of rapid growth, fish are sampled biweekly. Pound counts are taken to track fish growth and monitor if growth is following the annual growth projections. Length frequencies are taken three times during the final rearing cycle; during marking as fish are moved outside, at the end of October, and two weeks prior to out-planting. Seven weeks after marking and just prior to release 300 fish are sampled to quality check Ad clips and CWT retention. ***Chris Sullivan***

2.2.3.7. Communication

2.2.4. **NPTHC**

2.2.4.1. Production status –

- Parr and pre-smolt program- As of December 31, 2015 there are 646,464 BY 15 sac-fry on hand at NPTHC (**Table 2.2a**) to meet production goals listed in **Table 2.2a)**
  - 150,000 pre-smolts (acclimated) into Yoosa/Camp/Lolo Creek in October.
  - 75,000 pre-smolts (acclimated) into Newsome Creek in October.
  - 400,000 parr (direct stream) into Meadow Creek (Selway) in June or early July.
- Smolt program -
  - The NPT will transfer 200,000 Clearwater stock BY 2015 spring Chinook from DNFH to NPTHC during early September 2016 and reared in one of the NATURES S-channels until late-March or early-April 2017 and released at approximately 20 fpp on an station release (section 2.2.1.1).
  - The NPT will transfer an additional 200,000 Clearwater stock BY 2015 spring Chinook from DNFH to NPTHC during early September 2016 for on subsequent release in Lolo Creek as smolts in 2017. These fish will also be reared in one of the NATURES S-channels until late-March or early-April 2017 and released at approximately 20 fpp.

2.2.4.2. Nursery rearing -

2.2.4.3. Outside rearing

2.2.4.4. Projected releases/planned marking & tagging

NPTHC will release the 400,000 parr in late June or early July by truck directly into Meadow Creek at "Slims Camp." The NPT will transfer 200,000 BY 2015 Clearwater stock spring Chinook from DNFH to NPTHC during early September 2016 for Lolo Creek release at 20 fpp (section 2.2.1.1). NPT will also transfer approximately 200,000 BY 2015 Clearwater stock from DNFH to NPTH during early September 2016 to be reared until mid to late April 2017 and released at NPTHC at approximately 20 fpp.

PBT samples are taken from all adults used as broodstock, for use in determining origin of returning fish in future years. Fish destined for release from acclimation facilities (Yoosa/Camp Creek and Newsome Creek programs) will also be 100% marked (CWT) at approximately 160 fish per pound (2.52 g) at either NPTHC or Sweetwater Springs (**Table 2.2d**). Meadow Creek parr releases will not be CWT'd, since no returning adults are trapped and carcass recoveries are minimal.

The Newsome Creek fish will be transferred to Sweetwater Springs in mid-June to reduce densities at NPTHC. They are then transferred to the Newsome Creek AF in early September for acclimation and final rearing.

Lolo Creek fish will be transferred to Sweetwater Springs in mid-June to reduce densities at NPTHC. They are then transferred to Yoosa/Camp AF for acclimation and final rearing.

2.2.4.5. Acclimation facility operations/release –

- Yoosa/Camp – Transfer of the fish will occur in early September (when stream temperatures cool). Prior to release, 6,000 fish will be tagged with a PIT tag. Volitional release will begin on approximately October 1, with all fish forced out by October 12, 2016. Target size at release is 34 fish per pound (13.3 g) **(Table 2.2b)**.
- Newsome Creek – Transfer of fish will occur in early September (when water temperatures cool). Prior to release, 3,000 fish will receive a PIT tag. Volitional release will begin on approximately October 1, with all remaining fish forced out by October 12, 2016. Target size at release is 29 fish per pound (15.6 g) **(Table 2.2b)**.
- Meadow Creek – Up to 400,000 parr will be direct stream released into Meadow Creek in 2016. Prior to release, 5,000 fish reared at NPTHC will receive a PIT tag. Fish will be transported and direct stream released into Meadow Creek at "Slims Camp". Target size at release is 117 fish per pound (3.9 grams) **(Table 2.2a.)**.

The 200,000 DNFH/NPTHC on station fish will be 100% CWT'd (66,667 Adipose Clipped and CWT'd and 600 PIT tagged) and will be volitionally released as smolts into Clearwater River in the spring of 2017 (**Table 2.2c**). Marking and tagging conducted by NPT (Drew Wickard), CWT and PIT tags purchased by NPTH M&E

The 200,000 DNFH/Lolo Creek fish will be 100% ad clipped (60,000 CWT and 1,000 PIT tagged) and will be direct released as smolts into Lolo Creek in the spring of 2017 (**Table 2.2c**). Marking and tagging conducted by USFWS, CWT and PIT tags purchased by LSRCP ***Aaron Penney / Carl East***

2.2.4.6. Fish health status

54.0% of the BY 15 broodstock fish sampled were positive for IHNV. Eggs from 51 females were culled to bring all eggs to the status of being from females all under the ELISA O.D. value of .250. ***Marilyn Blair***

2.2.4.7. Juvenile fish monitoring and evaluation -

- Tag retention and delayed mortality – Estimate CWT delayed mortality rates within 5 days of tagging. Estimate CWT retention rates 25-35 days after tagging and just prior to release. Estimate PIT tag retention rates and delayed mortality within 7 - 10 days of tagging.
- PIT survival studies- Estimate smolt survival rates and migration timing (**Table 2.2c)**.
- Downstream migration – Operate rotary screw traps within Lolo and Newsome creeks to monitor movement, timing, condition factors, and population estimates. ***Sherman Sprague***

2.2.4.8. Communication

NPTHC produces monthly production and pathology reports, an annual operation plan and an annual operation report. Fish Research produces weekly weir reports, final weir summary report, spawning ground summary reports, and SURPH survival summary reports. ***Aaron Penney***

2.2.4.9. Remote PIT Tag Array Monitoring and Evaluations

Information can be seen in section 1.1.1.4.

2.3. Brood Year 2016 Spring Chinook

Spring Chinook coordination will begin in the spring of 2016 in advance of trapping season. Weekly conference calls scheduled for Tuesdays and standardized report tables keep all parties updated, informed, and coordinated on in-season run development, harvest estimates, broodstock collection, priorities for excess broodstock, out-planting plans, etc.

2.3.1. **DNFH**

The BY 2016 brood needs from DNFH is 2624 spring Chinook salmon. Only adipose fin clipped hatchery origin fish will be retained for broodstock. These fish will contribute to programs at Dworshak, Clearwater, and Nez Perce Tribal hatcheries. The brood number accounts for pre-spawning mortality and

includes jacks (goal for jacks is less than 5% contribution to production annually). This brood level will provide 4.83 million green eggs and 2.85 million smolts released to meet current US v Oregon production goals. This brood level also provides 300,000 Selway parr, 400,000 pre-smolts for transfer to NPTHC, and 400,000 smolts that will be produced at Clearwater Hatchery. Smolts in excess of 1.35 million are produced specifically toward meeting the LSRCP adult return goal of 9,135 adults to the river above Lower Granite Dam. BY 16 parr , pre-smolt, and smolt releases in 2017, 2017, and 2018 respectively are shown in ***Tables 2.3a and 2.3b*** .

2.3.1.1. Projected adult returns

Based on1-ocean returns last year and ocean conditions during emigration; the forecasted return for 2016 DNFH spring Chinook to the Clearwater River is 5,738 adipose fin clipped adults, sufficient to cover broodstock needs **(Table 2.3c)**. ***Chris Peery***

2.3.1.2. Broodstock acquisition (weir/trap/ladder operation)

Ladder Operation will be optimized to ensure adequate broodstock collection. The co-managers plan to trap as many adipose fin-clipped spring Chinook as necessary to ensure that broodstock needs are met at all Clearwater facilities. DNFH will trap beyond its 1,662 adult broodstock needs at the direction of the co-managers to meet other brood needs for other programs as identified in the broodstock calculator. Assuming returns to Kooskia Hatchery and the CFH Red River satellite are adequate to meet brood goals identified for those trapping locations, Dworshak, on average may be expected to trap approximately 906 additional broodstock for CFH releases in the Selway, the North Fork Clearwater, and Clear Creek.

Co-managers have agreed that the Dworshak will begin operation on June 14 in 2016 and that only fish with an adipose fin clip will be retained for broodstock. All unclipped fish that are trapped will be to the river or outplanted per criteria in section 2.3.1.3. The first fish will not be processed until at least 250 fish have been trapped trapped. Thereafter, if available, between 250 to 350 fish will be processed weekly until August 15 to meet the overall broodstock goal for the Dworshak trap as defined by the co-managers. ***Jeremy Sommer/Chris Peery/ Ray Jones***

2.3.1.3. Adult out-planting / distribution plans

Tables 2.4a and 2.4b list the prearranged streams to receive adult spring Chinook salmon. No outplanting is planned from DNFH, but contingencies are in place if the co-managers direct outplanting to occur. ***Jeremy Sommer/Ray Jones***

2.3.1.4. Carcass disposition

Chinook carcasses will be used by research groups if possible. Any Draxxin injected females would be disposed of at the local landfill. Fish

that have not been injected with antibiotics or hormones and have not been exposed to anesthetics requiring withdrawal periods, may be offered to the Nez Perce Tribe for subsistence programs and the local food bank. This would include, with the AOP partners support, excess jacks and adults collected for coded wire tags. ***Mark Drobish/Jeremy Sommer.***

2.3.1.5. Adult sampling, monitoring and evaluation

Returning adults are measured and examined for gender, various clips and tags, and marks then sorted for spawning or holding. Coded wire tags will be collected. Genetic samples are also collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see Appendix 1 for detail). This year, the BY12 2-Ocean adults and BY 13 one-Ocean adults will provide the adult returns for the rearing density evaluation study. Genetic samples will need to be collected from all the ad-clipped 1-Ocean and 2-Ocean adults during initial inventory. Delaying the sampling until spawning does not insure that all 1-Ocean adults are sampled since all are not included in the broodstock. Discussions are being held with Matt Campbell at the IDFG Genetics Lab on possible ways to sub-sample. ***Carrie Bretz/Chris Sullivan/Ray Jones/Matt Campbell/ Jeremy Sommer***

2.3.1.6. Spawning plans

DNFH will spawn 768 females for its programs and 238 females for KNFH's programs as well as 326 females for CFH programs. Only known hatchery origin fish as evidenced by a clipped adipose fin will be spawned. The number of eggs collected is based on historical adult survival, eye-up percentage, disease rates and smolt survival rates to meet smolt release targets. Broodstock collection is minimized to the extent possible. Eyed eggs may be culled based on disease sampling and by eye-up percentages. ***Jeremy Sommer/Ray Jones***

2.3.1.7. Fish health

Every adult female will be sampled individually for *Renibacterium salmoninarum* (Bacterial Kidney Disease) with the ELISA test. Up to 150 ovarian fluid samples will be sampled for viruses. An additional 60 tissue samples will be taken for virus, bacteria, *Myxobolus cerebralis* and *C. Shasta*. All eggs from females above the .250 ELISA O.D. cut off level will be culled. ***Marilyn Blair***

2.3.1.8. Egg Incubation

All eggs taken for KNFH will be incubated at KNFH. DNFH stock eggs will be incubated at DNFH. All eggs taken for CFH will be incubated at Clearwater Hatchery. ***Jeremy Sommer***/***Kent Hills***

2.3.1.9. Communication

FWS puts out weekly spawning reports and weekly return reports, and annual spawning and adult return reports are also produced. ***Adam Izbicki/Ray Jones***

2.3.2. **KNFH**

A total of 1,044 spring Chinook are needed from KNFH for BY 16 production. Approximately 526 Chinook are needed for broodstock for the KNFH spring Chinook salmon mitigation program. Only hatchery origin fish as evidenced by an adipose fin clipped are to be incorporated into broodstock. The broodstock goal includes jacks and accounts for pre-spawning mortality. This brood level produces 600,000 smolts for the KNFH program at an average 80% eyed egg-to-smolt survival. An additional 192 broodstock are also collected to provide for the IDFG release of 235,000 smolts in Clear Creek.

2.3.2.1. Projected adult returns

The 2016 forecasted return for KNFH spring Chinook to the LGR is 5,574 fish **(Table 2.3c)** and IDFG estimates another 2,735 adults returning from the 2014 release of 800,921 smolts into Clear Creek. Given this prediction it's likely that KNFH will meet broodstock needs. IDFG and the NPT will likely open sport and tribal fisheries in the Middle Fork Clearwater River area in the spring of 2016. This will be updated in-season as dam counts of PIT tagged adults update the estimates. ***Kent Hills, Chris Sullivan***

2.3.2.2. Broodstock acquisition (trap, weir, ladder operation)

Trap will be opened for Chinook collection around the 15th of May until warm water temperatures dictate its closure. Returning adipose fin-clipped adults adults collected for broodstock will be transported to DNFH for holding until spawning. Formalin treatment of adult broodstock from Kooskia will be started immediately at DNFH. ***Carrie Bretz***

2.3.2.3. Adult out-planting / distribution plans

Table 2.4a and 2.4b list the prearranged streams to receive adult spring Chinook salmon. Chinook loaded for adult out-planting will be loaded directly into NPT trucks at KNFH. Out-planting will be coordinated between Mike Key (NPT) and Carrie Bretz (FWS). All adults out-planted from KNFH will receive one right opercula v-notches as shown in **Table 2.4b**. Tribal use of un-anesthetized jacks for the elder program will need to be coordinated prior to adult sorting (NPT contact Nancy McAllaster, 208-621-2126).

2.3.2.4. Adult M&E

Returning adults are measured and examined for gender, various clips, tags, and marks then designated as broodstock or natural release. Coded wire tags will be recovered. Genetic samples are also collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see Appendix 1 for detail). ***Chris Sullivan/Carrie Bretz***

2.3.2.5. Spawning plans

KNFH BY 16 spring Chinook adult broodstock will be kept at DNFH. Spawning normally occurs the third week of August. Eggs collected that are in the low range of the ELISA values will be kept and the medium to high eggs are discarded. Jacks will be utilized for ~10% of the spawners. Kent Hills

2.3.2.6. Egg incubation

KNFH BY 16 stock (800k) eggs will be incubated at KNFH. ***Kent Hills***

2.3.2.7. Fish Health

Every adult female will be sampled individually for BKD with ELISA. Up to 150 ovarian fluid samples will be sampled for viruses. An additional 60 tissue samples will be taken for virus, bacteria, *Myxobolus cerebralis and Ceratonova shasta.* Generally, all eggs from females above the .250 ELISA O.D. cut off level will be culled. For eggs being transferred to Lyons Ferry, in addition to the above sampling all eggs from females above the .199 ELISA O.D. cut off level will be culled. ***Marilyn Blair***

2.3.2.8. Communication

FWS puts out weekly spawning reports and weekly return reports, and annual spawning and adult return reports are also produced.

2.3.2.9. Approved Research

Research on the incidence of IHNV in adult spring Chinook returning to Kooskia NFH will continue in 2016. A total of 100 adults will be sampled throughout the run and will be non-lethally sampled and PIT tagged at the time of trapping. PIT tagged adults would be resampled both lethally and non-lethally at the time of spawning. ***Marilyn Blair/Ray Jones***

2.3.2.10. Communication

2.3.3. **CFH**

Total brood needs at CFH for BY16 spring Chinook Salmon production is approximately 2,050 adipose fin clipped fish. Brood that will be collected at CFH satellite facilities uses only includes 896 for the SF program. The remainder of the balance will be collected at other facilities and includes the following: 384 will be collected at Kooskia for CFH's 235k smolt release into

Clear Creek, 384 will be collected at Dworshak for CFH's 400k smolt release into the NF Clearwater , and 384 will be collected at Dworshak for CFH's 400k smolt release into the Selway. The broodstock need for the new summer run Chinook Salmon program at Powell is approximately 426 adults. Unclipped adult returns from BY 2012 summer run smolts released at Powell in 2014 will be trapped to attain most of this goal but, if possible, up to 142 fish for brood could originate from summer run production fish trapped at the South Fork Salmon River could contribute to that total. Inclusion of adult brood from the South Fork Salmon River is intended to help maintain genetic diversity in the building pahse of this new Clearwater Hatchery program. Current hatchery production goal is 2.535 million smolts. Adult return goal for the program is 12,000 adult Chinook over Lower Granite Dam. Smolt release goals for BY 16 production at Clearwater Hatchery are shown in ***Table 2.3b****.*

2.3.3.1. Projected adults returns

IDFG pre-season forecast of spring Chinook returning to LGR from CFH releases is 7,952 for 2 and 3 ocean fish of which 3,136 are expected to be fish destined to Red River **(Table 2.3c)**. IDFG will use in-season assessments of overall run strength and returns to specific hatcheries based on analyses of counts and PIT tag detections at dams, to finalize sport harvest seasons and limits. The State sport fishery will be managed to 50% of the harvestable share of adult spring Chinook. Real time predictions will be used to adjust the share.

The IDFG preseason forecast of un-clipped summer Chinook Salmon returning to LGR from CFH releases is 5,033 for 2 ocean fish returning from smolt releases at the Powell satellite facility in 2014 and 208 for 3 ocean fish returning from releases at Crooked River in 2013. Returns of unclipped fish are not currently included in harvest share calculations. ***Sam Sharr***

2.3.3.2. Broodstock Acquisition (trapping operations at satellite facilities)

Spring Chinook Salmon will be trapped at the Red River weir. The Crooked River weir and trap will be installed for steelhead trapping in March and will remain in operation throughout Chinook trapping season. The Red River weir will be installed but will not be operated for steelhead trapping. The Red River weir will be operated for Chinook trapping season in May. Trapping operations will continue until after September 1 and five consecutive days of zero fish are trapped. Proposed adult needs will be approximately 870 females (448 females at Red River, 96 Clear Creek, and 326 Dworshak) and 870 males (448 males at Red River, 96 Clear Creek and 326 Dworshak) for CFH allocations (**Table 2.3c**).

As agreed to by the co-managers, the release goal for summer Chinook Salmon released at Powell in 2018 is 600,000 smolts. Approximately 213 females and 213 males must be trapped to meet the broodstock needs for the summer Chinook Salmon program at CFH. Adult 2 ocean returns

to the Powell will be trapped for summer run broodstock. Co-managers may decide that adult 3 ocean returns to Crooked River may be trapped for broodstock if PIT tag detections among adult returns to LGR indicate that they sufficiently numerous to warrant trapping at that location. Summer Chinook trapped at the South Fork of the Salmon River trap operated by McCall Fish Hatchery may also be incorporated into the broodstock for the summer Chinook Salmon program at CFH if adult brood needs cannot be met at the Powell and Crooked River trapping facilities. After all fisheries are closed on the SF Salmon River, additional fish will be trapped on the SF Salmon for this program up to 426 need to achieve the 600,000 release smolt release goal. CFH Manager predicts elevated pre-spawning mortality in holding adults for either spring or summer run returns, Hatchery Managers, with consent of co-managers will compensate for loss by taking and holding additional adult fish. By commencement of spawning, if too many adults have been taken, then adult C&S, food bank and out-plants will be implemented at locations and levels given in (**Table 2.4a and Table 2.4b)**. ***Malia Gallagher*/*Tony Folsom***

2.3.3.3. Adult out-planting / distribution plans

The out-planting protocol (for excess hatchery broodstock) provides for distribution for natural spawning and subsistence use. If adult Chinook available for release into natural spawning areas exceed the numbers agreed to in **Table 2.4a**, further consultation will occur. The general procedure for providing fish for subsistence will be first to tribal programs, then to charitable organizations. Please see **Tables 2.4a** and **2.4b** for out-planting priority streams and marks. ***Malia Gallagher/Tony Folsom***

2.3.3.4. Carcass disposition

2.3.3.5. Adult sampling, monitoring and evaluation

Genetic samples are collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see **Appendix** 2 for detail). ***Chris Sullivan***

2.3.3.6. Spawning plans

Spawning ratios of 1:1 will be used unless the broodstock population is less than 100 females. During the entire spawning year, at most five to ten percent of the total broodstock will be composed of jacks. An effort will be made to use all returning fish for spawning. If presented with an excess number of one sex, gametes from individual parents may be subdivided and each part fertilized with gametes with different parents. The first sort will occur between August 5 and 10. All females will be sorted twice per week, and all ripe females will be spawned each time. Spawning will continue until all females are spawned or full production is met. If too many eggs are taken for the hatchery program, these eggs

can be used to backfill appropriate IDFG programs, other agency programs. If not needed, surplus eggs may be appropriately out planted. ***Malia Gallagher*/*Tony Folsom***

2.3.3.7. Fish Health

All females spawned will be tested for Bacterial Kidney Disease (BKD) using ELISA. Generally, all eggs from females that are identified at a level of 0.25 OD or higher will be culled. Ninety fish will be examined for viral replicating agents using ovarian fluid and kidney/spleen tissue. If eggs are to be removed to another hatchery, all females will be examined for viral replicating agents. Eggs will not be culled due to presence of IHN but culling will occur due to presence of other viruses such as IPN, VHS, or ISA. 20 head wedges will be taken for *Myxobolus cerebralis* analysis. Juveniles will be inspected on a quarterly basis. Diagnostic sampling will be conducted on demand. A 60 fish pre-liberation sample will occur 30 to 45 days prior to release for each stock. ***David Burbank***

2.3.3.8. Egg Incubation

All of the egg's taken for CFH production will be held in one of the two incubation rooms.

2.3.3.9. Communication

Communication will be conducted through weekly coordination calls, monthly narratives and other hatcheries during the trapping season ensure all associated parties are informed.

2.3.4. **NPTHC**

In 2016**,** *approximately 478 spring Chinook salmon adults are needed for broodstock for the NPTHC spring Chinook program. This number does not include jacks (goal for jacks is less than 5% contribution to production annually). This number accounts for pre-spawn holding mortality estimated at 7% (NPTHC trapped fish only), BKD culling estimated at 9%, and an eyed egg to release mortality of 15%. These percentages are based on the most recent five-year average for each performance measure. This brood level will provide for a target release of 75,000 pre-smolts from Newsome Creek (South Fork Clearwater River) acclimation facility, 150,000 pre-smolts from Yoosa/Camp (Lolo Creek) acclimation facility, and 400,000 parr into Meadow Creek (Selway River).*

2.3.4.1. Broodstock Acquisition (trap, weir, ladder operations)

- On Station - The adult ladder and trap at NPTHC will be operated in 2016 to collect spring Chinook adults as a broodstock source for the Meadow Creek program and for the Lolo and Newsome programs. Trapping operations will begin late-April and continue through July 31st or until broodstock needs are met.

Broodstock selection will be based on existing fin clips, marks, or tags. In general, NPTHC trapped fish will be first used to meet existing US v Oregon mandated production, then be utilized to backfill at other Clearwater Sub-basin facilities to meet their US v Oregon mandated production, then as a last option be utilized for production above US v Oregon levels, pending co-manager approval (**Appendix 3**). For 2016, the NPTHC trap will be operated as follows:

1. Retain all adipose fin clipped adults.
2. Retain all adipose fin intact/CWT only adults.
3. Release all natural (no clips or wire) fish back into the Clearwater River at the Lenore boat launch.

An alternative broodstock source for the Meadow Creek, Selway program is to obtain spring Chinook broodstock from other programs. Per agreement with IDFG and USFWS, adults returning to, Rapid River, the Red River satellite and DNFH may also be used for broodstock. Up to 400 adults (200 females and 200 males) may be collected at these facilities if necessary to help NPTHC meet full production, if they are available. Preferably these fish would be spawned at IDFG and USFWS facilities and eggs transported to NPTHC for incubation and rearing. Alternatively, surplus adult SCS trapped at NPTHC may be available for use by other Clearwater Basin hatcheries in the event they are short of broodstock.

- Lolo Creek – Trapping operations on Lolo Creek usually begins at the end of May, after peak flows are reached. Trapping will continue through mid-September. A weir will be operated on Lolo Creek (RKM 21). In an effort to encourage natural production in Lolo Creek, during low return years, broodstock collection will have a very low priority. In high return years, localized broodstock may be collected, at which time pass/keep ratios will be developed. The adult weirs will also be used for escapement, estimating sex composition, age structure, return timing and genetic tissue sampling. When retained, trapped fish will be transported by NPTHC staff from the weir sites to NPTHC for holding and sexual maturation. For 2016, the Lolo Creek weir will be operated in a monitoring mode. All fish will be passed.
- Newsome Creek - Trapping operations on Newsome Creek usually begins at the end of May, after peak flows are reached. Trapping will continue through mid-September. The weir on Newsome Creek is located at RKM 0.1, just upstream from its confluence with the S.F. Clearwater River. In an effort to encourage natural production in Newsome Creek, during low return years, broodstock collection will have a very low priority. In high return years, localized broodstock may be collected, at which time pass/keep ratios will be developed. The adult weir will also be used for escapement, estimating sex composition, age structure, return timing and genetic tissue sampling.

When retained, trapped fish will be transported by NPTHC staff from the weir to NPTHC for holding and sexual maturation. For 2016, the Newsome Creek weir will be operated in a monitoring mode. All fish will be passed.

2.3.4.2. Adult out-planting plans

Only adults and jacks that have not been inoculated may be out-planted. Fish that have been inoculated and are utilized for spawning will be buried on site at NPTHC. Please see **Table 2.4a** and **2.4b**. ***Aaron Penney/ Carl East***

2.3.4.3. Spawning plans

The first sort and spawn will occur as early as August 2nd. Spawning will occur on Tuesday of each week at NPTHC, through the end of August. A spawning ratio of 1:1 will be used. Jacks will be limited to five percent of the male contribution. Spawning will continue until the egg take goal is achieved or all females are spawned. ***Aaron Penney/ Carl East***

2.3.4.4. Adult monitoring and evaluation

Genetic samples are also collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see **Appendix 2** for detail).

2.3.4.5. Juvenile production

The current NPTHC production goals are 625,000 parr/pre-smolts. Distribution of juvenile production is 400,000 parr (Meadow Creek tributary of Selway River), 150,000 pre-smolts (Lolo Creek), and 75,000 pre-smolts (Newsome Creek) (**Table 2.3a**).

Juvenile production destined for remote sites will be held in the production room tanks, raceways or NATURES S-channels at NPTHC, and also in tanks at the Sweetwater Springs facility. They are then transferred to the acclimation facilities when conditions permit (early September). PBT tagging (by taking genetics from all broodstock) is conducted on all SCS within NPTHC. Production (except Meadow Creek) will also be 100% marked with a CWT and sub-release groups will be PIT tagged. ***Aaron Penney/ Carl East***

2.3.4.6. Adult fish health

All females will be tested by ELISA for Bacterial Kidney Disease (BKD). Generally, all eggs from females that are identified at a level of 0.250 OD or higher will be culled. A 150 fish sample (ovarian fluids) will be taken for viral replicating agents. A 60 fish sample (head wedge) will be taken for *Myxobolus cerebralis* analysis. Juveniles will be examined when diagnostics are necessary. Pre-liberation samples will be taken prior to release (60 fish sample). ***Marilyn Blair***

2.3.4.7. Communication

A monthly NPTHC narrative and fish health report will be completed and submitted to BPA/COTR, NPT Research and Production divisions, IDFG/CFH and all other interested parties. NPTHC also produces an annual operation plan and an annual operations report for BPA and the co-managers. ***Aaron Penney***

3. COHO SALMON

A Coho Salmon reintroduction program was initiated by the Nez Perce Tribe in 1995. *Fish production for this program comes from DNFH, KNFH, Eagle Creek NFH and Cascade FH. The long-term adult return goal is 14,000 to the Clearwater River sub-basin. The broodstock collection goal is 2,000 adults (50% females) returning to the Clearwater River. Smolt release goals have ranged as high as 1.1 million, with the last 5 years at 830,000 smolts annually. Currently, production releases goals are 550,000 smolts reared out-of-basin from Eagle Creek NFH - 275,000 smolts in Lapwai Creek and 275,000 smolts in Clear Creek. Release goal for smolts reared at DNFH and released into Clear Creek is 400,000 smolts annually being acclimated at KNFH prior to release. In 2015, releases of Coho Salmon reared at Cascade Hatchery began as the result of the U.S. vs. Oregon Management Agreement. Up to 500,000 smolts from Cascade Hatchery will be released in the Clearwater Basin until this production can be transitioned to the Grande Ronde Basin in Oregon.*

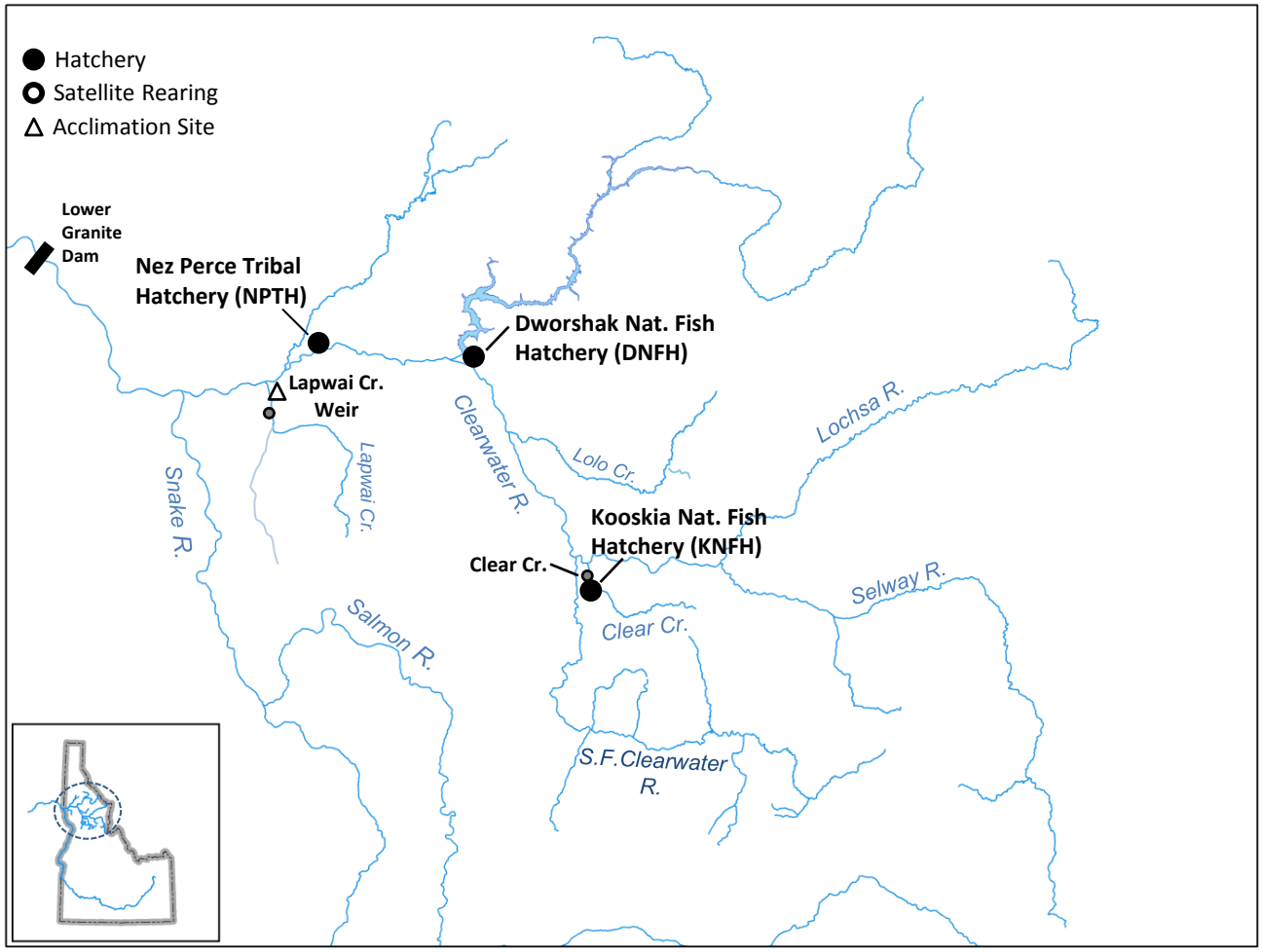


Table BY2014 SMOLTS - Coho BY 14 Release Goals for 2016

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	2016 Smolt Release Goal
NPTHC	Coho		DNFH	Clear Creek	400,000
Total					400,000
NPTHC	Coho		ECNFH	Lapwai Creek	275,000
	Coho			Clear Creek	275,000
Total					550,000
NPTHC	Coho		Cascade FH	Lapwai Creek	500,000
Total					500,000
Grand Total					1,450,000

Figure 7. Map showing Coho Salmon trapping sites, hatchery facilities, release sites in the Clearwater Basin and a table with typical smolt production and releases by program, and release site.

Figure 8. Flow chart of hatchery Coho Salmon production in the Clearwater Basin showing broodstock sources, movements of gametes and releases juvenile fish.

Figure 9. Timeline for hatchery production of Coho Salmon in the Clearwater Basin (This table not completed in time for completion in the 2016 AOP).

3.1. Brood Year 2014 Coho Salmon

3.1.1. **DNFH**

3.1.1.1. Production status

There were 553,233 fish on hand (17,065 pounds, 32.47 fpp) at DNFH as of January 1st, 2016 (**Table 3.1a)**. ***Mike Bisbee***

3.1.1.2. Projected transfer date/acclimation period at KNFH

Smolts will be transferred to KNFH Mid-February, early March, 2016 for final acclimation. ***Mike Bisbee***

3.1.1.3. Numbers/dates/marks & tags

204,828 fingerling Coho Salmon were marked with a CWT (no AD clip) starting August 11, 2015 and finishing August 27, 2015. Prior to release from KNFH, 5,000 Coho Salmon will be PIT tagged. PIT tags will be provided by the FWS through Mitchell Act funding. (**Table 3.1b**) ***Mike Bisbee***

3.1.1.4. Fish health

Fish are sampled monthly and prior to liberation; a 60 fish sample will be taken and assayed for virus, bacteria, and parasites. ***Marilyn Blair***

3.1.1.5. Juvenile monitoring and evaluation

Marks used are PIT tags and CWT. These marks are intended to provide the following information;

- Juvenile survival and emigration timing to Lower Granite Dam.
- Smolt-to-adult survival and adult return timing based on counts at Lower Granite Dam, and on ladder counts at DNFH and KNFH. ***Mike Bisbee***

3.1.2. **Transfers from Eagle Creek NFH**

3.1.2.1. Production status

Currently on station at Eagle Creek NFH.

3.1.2.2. Projected transfer

Total transfer of 550,000 smolts - Approximately 275,000 smolts (Clearwater stock) reared at Eagle Creek NFH will be transferred to KNFH mid-March, 2016 for final acclimation and direct release. Another 275,000 smolts (Clearwater stock) reared at Eagle Creek NFH will be transported to Lapwai Creek and direct stream released. ***Mike Bisbee***

3.1.2.3. Projected direct release

Early to mid-March, 2016. ***Mike Bisbee***

3.1.2.4. Fish health

Disease history for this brood year of fish is completed at Lower Columbia River Fish Health Center. ***Marilyn Blair***

3.1.2.5. Numbers/dates/marks & tags

Coho Salmon were marked by the FWS during rearing at Eagle Creek NFH. Each release group received 30,000 CWT (Clear Creek & Lapwai Creek) for a total of 60,000 CWT. Fish are not adipose fin clipped. Prior to transfer from Eagle Creek 10,000 fish were PIT tagged – (5,000 per each release group - Clear Creek and Lapwai Creek. PIT tags were be provided by FWS through Mitchell Act funding (**Table 3.1b**). ***Mike Bisbee***

3.1.3. **Transfers from Cascade FH**

3.1.3.1. Production status

BY 14 production currently at Cascade Hatchery.

3.1.3.2. Projected transfer

BY14 Coho Salmon reared at Cascade Hatchery are Clearwater stock smolts which will be transferred to the Clearwater Basin in mid-March 2016. ***Mike Bisbee***

3.1.3.3. Projected direct release

A projected 480,000 smolts will be transported from Cascade FH to Lapwai Creek for direct release. The long term plan for this production is reintroduction/restoration of Coho Salmon in Northeast Oregon/Wallowa River. The interim production plan is to release these extra Coho Salmon in the Clearwater River Basin until an agreement can be reached with Oregon Department of Fish and Wildlife. ***Mike Bisbee***

3.1.3.4. Fish health

Pre-transfer exam is completed at the Lower Columbia River Fish Health Center. ***Marilyn Blair***

3.1.3.5. Numbers/dates/marks & tags

BY14 Coho Salmon were 100% AD-clipped and 60,000 CWT/AD clip. There are not PIT tags in this group of fish (**Table 3.1b**). ***Mike Bisbee***

3.2. Brood Year 2015 Coho Salmon

3.2.1. **DNFH**

3.2.1.1. Production status

Coho Salmon recognized at Lower Granite Dam totaled 1,449 adults and 239 jacks in 2015. A total of 291 Coho Salmon broodstock were collected. Broodstock collection occurred at Lapwai Creek weir – 125 fish, at DNFH – 54 fish, at KNFH – 12 fish and at Lower Granite Dam - 100 fish. A total of 78 females were spawned with 83 males. Six (6) females were culled; eggs from the 78 Clearwater stock females were enumerated using a Van Gaalen egg sorter; percent eye-up was 82.46% and enumerated eggs totaled 151,026. A total of 266 (133 female, 133 male) Coho Salmon broodstock were collected at 3 Mile Hatchery on the Umatilla River and delayed fertilized at DNFH. 3 females culled; eggs from the 130 females were enumerated using a Van Galen egg sorter; percent eye-up was 84.84% and enumerated eggs totaled 292,604. 94,349 eyed eggs from 52 females were transported from Irrigon Hatchery (Umatilla River Stock) to DNFH. As of January 20, 2016, there are 461,367 BY 15 live eggs in eight stacks in A-Bank at DNFH (**Table 3.2a).** ***Mike Bisbee***

3.2.1.2. Projected production

We anticipate Clearwater River Stock production will be 100,000 reared at DNFH through spring 2016. ***Mike Bisbee***

3.2.2. **Eagle Creek NFH**

3.2.2.1. Egg transfer to Eagle Creek NFH

No eggs from Clearwater returning adults were taken to ECNFH. A late returning Kalama River stock will be used to backfill the ECNFH production. ***Mike Bisbee***

3.2.2.2. Projected production

We anticipate Kalama River Stock production will be 400,000 reared through spring 2017. ***Mike Bisbee***

3.2.2.3. Fish health

Kidney samples were assayed individually for BKD by ELISA on all spawned females. No females were detected above the .250 ELISA cut off level, so no eggs recommended to be culled due to BKD. Results of virus samples were 2.1% positive for IHNV. ***Marilyn Blair***

3.2.2.4. Projected release

Kalama stock smolts reared at Eagle Creek NFH will be released into Clear and Lapwai Creeks in mid-March 2017. Approximately 400,000 (200,000 each stream) will be acclimated or direct stream released. ***Mike Bisbee***

3.2.2.5. M&E

Current plans are to CWT 60,000 pre-smolts in July, 2016. CWT recovery helps determine smolt-to-adult survival, and adult return timing is based on adult counts at Lower Granite Dam and trap counts at DNFH, KNFH and Lapwai creek weir. Marking of fish will occur at Eagle Creek NFH with 30,000 CWT only mark per each release group (Lapwai Creek and Clear Creek). If FWS, through Mitchell Act, is able to provide PIT tags, then the Eagle Creek NFH release groups will be marked with 5,000 PIT tags each for a total of 10,000 PIT tags, tagged in January 2017 (**Table 3.2**b). These marks estimate the following; Juvenile survival to Lower Granite Dam based on PIT tag detection. Timing of adult returns based on PIT tags and counts at Lower Granite Dam. Smolt-to-adult survival based on PIT tags and the number of juveniles released and adult returns over Lower Granite Dam. Adults will be accounted for by redd surveys in Clear Creek – may be limited Broodstock counts at DNFH and KNFH NFH, Lapwai Creek. ***Mike Bisbee***

3.2.3. **Cascade Fish Hatchery**

3.2.3.1. Egg transfer to Cascade FH

Lack of adult returns in 2015 resulted in no Coho Salmon eggs being available to ship downriver to Cascade Hatchery for rearing. Adult Coho Salmon trapped at Bonneville Hatchery provided the backfill broodstock source (Tanner Creek) for BY 15. ***Mike Bisbee***

3.2.3.2. Projected production

We anticipate 500,000 smolts will be reared at Cascade Hatchery through spring 2016. ***Mike Bisbee***

3.2.3.3. Fish health

Pre-transfer exam will be completed by the Lower Columbia River Fish Health Center. ***Marilyn Blair***

3.2.3.4. Projected release

Smolts reared at Cascade FH will be released in mid-March 2017. The long term plan for this production is reintroduction/restoration of Coho Salmon in Northeast Oregon/Wallowa River. The interim production plan is to release these extra Coho Salmon in the Clearwater River Basin until an agreement can be reached with Oregon Department of Fish and Wildlife. ***Mike Bisbee***

3.2.3.5. M&E

Agreement for marking for BY 15 is no adipose fin clip and 60,000 ad-clip/CWT pre-smolts in July, 2016. ***Mike Bisbee***

3.3. Brood Year 2016 Coho Salmon

A primary program objective is to develop a local Clearwater River Coho Salmon stock. To accomplish this, adult Coho Salmon returning to the Clearwater River of the Snake River basin are the priority for use as broodstock. Fish may be collected at DNFH, KNFH, Lapwai Creek, LFH, and/or NPTHC; however, of these locations, fish collected at KNFH, DNFH and Lapwai Creek will be prioritized for broodstock. Approximately 2,000 adults are necessary to meet broodstock goals. Planned BY 16 smolt production for release in 2018 is summarized in ***Table 3.3a***

3.3.1. **KNFH**

3.3.1.1. Broodstock Acquisition Weir/Trap/transfer operations

Weir operations will start October 1, 2016 to trap adult Coho Salmon at KNFH. Depending on adult return projection and estimated broodstock collection adult Coho Salmon trapped at KNFH weir or other sites will be transported to DNFH for holding and spawning. Adult hatchery steelhead or fall Chinook incidentally trapped at the KNFH weir will be transported to the S.F. Clearwater and released by the NPT. ***Mike Bisbee***

3.3.1.2. Adult fish health

3.3.1.3. Adult out-planting

Once Coho Salmon broodstock goals are met; surplus Coho Salmon will be passed above the weir. ***Mike Bisbee***

3.3.1.4. Adult M&E

Genetic samples will be collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see Appendix 1 for detail). ***Chris Sullivan***

3.3.1.5. Juvenile M&E

Smolt-to-adult survival based on monitoring adult returns at a weir in Clear Creek and Lapwai Creek. ***Mike Bisbee***

3.3.2. **DNFH**

3.3.2.1. Ladder operation

The DNFH ladder will be operated during the fall of 2015 to trap early return steelhead. Adult Coho Salmon trapped during this time will be counted and either out planted or put into Holding Ponds for broodstock. Depending on the projected return, the NPT may request that the ladder be operated several additional times to collect Coho Salmon broodstock as needed to meet production goals. Coho Salmon staff will coordinate

with Steelhead staff on anesthesia use and handling protocols to prevent pre-spawn mortality of Coho Salmon. ***Mike Bisbee***

3.3.2.2. Coho Salmon spawning

All Coho Salmon spawning will take place at DNFH. The broodstock goal is to collect and spawn 950 females to provide eggs for DNFH, Eagle Creek and Cascade programs. Eggs for the DNFH group will be incubated and early reared at DNFH. Eggs for the Eagle Creek and Cascade groups will be incubated at DNFH to eye-up stage and transferred to Eagle Creek NFH and Cascade FH in December for final rearing. ***Mike Bisbee***

3.3.2.3. Fish Health

The Idaho Fish Health Center will collect the following samples from the returning adult Coho Salmon 60 head wedges, 60 kidney/spleens, 150 ovarian fluids, 100% kidneys for BKD testing by ELISA, and up to 60 intestine samples. Bacteriology will be performed from viral sampling (kidney/spleens). 100% sampling will be conducted on ovarian fluid from females whose eggs are destined for Eagle Creek and Cascade Hatcheries in Oregon. These samples will be two-pooled. ***Marilyn Blair***

3.3.2.4. Adult carcasses

All adult Coho Salmon carcasses will be donated to the local food bank. Once the quality of the fish is too poor for the food bank all carcasses will be out planted into Lapwai, Sweetwater, Potlatch, Mission Creeks and mainstem Clearwater River following spawning for nutrient enhancement. ***Mike Bisbee***

3.3.2.5. Adult out-planting

Coho Salmon adults surplus to broodstock needs will be out-planted to Lolo, Eldorado, Orofino, Lapwai, Sweetwater, Mission Creeks and South fork Clearwater River or back into the Clearwater. ***Mike Bisbee***

3.3.2.6. Eagle Creek NFH

When Clearwater broodstock can provide eggs for the Eagle Creek smolt program, these eggs will be incubated at DNFH to eye-up stage and then transferred to Eagle Creek NFH in late December/early January for final rearing. ***Mike Bisbee***

3.3.2.7. Cascade FH

When Clearwater broodstock can provide eggs for the Cascade smolt program, these eggs will be incubated at DNFH to eye-up stage and then transferred to Eagle Creek NFH in late December/early January for final rearing. ***Mike Bisbee***

3.3.2.8. Juvenile M&E

Smolt-to-adult survival and adult return timing shall be based on PIT tag information and counts at Lower Granite Dam and ladder counts at DNFH and KNFH, Lapwai Creek, LFH, NPTHC. ***Mike Bisbee***

3.3.3. **Lapwai Creek**

3.3.3.1. Weir operation

A picket weir will be installed and become operable starting October 1, 2016 to trap Coho Salmon broodstock below the train bridge and upstream from the mouth of Lapwai Creek. Pass/keep ratios will be adjusted on a weekly basis dependent on the projected return and actual captures. The adult weir will also be used for escapement, estimating sex composition, age structure and return timing. ***Mike Bisbee***

3.3.3.2. Adult transfers

Fall Chinook salmon trapped during operation of the Lapwai Creek Coho Salmon weir will be placed downstream of the weir. ***Mike Bisbee***

3.3.3.3. Juvenile M&E

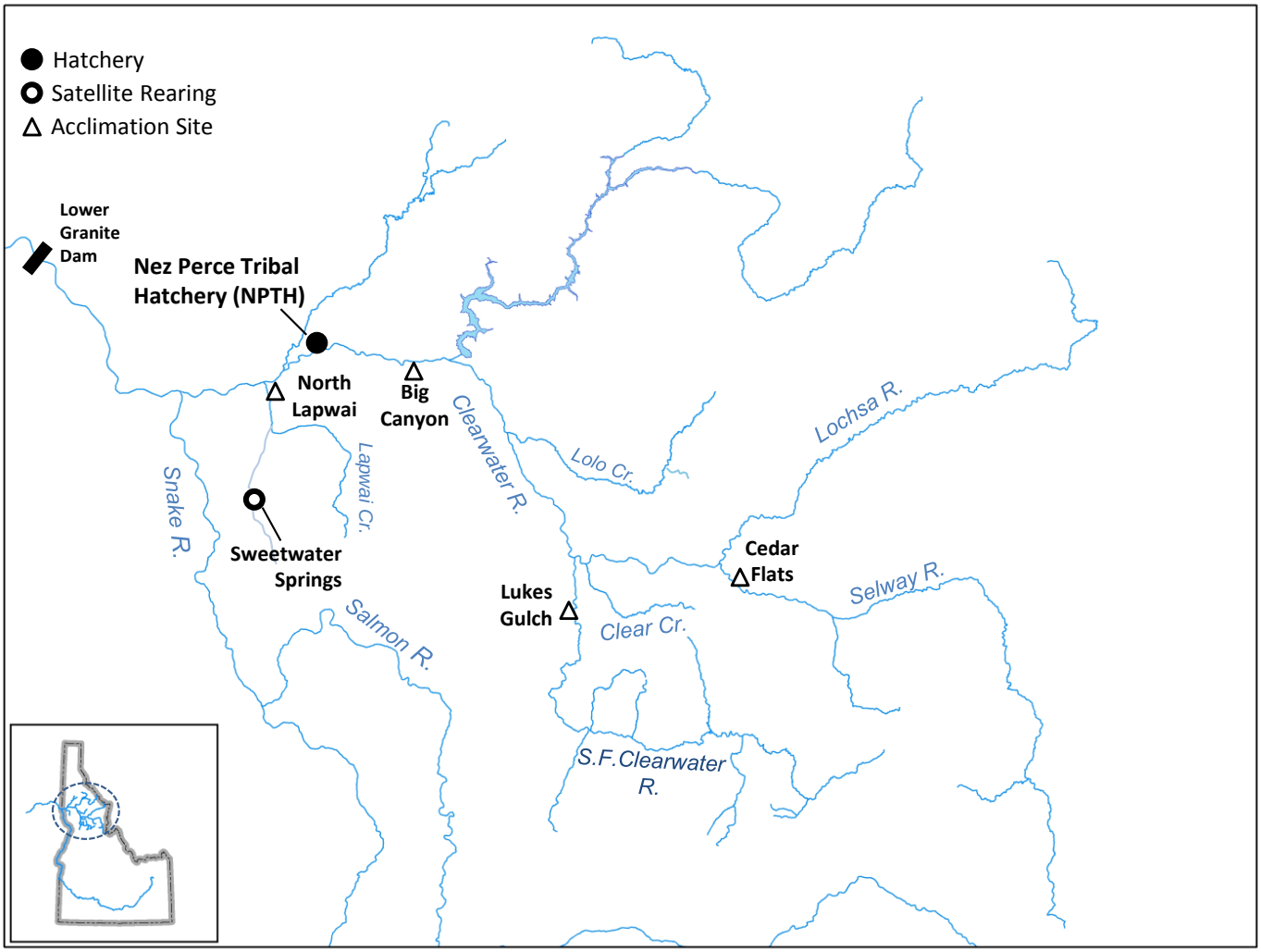
Smolt-to-adult survival based on monitoring adult returns at a weir in Lapwai Creek._Redd surveys in Lapwai Creek. Smolt-to-adult survival and adult return timing shall be based on PIT tag information and counts at Lower Granite Dam and ladder counts at DNFH and KNFH, Lapwai Creek, LFH, NPTHC. ***Mike Bisbee***

3.3.3.4. Communication

Clearwater Coho Salmon Project Leader produces monthly reports for coordination between hatchery management and staff communication. Semi-annual and annual reports are a contract requirement to the CRITFC and NOAA funding entities. ***Mike Bisbee***

4. FALL CHINOOK SALMON

The fall Chinook production program is a complex and highly integrated artificial program for Snake River fall Chinook implemented through the LSRCP program, the IPC Hells Canyon Settlement Agreement, and the Columbia Basin Fish and Wildlife Program. The basic intent of the program is to assist with the recovery of Endangered Species Act (ESA)-listed Snake River fall Chinook, mitigating for impacts of the mainstem hydro-system dams, and returning abundance of salmon to historic levels. Both short and long-term adult return goals for this program are identified in the Snake River Fall Chinook Management Plan. Snake River fall Chinook production is mandated in the 2008-2017 U.S. vs. Oregon Management Agreement (Table 9). Fall Chinook salmon production in the Clearwater River occurs through two programs – the Fall Chinook Acclimation Project (FCAP) and NPTHC. Beginning with the 2012 trapping season, activities for FCAP are covered under ESA Section 10 Permit No. 16607, and Permit No. 16615 for NPTHC.



BY2014 YEARLINGS - Fall Chinook Release Goals for 2016

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	2016 Yearling Release Goal
NPTHC	FACH	SnakeR	Lyons Ferry	Big Canyon Creek	150,000
Total					150,000
Grand Total					150,000

BY2015 SUB-YEARLINGS - Fall Chinook Release Goals for 2016

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	2016 Sub-Yearling Release
NPTHC	FACH	SnakeR	Lyons Ferry	Big Canyon Creek	500,000
Total					500,000
NPTHC	FACH	SnakeR	NPTH	NPTH	500,000
	FACH	SnakeR		N Lapwai Valley	500,000
	FACH	SnakeR		Lukes Gulch	200,000
	FACH	SnakeR		Cedar Flats	200,000
Total					1,400,000
Grand Total					1,900,000

BY 2016 SUB-YEARLINGS - Fall Chinook Production Goals for Release in 2017.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	2017 Sub-Yearling Release Goal
	FACH	SnakeR	Lyons Ferry	Big Canyon Creek	500,000
Total					500,000
	FACH	Snake R.	NPTH	NPTH	500,000
	FACH	Snake R.		N Lapwai Valley	500,000
	FACH	Snake R.		Lukes Gulch	200,000
	FACH	Snake R.		Cedar Flats	200,000
Total					1,400,000
Grand Total					1,900,000

BY2016 YEARLINGS - Fall Chinook Production Goals for Release in 2018.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	2018 Yearling Release Goal
	FACH	SnakeR	Lyons Ferry	Big Canyon Creek	150,000
Total					150,000
Grand Total					150,000

Figure 10. Map showing fall Chinook Salmon trapping sites, hatchery facilities, release sites in the Clearwater Basin and current smolt production and releases by program, hatchery and release site..

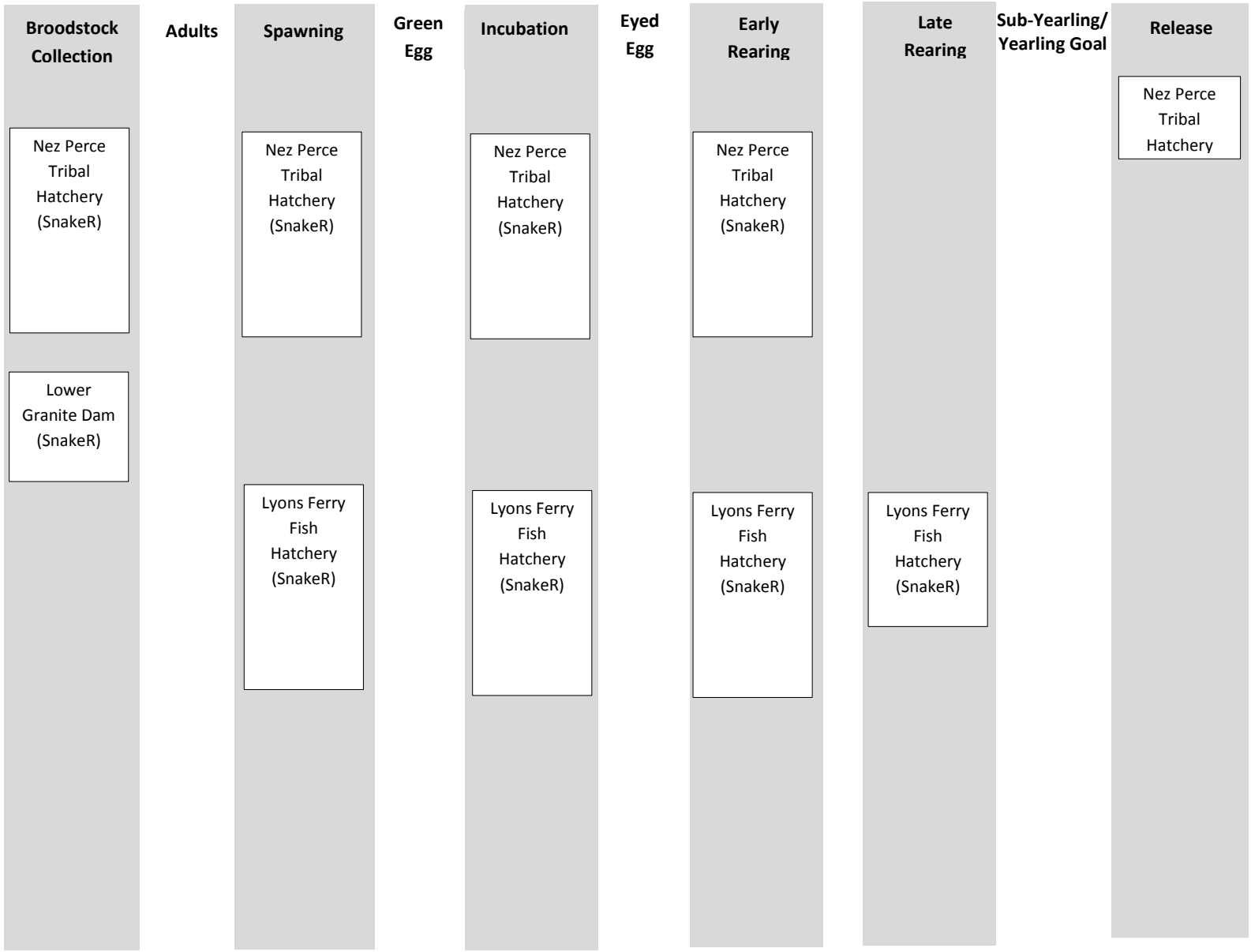


Figure 11. Flow chart of hatchery fall Chinook Salmon production in the Clearwater Basin showing broodstock sources, movements of gametes and releases juvenile fish

Figure 12. Timeline for hatchery production of fall Chinook Salmon in the Clearwater.

4.1. Brood Year 2014 Fall Chinook

4.1.1. FCAP – Big Canyon Facility

The Big Canyon Acclimation facility is a portable acclimation setup designed and operated for acclimation and release of Snake River fall Chinook salmon that are reared at LFH. Big Canyon facility is operated by the Nez Perce Tribe as part of FCAP funded by BPA. The facility has capacity to acclimate 150,000 yearlings and 500,000 sub-yearlings. The facility is operated in conjunction with two other acclimation facilities on the Snake River in an effort to restore ESA listed Snake River fall Chinook salmon and achieve the LSRCP mitigation goal of 18,300 adults to the project area

4.1.1.1. Production status

Approximately 155,000 yearlings are being reared at LFH for transfer to the Big Canyon acclimation facility on March 2-4, 2016 (**Table 4.2a**). ***Mike Key***

4.1.1.2. Projected release

Target release will be 150,000 yearlings at 10 fpp on April 12, 2016 **(Table 4.1a)**. Fish are 70,000 CWT and ad clipped and 80,000 CWT-only **(Table 4.1b)**. 1,000 will be PIT tagged (see M&E section below). ***Mike Key***

4.1.1.3. Fish health

Import permit sampling was conducted end of Jan. A 60 fish sample was collected and assayed prior to release from each site. ***Marilyn Blair***

4.1.1.4. M&E

Yearling release groups will be sampled for length and weight at time of release. A subsample of approximately 600 fish is collected as the fish are being released. We sample 500 fish from each raceway at LFH for coded wire tag and adipose fin clip retention 21 days after tagging/marking is completed. We will PIT tag 1,000 yearlings to estimate survival, migration rate and timing through the FCRPS. PIT tagging will occur at LFH. All mortalities at Big Canyon will be scanned for PIT tags. Aerial redd counts and adult spawned carcass sampling in the Clearwater sub-basin will be conducted by NPTHC M&E personnel. Coded wire tags will provide SAR data. ***Bill Arnsberg***

4.1.1.5. Communication

O&M and M&E quarterly and annual reports to BPA. ***Bill Arnsberg***

4.2. Brood Year 2015 Fall Chinook

4.2.1. FCAP – Big Canyon Facility

4.2.1.1. Production status

Approximately 500,000 sub-yearlings are being reared at LFH for transfer to the Big Canyon acclimation facility on May 4-6, 2016. ***Mike Key***

4.2.1.2. Projected release

Target release is 500,000 sub-yearlings at 50 fpp on May 25, 2016 (**Table 4.2a)**. A group of 100,000 fish are CWT / ad-clipped and 100,000 CWT-only for evaluation – the remaining fish are unmarked. 2,000 will be PIT tagged (**Table 4.2b**). ***Mike Key***

4.2.1.3. Fish health

Import permit sampling was completed in April for the sub-yearling program. ***Marilyn Blair***

4.2.1.4. Juvenile M&E

Sub-yearling release groups will be sampled for length and weight at time of release. A subsample of approximately 1,000 fish is collected as they are being released. We sample 500 fish from each raceway at LFH for coded wire tag and adipose fin clip retention 21 days after tagging/marking is completed. We will PIT tag 2,000 sub-yearlings to estimate survival, migration rate and timing through the FCRPS. All mortalities at Big Canyon will be scanned for PIT tags. Aerial redd counts and adult spawned carcass sampling in the Clearwater subbasin will be conducted by NPTHC M&E personnel. Coded wire tags will provide SAR data. ***Bill Arnsberg***

4.2.1.5. Communication

O&M and M&E quarterly and annual reports to BPA. ***Bill Arnsberg***

4.2.2. **NPTHC**

NPTHC is authorized to produce 1.4 million sub-yearling fall Chinook juveniles annually. Target releases are 500,000 acclimated on station into the Clearwater River, 500,000 acclimated and released from North Lapwai Valley facility into the Clearwater River, 200,000 acclimated and released from Lukes Gulch facility into the South Fork Clearwater River, and 200,000 acclimated and released from Cedar Flats facility into the Selway River.

4.2.2.1. Production status

As of December 31, 2015, there are 1,443,958 fall Chinook eggs/fry on hand at NPTHC.

4.2.2.2. Projected release

1.4 million sub-yearlings.

- NPTHC: A release of 500,000 sub-yearlings into the Clearwater River at 50 fpp (9.1 g) is planned (**Table 4.2a**). As identified in the U.S. vs. Oregon Management Agreement, 200,000 fish will be marked with a CWT, and 100,000 fish will be marked with a CWT and an adipose fin clip (AD) (**Table 4.2b**). The remainder of this release (200,000) will be unmarked and untagged. Fish are marked and tagged by NPTHC M&E employees during transfer to two earthen ponds from the production tanks or from two raceways, after reaching a target mark size of 160 fpp. 2,000 fish are PIT tagged for standard outmigration monitoring. Prior to release, a minimum 60 fish sample is collected for a pre-release health inspection. Bacteriology, virology and parasitic assays are performed. A volitional release begins in early June, unless river water temperatures warrant an earlier release. At the start of the scheduled volitional release, hatchery employees take lengths and weights on a minimum of 400 fish (200 from each pond). Scheduled final release date from NPTHC is June 15, 2016. Hatchery or river conditions may warrant a shortened or no volitional release period.
- North Lapwai Valley: This facility was designed for and the program specifies a release of 500,000 sub-yearlings into the Clearwater River via Lapwai Creek by the end of May. However, warming water temperatures and decreasing flows in the creek in May have always warranted an earlier release to avoid high mortalities and disease outbreaks. Employees living at the facility monitor both water temperatures and dissolved oxygen (DO) levels daily, and fish are released when water temperatures reach 63 F (17.2 C) and/or DO levels drop significantly. The release goal has been modified to accommodate this rearing challenge. For 2016, a release of 500,000 sub-yearlings at 80 fpp (9.1 g) into the Clearwater River is scheduled for early May, 2016 (**Table 4.2a**). However, if flow, temperature and DO conditions allow, fish will be reared as long as possible toward meeting the original goal of release at the end of May at 50 fpp. Fish slated for final acclimation and release from North Lapwai Valley AF will be marked at NLV during transfer there from NPTHC. Per the U.S. vs. Oregon Management Agreement, this group will be comprised of 200,000 CWT only fish, 100,000 AD and CWT fish, and 200,000 unmarked and untagged fish (Table **4.2b**). 3,000 fish will be PIT tagged for outmigration monitoring. Prior to release, a minimum 60 fish sample is collected for a pre-release health inspection. Bacteriology, virology and parasitic assays will be performed. Hatchery staff will take lengths and weights on a minimum of 400 fish.
- Cedar Flats: A release of 200,000 sub-yearlings into the Selway River at 50 fpp (9.1 grams) is planned (**Table 4.2a**). Transfer of the fish occurs in mid-April. Per the U.S. vs. Oregon Management Agreement, they will be 100% CWT'd, and half the release group will also have an AD clip (**Table 4.2b**). 2,000 fish are PIT tagged for standard outmigration monitoring. Prior to release, a minimum 60

fish sample is collected for a pre-release health inspection. Bacteriology, virology and parasitic assays are performed. NPTHC staff will take lengths and weights on a minimum of 400 fish just before release. Scheduled final release date from Cedar Flats AF is June 13, 2016.

- Lukes Gulch: A release of 200,00 sub-yearlings into the S. F. Clearwater River at 50 fpp (9.1 g) is planned (**Table 4.2a**). Transfer of the fish occurs in mid-April. Per the U.S. vs. Oregon Management Agreement, they will be 100% CWT'd, and half the release group will also have an AD clip (**Table 4.2b**). 2,000 fish are PIT tagged for standard out migration monitoring. Prior to release, a minimum 60 fish sample is collected for a pre-release health inspection. Bacteriology, virology and parasitic assays are performed. NPTHC staff will take lengths and weights on a minimum of 400 fish just before release. Scheduled final release date from Lukes Gulch AF is June 13, 2016. ***Aaron Penney/ Carl East***

4.2.2.3. Fish health

Kidney samples were assayed by ELISA on all spawned females; eggs from one female were culled due to the cut off ELISA OD level of .250. 150 ovarian fluid samples, 60 tissue samples and 60 cranial samples were taken for viral, bacteriological and parasitic assays. IHNV was found in 70 % of samples tested. Sixty fish sample will be collected and assayed prior to release. ***Marilyn Blair***

4.2.2.4. Monitoring and Evaluation

Scan all fish for CWT. Initial tag retention and tagging mortality estimated. Estimate final CWT retention rates 21 days or more after tagging. PIT survival studies- PIT tag 3,000 of each release group for survival estimates, growth rates, and migration timing.

Redd surveys and carcass collection. Scales and genetic samples taken, hatchery/wild determination, scan for PIT tags and CWTs, along with all other biological information. Volunteers to NPTHC and fish hauled from Lower Granite Dam will be scanned for PIT tags and CWTs and scales and genetics will be taken on all spawned fish and mortalities, along with all other biological information. ***Bill Arnsberg / Jay Hesse / Bill Young***

4.2.2.5. Communication

NPTHC produces monthly production and pathology reports, and an annual operation plan and annual operation report for BPA and the co-managers. M&E produces quarterly and annual reports to BPA. ***Aaron Penney***

4.3. Brood Year 2016 Fall Chinook

4.3.1. **Lower Granite Dam Adult collection**

Snake River Fall Chinook adults will be collected at Lower Granite Dam (LGR) and transported to NPTHC, in accordance with the U.S. vs. Oregon Management Agreement. Additionally, adult fall Chinook may be trapped at the fish ladder at NPTHC. Trapping ratios between the two locations are determined annually by the co-managers. Activities involving *trapping and collection of adult FCS for broodstock are covered under ESA Section 10 Permit No. 16615 for NPTHC, and No. 16607 for LFH, which provides fish for the FCAP program.*

4.3.1.1. Lower Granite Dam

Adult FCS will be collected at LGR beginning the last week in August or when water temperatures are below 70º F (22.2º C). Trapping at LGR will continue throughout the run and is anticipated to end by late November or early December. FCS are collected in the trap as a sub-sample of the returning run. The sub-sample rate for 2016 has not been set, and once agreed to may change mid-season based on actual captures. In an effort to minimize use of one-salt males in the broodstock, co-managers use historical age-class data from previous years CWT recoveries and run predictions to determine a "jack" cutoff length in advance of the trapping season. This cutoff is typically 75 cm. Any fish smaller than this cutoff length is not transported to NPTHC. Fish transported to NPTHC are usually placed in the north holding pond, but may also be placed in the south holding pond if densities become a concern. NPTHC swim-ins are marked with a right operculum V-notch to differentiate them from the LGR fish. WDFW and NPTHC have cooperatively developed a transportation schedule for adults trapped at LGR. The goal of NPTHC is to receive 30% of the females trapped and LFH to receive 70%. This schedule will be modified as needed to ensure equitable distribution of fish between the two programs. A portion of known LFH origin and unknown origin hatchery FCS will be transported from LGR to NPTHC for holding and spawning. ***Aaron Penney/ Carl East***

4.3.1.2. Radio Telemetry

A total of 116 adult fall Chinook will be radio tagged at Lower Granite Dam from August 18 to December 2. Carried out by co-managers (NPT and WDFW), this study will evaluate site fidelity of hatchery releases throughout the mainstem Snake River and Clearwater River basin. Additionally, the project will estimate fall back rates at Lower Granite Dam. The project is based out of Orofino and incorporates mobile tracking (via truck and boat) and fixed site receivers. ***Peter Cleary***

4.3.1.3. NPTHC

There will be weekly in-season updates on LGR adult hauled numbers and an assessment of actual FCS adults counted at LGR with updated run

forecasts to determine if and when the adult ladder and trap may be operated at NPTHC to meet full production. Trapping at NPTHC typically occurs in September – November when necessary.

In an effort to minimize use of one-salt males in the broodstock, co-managers use historical age-class data from previous years CWT recoveries and run predictions to determine a "jack" cutoff length in advance of the trapping season. This cutoff is typically 75 cm. Fish smaller than this cutoff length are not kept, instead they are returned to the river or used for subsistence.

AQUI-S will be used to anesthetize FCS adults during broodstock collection, pending approval under an INAD through the USFWS. Use of this product will allow for greater accuracy in data collection (when compared to live handling of fish) during processing of trapped fish. It will also allow for immediate return to the river of unwanted fish if so desired, since no withdrawal period is required.

Volunteers to NPTHC are marked with a right operculum V-notch to differentiate them from LGR trapped fish. The ladder will be closed when broodstock needs are met. Additionally, all adults will receive formalin treatments three times per week to control fungus and decrease pre-spawning mortality. NPTHC intends to trap only enough adults to meet program goals from both LGR and the NPTHC ladder.

In the event production exceeds 110% of the program goals, surplus fry will be distributed amongst the FCS production releases as a first option. PBT integrity will be considered in determining how surpluses are distributed. Alternatively, they may be outplanted into the lower Clearwater River or utilized in some other way, pending co-manager approval.

4.3.1.4. Out-planting

Adults excess to broodstock and not needed for coded-wire tag recovery or tribal subsistence may be out-planted to supplement natural production. Proposed out-plants and any fish research requests will be considered and reviewed by the co-managers. No inoculated or injected fish will be out-planted. Instead they will be buried on site at NPTHC.

4.3.1.5. Spawning plans

Spawning at NPTHC will occur every Tuesday beginning on October 18th, and continue until program egg-take goals are met. Spawning may also occur on Wednesdays to avoid extremely long days during larger egg takes. Hatchery staff will ensure M&E employees are aware if Wednesday spawning is necessary.

Out-of-Snake River Basin adults, identified as "strays" by CWT or PIT tag may be culled or transferred to lower river hatcheries to meet production goals. However, to meet NPTHC production, strays may be retained at a rate not to exceed 5%. Mating will be a 1 x 1 cross (1 female: 1 male). Natural Snake River fish will be incorporated into the broodstock at a target rate of up to 30%, provided that this number does not exceed 20% of the natural origin population.

In early-November, Gonadotropin Releasing Hormone (sGnRHa) may be used on remaining un-spawned LGR females to facilitate maturation. Adults from LGR that have CWT's and are excess to broodstock needs will be sacrificed to recover the wire for run-reconstruction purposes.

Adults from LGR without wire will have scale samples taken before they are released into Clearwater Basin streams. Fish held at NPTHC will have been treated with formalin so if a fishery is occurring in the Clearwater Basin, these fish may be out-planted into closed waters, and/or marked differentially for easy identification by anglers. However, no inoculated or injected fish will be out-planted. Any action of this type will be coordinated with the NPT Fish and Wildlife Commission and the co-managers. These fish may also be spawned to backfill for LFH if necessary. Adults and jacks trapped at NPTHC in excess to broodstock needs may be returned to the river to spawn naturally, if they have not been injected or inoculated.

Every adult female will be sampled individually for BKD using enzyme-linked immunosorbant assay (ELISA). Up to 150 ovarian fluid samples (3 fish pools) will be sampled for viruses. An additional 60 tissue samples will be taken for bacteria assays, and sampled for Myxobolus cerebralis. Samples will be collected by NPTHC staff and delivered to IFHC.

Whenever possible, eggs from early spawned females will be used for the Luke's Gulch AF and Cedar Flats AF programs, to support an early returning run to the S.F. Clearwater and Selway Rivers. However, the Clearwater River direct release from NPTHC is the highest priority in the event of an egg shortage, and that goal will always be met before either the Luke's Gulch or Cedar Flats acclimated programs. The North Lapwai Valley AF program may be reduced to ensure the Luke's Gulch and Cedar Flats program goals are met. The intent of the fall Chinook program is to take eggs across the entire run, and build release groups represented by multiple takes whenever possible. Chinook salmon carcasses may be returned to free-flowing reaches of the Clearwater River for nutrient enhancement, if they have not been injected or inoculated. ***Aaron Penney/ Carl East***

4.3.1.6. Adult M&E

Genetic samples are also collected from all spawned adults to develop the Parentage Based Tagging (PBT) baseline (see Appendix 1 for detail). ***Chris Sullivan***

4.3.1.7. Egg Incubation

Fertilized eggs will be water hardened for 30 minutes in 100 parts per million Iodophore and placed in heath trays for incubation. At between 600 and 625 temperature units (TU's) eyed eggs will be shocked; machine sorted the following day and transferred back into Heath trays to hatch. The eggs from females with a high BKD ELISA value may be culled. At swim-up, the fish will be transferred to production room tanks at ~1,200 fpp (0.37 grams). ***Aaron Penney/ Carl East***

4.3.1.8. Adult M&E

- Redd surveys and carcass collection. Scales and genetic samples taken, hatchery/wild determination, scan for PIT tags and CWTs, along with all other biological information.
- Volunteers to NPTHC and fish hauled from Lower Granite Dam will be scanned for PIT tags and CWTs and scales and genetics will be taken on all spawned fish and mortalities, along with all other biological information. ***Bill Arnsberg, Jay Hesse***

4.3.1.9. Fish health

Every adult female will be sampled individually for BKD with ELISA. Up to 150 ovarian fluid samples (3 pool) will be sampled for viruses. An additional 60 tissue samples will be taken for virus, bacteria and *Myxobolus cerebralis.* Brood fish health samples will be taken by NPT staff and delivered to Idaho Fish Health Center personnel for analysis. Eggs from fish with a high BKD titer over the .250 ELISA O.D. value will be culled. ***Marilyn Blair***

4.3.1.10. Communication

NPTHC produces monthly production and pathology reports, and both an annual operation plan and annual operation report for BPA and the co-managers. Fish Research produces quarterly and annual reports to BPA.

5. RAINBOW TROUT

- **Dworshak** Reservoir Mitigation

The initial mitigation responsibility for Dworshak Dam Project was to provide 100,000 pounds of rainbow trout annually to be stocked into Dworshak Reservoir. This mitigation has evolved over the years to approximately 18,000 pounds of rainbow trout or 50,000 catchables. Since 1997, Hagerman NFH has raised rainbows for stocking into Southern Idaho reservoirs and IDFG reciprocates by stocking lakes in the Clearwater

Basin. Based on creel information provided by IDFG, return to creel of historical rainbow trout out-plants into Dworshak Reservoir have been very low. Therefore, the release locations of the majority of these fish have been changed to lowland lakes or reservoirs in the North Fork Clearwater drainage. At this time, the only agreed-to release locations for COE mitigation rainbow trout are within the North Fork Clearwater Drainage. ***Joe DuPont/Tod Sween/Ann Setter/Ken Fone***

- ***Clearwater Basin***

  Until 2009, IDFG annually stocked approximately 50,000 (3,300 lbs) of Kamloops rainbow trout from LFH into the Clearwater River system. In 2010, IDFG and NPT agreed to a new allocation and release locations for these fish. In 2016, 650 lbs. (1 fish/lb) will be released into Tunnel Pond and, 650 lbs. (3 fish/lb) will be released into Mann Lake. Changes to these releases can be made with approval from both the NPT and IDFG. The NPT will transport the fish destined for Tunnel Pond and IDFG will transport the Mann Lake fish. This program will be evaluated for 5 years to determine if it's meeting the needs of the public in mitigating for lost fisheries.

  Spokane rainbows (160,000) from LFH will be stocked into lowland lakes within the Clearwater drainage in April and May; these unmarked fish provide additional fishing opportunities. This program is funded by the Lower Snake River Compensation Plan and the Dingle-Johnson Program to compensate for dam related losses. ***Joe Dupont / Becky Johnson***

  The CFH regional rainbow program redistributes approximately 100,000 IDFG reared trout. There are 25+ plant sites, requiring 100+ trips, and stocking occurs from April to October. In 2016 CFH is scheduled to release approximately 117,500 catchable rainbow trout. ***Joe Dupont***

6. PACIFIC LAMPREY

The purpose of this stop gap effort by NPT Fisheries is to avoid local extirpation in the Snake River Basin and maintain a population of ammocoetes that serve as a source of pheromone attractants drawing adults upstream to spawn in the abundant habitat in this region, thereby continuing a presence in the Snake River Basin until upstream adult and downstream juvenile passage problems are identified and corrected, and healthy, harvestable populations are restored. The Nez Perce Tribe believes it is imperative to restore this important component of the ecosystem and retain cultural values.

6.1. NPTHC

NPT Program Nez Perce Tribal Hatchery – During the summer of 2015, NPT Fisheries again conducted trapping operations for adult lamprey at Bonneville, The Dalles, and John Day dams and transported them to Nez Perce Tribal Hatchery. From June 11-30, 2015, a total of 289 lampreys were collected at Bonneville Dam, and from July 22 to August 19 an additional 217 lamprey were obtained from John Day Dam, and 210 lampreys were collected from traps at The Dalles Dam. A total of 716 lampreys were collected from these trapping efforts, and all were injected with oxytetracycline by NPT staff for furunculosis. After holding these adults through the winter months, NPT plans to out-plant them during April/May 2016 in Lolo Creek, Orofino Creek, and

Newsome Creek, Big Canyon Creek, and the South Fork Salmon and Johnson Creek in Idaho, Asotin Creek in Washington, and the Wallowa River and Minam River in Oregon, to spawn naturally. Genetic samples are collected by NPT staff for analysis by CRITFC in the lab at Hagerman NFH. Staff are also providing researchers at the Rocky Mountain Research Station in Missoula, Montana with lamprey tissue samples for the development of genetic markers for eDNA analysis. ***Tod Sween***

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USFWS	Jill Olson	Fish Biologist	(208) 476-2238	Jill_Olson@fws.gov
USFWS	Laura Sprague	IFHC Wild Fish Health Survey Prog. Coordinator	(208) 476-9500	Laura_Sprague@fws.gov
USFWS	Marilyn Blair	IFHC Project Leader	(208) 476-9500	Marilyn_J_Blair@fws.gov
USFWS	Mark Drobish	DNFH Manager	(208) 476-4591	mark_drobish@fws.gov
USFWS	Rod Engle	LSRCP - Science Coordinator	(208) 378-5298	rod_engle@fws.gov
USFWS	Ray Jones	IFRO Evaluation Biologist	(208) 476-2239	ray_jones@fws.gov

Agency	Name	JobTitle	BusinessPhone	EmailAddress
USFWS	Tom Tighe	Fish Biologist	(208) 476-2269	Tom_Tighe@fws.gov

Table 1.1a. Steelhead Rearing Metrics for BY 2015 fish for release in 2016

Program	Brood Collection Site	Rearing Facility	Release Site	Release Goals		Inventory To Date		Excess Fry/ Fingerlings Released		Projected Smolt Releases		
				Number	Size (FPP)	Date	Number	Number	Release Site	Dates	Number	Size (FPP)
DNFH	DNFH	DNFH	DNFH	1,200,000	5.8	12/31/2015	1,285,947	0	0	4/11-4/22/2016	1,273,088	5.8
			Clear Creek	300,000	5.8	12/31/2015	363,601	0	0	4/11-4/22/2016	359,965	5.8
			SF CLWR, Red House	400,000	5.8	12/31/2015	428,732	0	0	4/11-4/22/2016	424,445	5.8
			Lolo Creek	200,000	5.8	12/31/2015	246,187	0	0	4/11-4/22/2016	243,725	5.8
Total				2,100,000			2,324,467	0			2,301,222	
CFH	SF-CLWR	CFH	Meadow Creek-SF	501,000	4.5	1/7/2016	554,619	0	NA	4/18-4/22/2016	543,756	4.5
			Red House Hole-SF	219,000	4.5	1/7/2016	232,619	0	NA	4/18-4/22/2016	227,969	4.5
			Newsome Creek-SF	123,000	4.5	1/7/2016	124,135	0	NA	4/18-4/22/2016	121,708	4.5
Totals				843,000			911,373	0			893,433	

Table 1.1b. BY 2015 Steelhead Inventory to Date by Mark Type for release in 2016.

Program	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date						PIT Tags				
				Date	Total	Adipose Fin Clip		No Clip		Total # Tags [1]	Funding Source [2]			
						No CWT	CWT	CWT	No CWT		CSS	LSRCP	USACOE	USFWS
DNFH	DNFH	DNFH	DNFH	12/31/2015	1,285,947	1,122,241	163,706	0	0	18,700	7,800		10,900	
			Clear Creek	12/31/2015	363,601	343,337	20,264	0	0	3,200	1,200		2,000	
			SF CLWR, Red House	12/31/2015	428,732	407,911	20,821	0	0	7,500	2,700		4,800	
			Lolo Creek	12/31/2015	246,187	0	0	0	246,187	3,500	1,200		2,300	
Total					2,324,467	1,873,489	204,791	0	246,187	32,900	12,900	-	20,000	-
CFH	SF-CLWR	CFH	Meadow Creek-SF	1/7/2016	554,619	348,328	0	160,140	46,386	10,800	3,200	7,600		
			Red House Hole-SF	1/7/2016	232,619	232,622	0	0	0	4,700	1,400	3,300		
			Newsome Creek-SF	1/7/2016	124,135	0	0	0	124,192	2,600	800	1,800		
Totals					911,373	580,950	0	160,140	170,578	18,100	5,400	12,700	-	-
Grand Total					3,235,840	2,454,439	204,791	160,140	416,765	51,000	18,300	12,700	20,000	-

[1] Represents actual number tagged if tags have already been applied at the time of this report

Table 1.2a Adult cumulative brood stock acquisition schedules for hatchery steelhead programs in the Clearwater River, 2016.

Season	Date	Dworshak Trap	SF Clwtr Localized
Fall	Oct	100	NA
	Nov	100	
	Dec	100	
Spring	9-Feb	150	
	16-Feb	150	100
	1-Mar	150	100
	8-Mar	-	100
	15-Mar	150	100
	22-Mar	250	
	29-Mar	150	
	5-Apr		
	12-Apr	150	
	19-Apr		
LGR Return	2015-16 Projected	17,745	7,092
	Previous 5 Yr Avg	17,047	9,059

[1] Approximate acquisition schedule based on average historic acquisition timing and number

Table 1.2b. BY 2016 - Steelhead Spawning/Egg Take Plan.

Take		Eggs / Female by Spawn Type		Hatchery Program / Brood Source / Females Spawned By Method / Green Eggs Taken																									
				DNFH - All Releases										CFH - South Fork Clearwater								MVH- Upper Salmon R.				Grand Totals			
				DWORB				Reconditioned Kelts				SFCWR						DWORB				SFCWR				DWORB					
				Females				Females				Females						Females				Females				Females					
No.	Dates	Kill Sp	*Air Sp*	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Green Eggs Projections Combined	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Green Eggs Projections Combined	Kill Sp	*Air Sp*	Total	Green Eggs Projections	Kill Sp	*Air Sp*	Total	Green Eggs Projections
1 E	12-Jan	6,619	5,906	58		58	383,902			0	0			0	0	383,902			0	0			0	0	0			0	0	58	0	58	383,902
2 E	19-Jan	6,619	5,906	39		39	258,141	1		1	6,619			0	0	264,760			0	0			0	0	0			0	0	39	0	39	264,760
2.1 E	3-Feb	6,619	5,906	23		23	152,237			0	0			0	0	152,237			0	0			0	0	0			0	0	23	0	23	152,237
3	9-Feb	6,619	5,906		62	62	366,172			0	0			0	0	366,172			0	0			0	0	0			0	0	0	62	62	366,172
4	23-Feb	6,619	5,906		62	62	366,172			0	0			0	0	366,172			0	0	50		50	330,950	330,950			0	0	50	62	112	697,122
5	1-Mar	6,619	5,906		62	62	366,172			0	0			0	0	366,172			0	0	50		50	330,950	330,950			0	0	50	62	112	697,122
6	8-Mar	6,619	5,906			0	0			0	0			0	0	0			0	0	50		50	330,950	330,950			0	0	50	0	50	330,950
7	15-Mar	6,619	5,906	57		57	377,283			0	0			0	0	377,283			0	0	50		50	330,950	330,950			0	0	107	0	107	708,233
8	22-Mar	6,619	5,906	57		57	377,283			0	0			0	0	377,283			0	0			0	0	0	64		64	423,616	121	0	121	800,899
9	29-Mar	6,619	5,906	57		57	377,283			0	0			0	0	377,283			0	0			0	0	0			0	0	57	0	57	377,283
10	12-Apr	6,619	5,906	57		57	377,283			0	0			0	0	377,283			0	0			0	0	0			0	0	57	0	57	377,283
Cumulative				348	186	534	3,401,928	1	0	1	6,619	0	0	0	0	3,408,547	0	0	0	0	###	0	200	1,323,800	1,323,800	64	0	64	423,616	612	186	798	5,155,963

Table 1.2c. Steelhead Projected marking for BY 2016 Production for release in 2017.

Program	Brood Collection Site	Rearing Facility	Release Site	Smolt Release Goals	Projected Marking				PIT Tags					
					Adipose Fin Clip		No Clip		Total # Tags	Funding Source				
					No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	ACOE	USFWS
DNFH	DNFH	DNFH	DNFH	1,200,000	1,080,000	120,000			18,700	7,800	0	0	10,900	0
			Clear Creek	300,000	280,000	20,000			5,000	1,800	0	0	3,200	0
			SF CLWR, Red House	400,000	360,000	40,000			5,700	2,100	0	0	3,600	0
			Lolo Creek	200,000	0	0	0	200,000	3,500	1,200	0	0	2,300	0
Total				2,100,000	1,720,000	180,000	0	200,000	32,900	12,900	0	0	20,000	0
CFH	SF-CLWR	CFH	Meadow Creek-SF	501,000	290,000		140,000	70,000	10,800	3,200	7,600	0	0	0
			Red House Hole-SF	219,000	220,000				4,700	1,400	3,300	0	0	0
			Newsome Creek-SF	123,000				123,000	2,600	800	1,800	0	0	0
Totals				843,000	510,000	0	140,000	193,000	18,100	5,400	12,700	0	0	0
Grand Totals				2,943,000	2,230,000	180,000	140,000	393,000	51,000	18,300	12,700	0	20,000	0

Table 2.1a. BY2014 SMOLTS - Sp/Su Chinook Salmon inventories by life stage , smolt release goals and projected releases in 2016.

Hatchery Program	Run	Brood Collection Site	Rearing Facility	Release Site	Release Goals		Inventory To Date		Projected Smolt Release		
					Number	Size (FPP)	Date	Number	Dates	Number	Size (FPP)
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,470,000	20.0	1/1/2016	1,506,740	4/29/2016	1,500,713	20.0
Total					1,470,000			1,506,740		1,500,713	
KNFH	SpCS	KNFH	KNFH	Kooskia NFH	600,000	24.0	12/31/2015	660,472	3/11/2016	660,190	24.0
Total					600,000			660,472		660,190	
NPTH	SpCS	DNFH	NPTH	NPTH	200,000	20.0	12/31/2015	190,990	4/4-4/7/2016	185,260	20.0
				Lolo Creek	200,000	20.0	12/31/2015	197,291	TBD - with Steelhead	191,372	20.0
Total					400,000			388,281		376,632	
CFH-LSRCP	SpCS	SFClw	CFH	Red River	1,100,000	16.0	1/7/2016	1,273,106	3/23-3/29/2016	1,234,943	16.0
		DHFH		NF Clearwater (CFH)	400,000	16.0	1/7/2016	489,126	4/4-4/5/2016	474,513	16.0
		DNFH		Selway River-Lower	400,000	16.0	1/7/2016	464,598	3/14-3/15/2016	450,714	16.0
		Koos/Pow		Clear Creek	635,000	16.0	1/7/2016	792,300	3/16-3/18/2016	767,950	16.0
		SFClw		Mill Creek 1	0	N/A	1/7/2016	434,112	3/30-4/1/2016	421,088	16.0
	SpCS Subtotal				2,535,000			3,453,242		3,349,208	
	SuCS	Pow/SFSR	CFH	Powell Pond	600,000	16.0	1/7/2016	244,534	3/21-3/22/2016	237,198	16.0
Total					3,135,000			3,697,776		3,586,406	
Grand Total					5,605,000			6,253,269		6,123,941	

1/ The Mill Creek release was unanticipated additional spring Chinook production that was backfill to fully utilize rearing space that was available because of a shortfall in summer Chinook production from BY 14.

Table 2.1b. BY2014 SMOLTS - Sp/Su Chinook Salmon Inventory to Date by Mark Type for release in 2016.

Hatchery Program	Run	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date						PIT Tags				
					Date	Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
							CWT	No CWT	CWT	No CWT		CSS	LSRCP	USFWS	BPA
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1/1/2016	1,506,740	120,000	1,386,740	0	0	42,000	42,000	0	0	0
Total						1,506,740	120,000	1,386,740	0	0	42,000	42,000	0	0	0
KNFH	SpCS	KOOS	KNFH	Kooskia NFH	12/31/2015	660,472	110,000	495,572	0	54,900	8,000	0	0	8,000	0
Total						660,472	110,000	495,572	0	54,900	8,000	0	0	8,000	0
NPTH	SpCS	DNFH	NPTH	NPTH	12/31/2015	190,990	67,352	0	123,638	0	600	0	0	0	600
				Lolo Creek	12/31/2015	197,291	74,331	122,960	0	0	1,000	0	0	0	1,000
Total						388,281	141,683	122,960	123,638	0	1,600	0	0	0	1,600
CFH	SpCS	SFClw	CFH	Red River	1/7/2016	1,273,106	118,102	1,155,004	0	0	17,100	5,100	12,000	0	0
		Dwor		NF Clearwater (CFH)	1/7/2016	489,126	118,253	370,873	0	0	17,100		17,100	0	0
		Dwor		Selway River-Lower	1/7/2016	464,598	116,998	191,922	155,678	0	17,100	5,100	12,000	0	0
		KOOS/Pow		Clear Creek	1/7/2016	792,300	117,575	674,725	0	0	9,500	3,500	6,000	0	0
		NA 1/		Mill Creek	1/7/2016	434,112	98,590	335,522	0	0	1,000		1,000	0	0
	SpCS Subtotal					3,453,242	569,518	2,728,046	155,678	0	61,800	13,700	48,100	0	0
	SuCS	Pow/SFSR		Powell Pond	1/7/2016	244,534	0	0	244,534	0	25,500	13,500	12,000	0	0
Total						3,697,776	569,518	2,728,046	400,212	0	87,300	27,200	60,100	0	0
Grand Total						6,253,269	941,201	4,733,318	523,850	54,900	138,900	69,200	60,100	8,000	1,600

1/ The Mill Creek release was unanticipated additional spring Chinook production that was backfill to fully utilize rearing space that was available because of a shortfall in summer Chinook production from BY 14.

Table 2.2a. BY2015 PARR and PRE-SMOLT - Sp/Su Chinook Salmon inventories by life stage, release goals and projected releases in 2016.

Hatchery Program	Run/ Life Stage	Brood Collection Site	Rearing Facility	Release Site	Inventory To Date		Release Goals		Projected Releases		
					Date	Number	Number	Size (FPP)	Dates	Number	Size
DNFH	SpCS/Parr	DNFH	DNFH	Selway River-Upper	1/1/16	308,350	300,000	100.0	9/1/2016	300,000	100.0
Total						308,350	300,000			300,000	
NPTHC	SpCS/Pre-Smolt	NPTHC	NPTH	Newsome Cr (SF Clw)	12/31/15	84,464	75,000	29.0	10/12/2016	84,000	29.0
	SpCS/Pre-Smolt	NPTHC		Lolo Cr (Clearwater R.)		162,000	150,000	34.0	10/12/2016	161,500	34.0
	SpCS/Parr	NPTHC		Meadow Cr. (Selway)		400,000	400,000	117.0	7/1/2016	400,000	117.0
Total						646,464	625,000			645,500	
CFH	SpCs/Fry	NA [2]	CFH	SF Clwtr at Meadow Cr.	1/7/16	544,000	NA	NA	1/18 & 1/25/2016	540,000	1,500.0
	SpCS/Fry			Lower Selway	1/7/16	410,000	NA	NA	1/21 & 1/29/2016	408,000	1,500.0
Total						954,000	0			948,000	
Grand Total						1,908,814	925,000			1,893,500	

[1] Eyed Eggs to Rear = (Total Green Eggs) - (Eggs culled for disease) - (Dead eggs picked) - (Eggs culled for hatchery capacity) - (Eggs transferred out)

[2] Unintended surplus production

Table 2.2b. BY 2015 Sp/Su Chinook Salmon - Early Rearing Inventory for smolt releases in 2017 (including anticipated set out) [1]

Hatchery Program	Run	Brood Collection Site	Rearing Facility	Release Site	BY 2015 Smolt Release Goals for 2017	Size (FPP)	Inventory to Date		
							Date	Goal [2]	Actual
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,650,000	20.00	11/30/2015	1,737,501	1,762,889
Totals					1,650,000			1,737,501	1,762,889
KFH	SpCS	KFH	KFH	Kooskia NFH	600,000	24.00	9/15/2015	864,304	830,132
Totals					600,000			864,304	830,132
NPTHC	SpCS	DNFH	NPTHC	NPTHC	200,000		11/30/2015	210,606	216,810
				Lolo Creek	200,000		11/30/2015	210,606	214,205
Totals					200,000				
CFH	SpCS	Red R.	CFH	Red River	1,100,000	16.0	1/7/2016	1,309,524	1,408,584
		DNFH		NF Clearwater (CFH)	400,000	16.0	1/7/2016	476,190	508,876
		DNFH		Selway River-Lower	400,000	16.0	1/7/2016	476,190	512,151
		DNFH		Clear Creek	635,000	16.0	1/7/2016	755,952	799,050
	CFH SpCS Subtotal [3]				2,535,000			3,017,857	3,228,661
	SuCS	Pow/SFSR	CFH	Powell Pond	600,000	16.0	1/7/2016	714,286	937,135
Totals					3,135,000			3,732,143	4,165,796
Grand Totals					5,585,000			6,333,948	6,758,817

[1] This is a summary of inventory. A detailed inventory by Vat and Release Location can be found in Appendix 2.2.

[2] Estimated fish needed in vats to reach eventual smolt release goals, based on brood calculator exclusive of the 7% buffer.

[3] The sub total goal shown here is the number of eyed eggs required to meet the un-buffered smolt release goal. The actual inventory shown is what remains after 854,000 excess were set aside to be release as fry (see Table 2.2a)

Table 2.2c BY 2015 SMOLTS - Sp/Su Chinook Projected Marking of BY 2015 juveniles to be released in 2017.

Hatchery Program	Run	Brood Collection Site	Rearing Facility	Release Site	Release Goals for 2017	Likely Marking Date(s)	Inventory to Date		Projected Marking				Projected PIT Tags [1]				
									Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
							Date	Number	No CWT	CWT	CWT	No CWT		CSS	LSRCP	USFWS	BPA
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,650,000	8/15-9/2/16	11/30/2015	1,762,889	1,530,000	120,000	0	0	42,000	42,000	0	0	0
Totals					1,650,000			1,762,889	1,530,000	120,000	0	0	42,000	42,000	0	0	0
KFH	SpCS	KFH	KFH	Kooskia NFH	600,000	7/6/2016	12/31/2015	782,217	500,000	110,000	0	55,000	8,000	0	0	8,000	0
Totals					600,000			782,217	500,000	110,000	0	55,000	8,000	0	0	8,000	0
NPTHC	SpCS	DNFH	NPTHC	NPTH	200,000	8/15-9/2/16	11/30/2015	216,810	0	66,000	133,000	0	600				600
				Lolo Creek	200,000	8/15-9/2/16	11/30/2015	214,205	140,000	60,000	0	0	1,000		1,000		
Totals					200,000			431,015	140,000	126,000	133,000	0	1,600	0	1,000	0	600
CFH	SpCS	Red R.	CFH	Red River	1,100,000	5/31-6/10/2016	1/7/2016	1,408,584	980,000	120,000			17,100	5,100	12,000		
		DNFH		NF Clearwater (CFH)	400,000	5/31-6/10/2016	1/7/2016	508,876		400,000			17,100		17,100		
		DNFH		Selway River-Lower	400,000	5/31-6/10/2016	1/7/2016	512,151	145,000	120,000	135,000		17,100	5,100	12,000		
		DNFH		Clear Creek	635,000	5/31-6/10/2016	1/7/2016	799,050	515,000	120,000			9,800	3,500	6,300		
	SpCS Subtotal				2,535,000			3,228,661	1,640,000	760,000	135,000	0	61,100	13,700	47,400	0	0
	SuCS	Pow/SFSR	CFH	Powell Pond	600,000	5/31-6/10/2016	1/7/2016	937,135	180,000	120,000	300,000		25,500	13,500	12,000		
Totals					3,135,000			4,165,796	1,820,000	880,000	435,000	0	86,600	27,200	59,400	0	0
Grand Totals					5,585,000			7,141,917	3,990,000	1,236,000	568,000	55,000	138,200	69,200	60,400	8,000	600

[1] PIT Tagging occurs in spring 2017

Table 2.2d. BY 2015 PARR and PRE-SMOLT - Sp/Su Chinook Salmon Inventory to Date by Mark Type for release in 2016.

Hatchery Program	Run/ Life Stage	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date		Projected Marking & Tagging				PIT Tags				
					Date	Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
							No CWT	CWT	CWT	No CWT		CSS	LSRCP	USFWS	BPA
DHFH 1	SpCS/Parr	DNFH	DNFH	Selway River-Upper	01/01/16	308,350	0	0	0	308,350	0	0	0	0	0
Total						308,350	0	0	0	308,350	0	0	0	0	0
NPTH	SpCS/Pre-Smolt	NPTHC	NPTHC	Newsome Cr. (SF Clw)	12/31/15	84,464	0	0	84,000	0	3,000	0	0	0	3,000
	SpCS/Pre-Smolt			Lolo Cr. (Clearwater R.)		162,000	0	0	161,500	0	6,000	0	0	0	6,000
	SpCS/Parr [2]			Meadow Cr. (Selway)		400,000	0	0	0	400,000	5,000	0	0	0	5,000
Total						646,464	0	0	245,500	400,000	14,000	0	0	0	14,000
CFH	SPCS/Fry			S. Fk. Clearwater			0	0	0		0	0	0	0	0
				Lower Selway			0	0	0		0	0	0	0	0
Total															
Grand Total						954,814	0	0	245,500	708,350	14,000	0	0	0	14,000

[1] More fry may be added to this group to be determined at marking

[2] These are presently eggs/sac fry at DNFH to be tranfered to NPTH.

Table 2.3a BY 2016 PARR and PRE-SMOLT - Sp/Su Chinook Production Goals for Release in 2017.

Hatchery Program	Run/ Life Stage	Prefered Brood Collection Site	Rearing Facility	Release Site	BY 2016 Parr/Pre-Smolt Release Goal for 2017
DNFH	SpCS/Parr	DNFH	DNFH	Selway River-Upper	300,000
Total					300,000
NPTHC	SpCS/Pre-Smolt	NPTH	NPTH	Newsome Cr. (SF Clw)	75,000
	SpCS/Pre-Smolt			Lolo Cr. (Clearwater R.)	150,000
	SpCS/Parr			Meadow Cr. (Selway)	400,000
Total					625,000
Grand Total					925,000

Table 2.3b. BY 2016 SMOLTS - Sp/Su Chinook Smolt Production Goals for Release in 2018.

Hatchery Program	Run	Rearing Facility	Prefered Brood Collection Site	Release Site	BY 2016 Smolt Release Goal in 2018
DNFH	SpCS	DNFH	DNFH	NF Clearwater (DNFH)	1,650,000
DNFH Total					1,650,000
KFH	SpCS	KNFH	KFN/DNFH	Kooskia NFH	600,000
KFH Total					600,000
NPTHC	SpCS	NPTH	DNFH	NPTH	200,000
				Lolo Creek	200,000
NPTHC Total					400,000
CFH	SpCS	CFH	Red R.	Red River	1,100,000
			DNFH	NF Clearwater (CFH)	400,000
			DNFH	Selway River-Lower	400,000
			KFH/DNFH	Clear Creek	635,000
			CFH SpCS Subtotal		2,535,000
	SuCS	CFH	Pow/SFSR	Powell Pond	600,000
CFH Total					5,670,000
Grand Total					8,320,000

Table 2.3c. Preferred BY 2016 broodstock trapping and holding locations for spring/summer chinook salmon production in the Clearwater Basin.

NOTE: NUMBERS AND TRAPPING LOCATIONS FOR BROODSTOCK IN BY 2016 ARE NOT FINAL AND ARE STILL BEING NEGOTIATED BY STATE AND TRIBAL MANGERS.

HATCHERY - RUN	PROGRAM	SMOLT RELEASE TARGET	Adult Brood Needs by Facility						Brood Holding Site				
			Preferred Trapping Sites [1]										
			DNHF	KNFH	Red River	Powell	NPTH	Total	DNFH	CFH	Powell	NPTH	Total
DNFH - SCS	NF Clearwater	1,650,000	1,166					1,166	1,166				1,166
DNFH - SCS	Selway Parr	300,000	212					212	212				212
DNFH - SCS	Transfer to NPTHC	380,000	280					280	280				280
KNFH - SCS	Clear Creek	600,000		526				526	526				526
CFH - SCS	SF Clearwater	1,100,000			896			896		896			896
CFH - SCS	Selway	400,000		326				326		326			326
CFH - SCS	Clear Creek	400,000		326				326	232	94			326
CFH - SCS	Clear Creek	235,000		194				194	194				194
CFH - SCS	NF Clearwater	400,000		310				310		310			310
CFH - SCS	New Production (release TBD)	215,000		176				176		176			176
CFH - SUM	Powell	600,000				426		426			426		426
NPTHC - SCS	Lolo, Newsome, Meadow Ck. Parr/Presmolt	625,000					478	478				478	478
	Total	**6,925,000**	**1,658**	**1,858**	**896**	**426**	**478**	**5,316**	**2,610**	**1,802**	**426**	**478**	**5,316**

[1] shaded cells are brood that managers prefer to be trapped at Kooskia but if numbers trapped at Kooskia are insufficient to meet these needs, the balance could b trapped at Dworshak.

Table 2.3d. Adult brood stock acquisition schedules for hatchery Sp/Su Chinook Salmon programs in the Clearwater River drainage, 2016.

Table 2.3d. Adult brood stock acquisition schedules for hatchery Sp/Su Chinook Salmon programs in the Clearwater River drainage, 2016.

	Spring				Summer
Date	Dworshak Trap	Kooskia Trap	NPTH Trap	Red River Trap	Powell
3-May					
10-May		52	0		
17-May		102	5		
24-May		329	10		
31-May		557	14		
7-Jun		297	67	9	
14-Jun		279	105	72	
21-Jun		56	177	152	21
28-Jun		186	229	305	55
5-Jul	133		277	493	141
12-Jul	249		349	609	179
19-Jul	332		382	654	196
26-Jul	332		425	663	200
2-Aug	315		449	681	200
9-Aug	298		449	690	204
16-Aug			478	717	213
23-Aug				806	217
30-Aug				896	268
6-Sep					375
13-Sep					426
20-Sep					
27-Sep					
Total	1658	1858	478	896	426
2016 LGR Forecast*	5738	5574	310	3136	5210
5 Yr Avg LGR Return*	6925	4499			

*2- and 3-ocean returns only

Table 2.4a. Sites, release numbers for adult Spring Chinook Salmon, when all Clearwater Basin Production Programs are above broodstock, harvest and C&S needs.*

Release Location	Hatchery Source	Guidline Range	Proposed Max
Selway Basin			
McGruder	RR, NPTH, Clear, DNFH, KNFH	800 - 1,000	6,000
O'Hara Creek	RR, NPTH, Clear, DNFH	200	
Lower Selway	RR, NPTH, Clear, DNFH, KNFH	0 - 2,000	3,400
SF Clearwater R.			600
Mill Creek	RR, NPTH, Clear, DNFH	150	
Meadow Creek	RR, NPTH, Clear, DNFH	150 - 300	
SF Clearwater R.	RR, NPTH, Clear, DNFH	0 - 500	
Lochsa River			
Main Lochsa, Badger Cr., Boulder Cr.	RR, NPTH, Clear, DNFH	500	
	TOTAL	**1,800 - 4,650**	**10,000**

*Release Locations are not prioritized. If guidline range is likely to be exceeded, co-managers will discuss disposition of excess fish.

*There are weekly conference calls scheduled for Tuesdays, to keep all parties updated, informed, and coordinated on in-season run development, harvest estimates, broodstock collection, outplanting plans, etc…

Table 2.4b. Proposed hatchery identifying marks for adult spring Chinook salmon outplanting in the Clearwater River.

Hatchery / Location	Mark	Purpose
Dworshak	left opercle v-notch	outplant
Kooskia	1) 1 right opercle v-notches	outplant / fishery recycle
	2) if recycle returnees - additional opercle v-notch	outplant / fishery recycle
Clear Creek above weir	right opercle v-notch	natural spawners
Lochsa (Powell satellite)	left opercle punch	fishery recycle / outplant
Crooked Fork Cr. weir	right opercle punch	ISS - natural fish above weir
Red River/Crooked River	1) right opercle punch	fishery recycle
	2) 2 right opercle punches	outplant (early)
Rapid River	dorsal punch	Clearwater (Selway) outplants
Lower Lolo Cr. weir	left and right opercle punch	NPT weir evaluation (fish collected at weir and released above weir)
Upper Lolo Cr. weir	right opercle punch	NPT weir evaluation (fish collected at weir and released above weir)
Newsome Cr. above weir	left opercle punch	NPT weir evaluation (fish collected at weir and released above weir)
NPTH	left opercle punch	outplant / fishery recycled to Lenore Boat Launch

Table 3.1a BY2014 SMOLTS - Coho Salmon Rearing Metrics

Rearing Facility	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory To Date		Release Goals		Projected Smolt Release		
					Date	Number	Number	(FPP)	Dates	Number	(FPP)
DNFH	Coho	Clw	DNFH	Clear Creek	1/1	553,233	400,000	20.0	March	551,000	20.0
Total						553,233	400,000			551,000	
ECNFH	Coho	Clw	ECNFH	Lapwai Creek	1/20	284,686	275,000	20.0	March	282,500	20.0
		Clw		Clear Creek	1/20	284,686	275,000	20.0	March	282,500	20.0
Total						569,372	550,000			565,000	
Cascade FH	Coho	Clw	Cascade FH	Lapwai Creek	1/11	486,302	500,000	20.0	March	484,000	20.0
Total						486,302	500,000			484,000	
Grand Total						1,608,907	1,450,000			1,600,000	

Table 3.1b. BY2014 SMOLTS - Coho Salmon Inventory to Date by Mark Type in 2016.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date					PIT Tags				
					Date	Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
							No CWT	CWT	CWT	CWT		CSS	LSRCP	IPC	BPA
NPTHC	Coho	Clw	DNFH	Clear Creek	1/1/16	204,828	0	0	204,828	348,405	5,000				
Total						204,828	0	0	204,828	348,405	5,000	0	0	0	0
NPTHC	Coho	Clw	ECNFH	Lapwai Creek	1/20/16	30,040	0	0	30,040	254,647	5,000				
	Coho	Clw		Clear Creek	1/20/16	30,038	0	0	30,038	254,647	5,000				
Total						60,078	0	0	60,078	509,294	10,000	0	0	0	0
NPTHC	Coho	Clw	Cascade FH	Lapwai Creek	1/11/16	60,000	426,302	60,000			0				
Total						60,000	426,302	60,000	0	0	0	0	0	0	0
Grand Total						324,906	426,302	60,000	264,906	857,699	15,000	0	0	0	0

Table 3.2a. BY 2015 Coho Salmon - Early Rearing Inventory (including anticipated set out) 1

Rearing Hatchery	Species	Stock	Inventory to Date		
			Date	Goal [2]	Actual
DNFH	Coho	Clw	01/22/16		123,229
		Uma	01/22/16		335,379
ECNFH	Coho	Clw			
Cascade FH	Coho	Clw			

[1] This is a summary of inventory. A detailed inventory by Vat and Release Location can be found in Appendix 3.1.

[2] Estimated fish needed in vats to reach eventual smolt release goals, based on brood calculator

Table 3.2b. BY 2015 SMOLTS - Coho Salmon Projected Marking of BY 2015 fish in 2016.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	Likely Marking Date(s)	Release Goals for 2017	Inventory to Date		Projected Marking				PIT Tags [1]				
									Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
							Date	Number	No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	BPA
DNFH	Coho			Clear Creek		400,000											
Total						400,000			0	0			0	0	0	0	0
ECNFH	Coho			Lapwai Creek		275,000											
	Coho			Clear Creek		275,000											
Total						550,000		0	0	0	0	0	0	0	0	0	0
Cascade FH	Coho			Lapwai Creek		500,000			440,000	60,000			0				
Total						500,000		0	440,000	60,000	0	0	0	0	0	0	0
Grand Total						1,450,000		0	440,000	60,000	0	0	0	0	0	0	0

[1] PIT Tagging occurs in spring 2017

Table 4.1a. BY2014 YEARLINGS - Fall Chinook Salmon inventories by life stage , smolts release goals and projected releases in 2016.

Hatchery Prtogram	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory To Date		Release Goals		Projected Parr and Pre-Smolt Release		
					Date	Number	Number	(FPP)	Dates	Number	(FPP)
NPTHC	FACH	SnakeR	Lyons Ferry	Big Canyon Creek	01/15/16	155,000	150,000	10	4/12/2016	150,000	10.0
Total						155,000	150,000			150,000	
Grand Total						155,000	150,000			150,000	

[1] Eyed Eggs to Rear = (Total Green Eggs) - (Eggs culled for disease) - (Dead eggs picked) - (Eggs culled for hatchery capacity) - (Eggs transferred out)

Table 4.1b. BY2014 YEARLINGS - Fall Chinook Salmon Inventory to Date by Mark Type for release in 2016.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date						PIT Tags				
					Date	Total	Adipose Fin		No Clip		Total # Tags	Funding Source			
							No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	BPA
NPTHC	FACH	SnakeR		Big Canyon Creek	01/15/16	155,000		70,000	80,000		1,000	0	1,000	0	0
Total						155,000	0	70,000	80,000	0	1,000	0	1,000	0	0
Grand Total						155,000	0	70,000	80,000	0	1,000	0	1,000	0	0

Table 4.2a. BY2015 SUB-YEARLINGS - Fall Chinook Salmon inventories by life stage , smolts release goals and projected releases in 2016.

Hatchery Prtogram	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory To Date		Release Goals		Projected Smolt Release		
					Date	Number	Number	Size (FPP)	Dates	Number	Size (FPP)
NPTHC	FACH	Snake R.	SnakeR	Big Canyon Creek	1/15/2016	515,000	500,000	50.0	5/25/2016	500,000	50.0
Total						515,000	500,000			500,000	
NPTHC	FACH	Snake R.	NPTH	NPTH	12/31/2015	511,000	500,000	50.0	6/13/2016	510,670	50.0
	FACH	Snake R.		N Lapwai Valley	12/31/2015	511,000	500,000	50.0	5/31/2016	510,670	50.0
	FACH	Snake R.		Lukes Gulch	12/31/2015	211,000	200,000	50.0	6/13/2016	210,670	50.0
	FACH	Snake R.		Cedar Flats	12/31/2015	211,000	200,000	50.0	6/13/2016	210,670	50.0
Total						1,444,000	1,400,000			1,442,680	
Grand Total						1,959,000	1,900,000			1,942,680	

Table 4.2b. BY2015 SUB-YEARLINGS - Fall Chinook Salmon Inventory to Date by Mark Type for release in 2016.

Hatchery Program	Species	Brood Collection Site	Rearing Facility	Release Site	Inventory to Date						PIT Tags				
					Date	Total	Adipose Fin		No Clip		Total # Tags	Funding Source			
							No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	BPA
NPTHC	FACH	Snake R.	Lyons Ferry	Big Canyon Creek	1/15/2016	515,000		100,000	100,000	300,000	2,000	0	2,000	0	0
Total						515,000	0	100,000	100,000	300,000	2,000	0	2,000	0	0
NPTHC	FACH	Snake R.	NPTH	NPTH	12/31/2015	511,000		100,000	200,000	200,000	2,000	0	0	0	2,000
	FACH	Snake R.		N Lapwai Valley	12/31/2015	511,000	0	100,000	200,000	200,000	2,000	0	0	0	2,000
	FACH	Snake R.		Lukes Gulch	12/31/2015	211,000	0	100,000	100,000	0	2,000	0	0	0	2,000
	FACH	Snake R.		Cedar Flats	12/31/2015	211,000	0	100,000	100,000	0	2,000	0	0	0	2,000
Total						1,444,000	0	400,000	600,000	400,000	8,000	0	0	0	8,000
Grand Total						1,959,000	0	500,000	700,000	700,000	10,000	0	2,000	0	8,000

Appendix Table 1. Broodstock calculator for USFWS, IDFG and NPTHC salmon and steelhead hatchery programs in the Clearwater River drainage.

PROGRAM INPUTS						HISTORICAL HATCHERY PERFORMANCE METRICS (5-YR AVG)						FORM CALCULATED VALUES									
SPECIES	HATCHERY	PROGRAM	PREFERED TRAPPING SITE	FORMAL RELEASE GOAL	COMANAGER APPROVED CUSHION % (1)	% FEMALES IN BROODSTOCK	% MORTALITY DURING HOLDING	GREEN EGG FECUNDITY	% SURVIVAL AFTER CULLING (2) DISEASE	% SURVIVAL GREEN TO EYED EGG	% SURVIVAL EYED EGG TO RELEASE	RELEASE GOAL WITH CUSHION	EYED EGGS	GREEN EGGS	GREEN EGGS BEFORE DISEASE CULL	FEMALES SPAWNED	MALES SPAWNED	TOTAL ADULTS SPAWNED	TRAPPED ADULTS NEEDED	ADULTS TRAPPED TO MEET 1:1 RATIO	SMOLTS PER TRAPPED ADULTS NEEDED
				(c)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(N)	(M)	(O)	(P)	(Q)	(R)	(S)	(T)
STLHD	DNFH	NF Clearwater	DNFH	1,535,000	7%	67%	4.7%	6,541	87.0%	92.0%	80.0%	1,642,450	2,053,063	2,231,590	2,565,046	392	193	585	614	930	2,675
	DNFH AIR SPN	NF Clearwater	DNFH	565,000	7%	67%	4.7%	5,773	87.0%	92.0%	80.0%	604,550	755,688	821,399	944,137	164	81	245	258	391	2,343
	MVH	Salmon River	DNFH	93,000	10%	67%	3.5%	6,693	100.0%	76.6%	85.0%	102,300	120,353	157,119	157,119	23	23	46	48	73	2,131
	CFH	Clearwater	SFCLW	843,000	10%	67%	3.5%	6,693	100.0%	76.6%	85.0%	927,300	1,090,941	1,424,205	1,424,205	213	213	426	442	670	2,098
SP/SU CHIN	DNFH	NF Clearwater	DNFH	1,470,000	3%	57%	7.5%	3,944	94.2%	89.6%	94.8%	1,514,100	1,597,152	1,782,536	1,892,288	480	480	960	1,038	1,207	1,459
	DNFH	Selway Parr	DNFH	300,000	3%	57%	7.5%	3,944	94.2%	89.6%	94.8%	309,000	325,949	363,783	386,181	98	98	196	212	247	1,458
	DNFH	Transfer to NPTHC	DNFH	400,000	3%	57%	7.5%	3,944	94.2%	89.6%	93.0%	412,000	443,011	494,432	524,874	133	133	266	288	335	1,431
	DNFH	NF Clearwater	DNFH	180,000	3%	57%	7.5%	3,944	94.2%	89.6%	94.8%	185,567	195,746	218,466	231,918	59	59	118	128	149	1,450
	KNFH	Clear Creek	KNFH	600,000	22%	50%	9.3%	3,623	94.6%	89.2%	89.2%	732,000	728,597	816,813	863,438	238	238	476	526	526	1,392
	CFH	SF Clearwater	RR	1,100,000	7%	50%	6.0%	4,000	89.0%	94.0%	84.0%	1,182,796	1,408,090	1,497,968	1,683,110	421	421	842	896	896	1,320
	CFH	Selway	DNFH	400,000	7%	50%	6.0%	4,000	89.0%	94.0%	84.0%	430,108	512,033	544,716	612,040	153	153	306	326	326	1,319
	CFH	Clear Creek	DNFH	400,000	7%	50%	6.0%	4,000	89.0%	94.0%	84.0%	430,108	512,033	544,716	612,040	153	153	306	326	326	1,319
	CFH	Clear Creek	KNFH	235,000	7%	50%	6.0%	4,000	89.0%	94.0%	84.0%	252,688	300,819	320,020	359,574	90	90	180	192	192	1,316
	CFH	NF Clearwater	DNFH	400,000	2%	50%	6.0%	4,000	89.0%	94.0%	84.0%	408,163	485,909	516,924	580,814	145	145	290	310	310	1,317
	CFH	All CFH Spring Chinook Programs		215,000	7%	50%	6.0%	4,000	89.0%	94.0%	84.0%	231,183	275,218	292,785	328,972	82	82	164	176	176	1,314
	CFH - SU	Powell	PO, SFS	600,000	7%	50%	6.0%	4,600	89.0%	94.0%	84.0%	645,161	768,049	817,074	918,060	200	200	400	426	426	1,514
	NPTHC	Lolo/Newsome/ Meadow Ck.	NPTHC	625,000	0%	50%	7.0%	4,003	91.0%	85.0%	91.0%	625,000	686,813	808,016	887,929	222	222	444	478	478	1,308
FACH	NPTHC	Snake River		1,400,000	0%	50%	18.0%	4,028	98.0%	89.0%	96.0%	1,400,000	1,458,333	1,638,577	1,672,017	415	415	830	1,014	1,014	1,381
COHO	DNFH	Clearwater		300,000	10%	50%	9.2%	2,835	93.1%	83.0%	87.5%	333,333	380,822	459,043	493,329	174	174	348	384	381	868
	ECFH	Clearwater		550,000	10%	50%	9.2%	2,835	93.1%	81.3%	71.8%	611,111	851,367	1,047,063	1,125,269	397	397	794	876	870	698

Appendix 2. Parental Based Tagging

A novel approach for mass marking hatchery broodstock is parentage-based tagging. Parentage-based tagging (PBT) involves the annual genotyping of all broodstock at each hatchery, creating a parental genotype database. Progeny from any of these parents (either collected as juveniles or returning adults), if genotyped, could be assigned back to their parents, thus identifying the hatchery they originated from and exact brood year they were produced in.

The exceptional advantage PBT has over mechanical tagging technologies is increased sample size. By genotyping all parental broodstock, every juvenile is "tagged" thereby vastly increasing the chances of encountering a tagged fish. The key to this technology ultimately working is the ability to sample all (100%) of the hatchery broodstock.

Eagle Fish Genetics Lab provides Whatman sheets (3mm chromatography paper) for sample preservation and sampling equipment to the spawning facilities, but relies largely on existing hatchery or other program personnel to take fin tissue samples, record sex and record spawn/sample date. General sampling guidelines for hatchery staff include:

- Obtaining tissue samples (fin clips) from every adult hatchery steelhead and Chinook salmon that contributes to spawning in the Snake River basin (~6000 adult hatchery steelhead and ~10,500 adult hatchery Chinook salmon).
- Ensuring that all samples come from fresh, "live" tissue and that each sample is properly preserved until DNA extraction and free of contamination.
- Ensuring that every sample is properly labeled and inventoried.
- Ensuring that data/information from every fish sampled is recorded and tied to a field/hatchery sample number (sample/spawn date, take #, hatchery, sex, length, cross information, etc.) and that field/hatchery sample number is tied to a unique genetic (Progeny) number.

A specific sampling protocol includes:

1. Use forceps and scissors or a scalpel, remove a small amount of tissue:
    a. fin tissue – about the size of your little finger nail (any fin will work, just make sure that it is free of fungus and that you are sampling "live" tissue
2. Carefully wipe clean instruments with a Kimwipe or paper towel and rinse the instrument in ethanol or clean water between each sample.
3. Place tissue onto pre-labeled Whatman sheets and store in dry space out of sunlight until they can be shipped to the Eagle Genetics Lab.

If possible, record every individual cross by genetic sample number, sex and date.

Appendix 3. 2016 Snake River Kelt Reconditioning Project Summary

Background and Goals

As a strategy to improve survival of ESA-listed steelhead stocks in the Columbia Basin, NOAA Fisheries has identified actions to improve the productivity and abundance of steelhead kelts in two Reasonable and Prudent Alternatives (RPAs) in the 2008 FCRPS Biological Opinion (BiOp). RPA #33 covers operations to benefit upper and middle Columbia River Stocks, and RPA #42 covers operations to benefit Snake River B-run Steelhead. RPA #42 includes implementation of Kelt reconditioning in the Snake River Basin, with the goal of improving the productivity of ESA-listed wild interior basin B-run steelhead, and research as necessary to accomplish this goal. NOAA's analysis indicates that a combination of kelt reconditioning and other actions could increase the number of returning Snake River B-run steelhead spawners to Lower Granite Dam by about 6%, and that a kelt reconditioning program in the Snake Basin may be critical to achieving this goal (Supplemental Comprehensive Analysis Steelhead Kelt Appendix- Bellerud et al. 2007). In practice, the goal of the program is to increase returns of wild adult female Snake River B-run steelhead to Lower Granite Dam by 180 fish (baseline 3000 adult females estimated in Bellerud et al. 2007).

An experimental-scale kelt reconditioning project is being conducted at Dworshak by the Nez Perce Tribe (NPT) and the Columbia River Inter-Tribal Fish Commission (CRITFC), in collaboration with the University of Idaho and USFWS. This project includes both implementation and research components. The implementation component of the project involves collection, reconditioning, and release of wild B-run female steelhead kelts to achieve the goal of RPA #42. The research component of the project involves air spawning and reconditioning of DNFH ladder returning hatchery-origin fish for use as an experimental model. These fish provide a unique and important research tool to address critical uncertainties and maximize the success of kelt reconditioning programs throughout the Columbia Basin.

2016 Operations and Research

Dworshak is cooperating with CRITFC and the NPT in a Kelt Reconditioning Project. NPT staff will air spawn 186 females for the kelt program. These fish will be retained until the spring of 2017. A portion of the surviving mature fish will be air-spawned or euthanized to assess egg quality of reconditioned kelts. The remaining portion will be tagged and returned to the Clearwater River.

An additional 150 steelhead kelts will be collected at Lower Granite Dam (LGR) and transferred to DNFH or NPTH. For 2016, kelts from tributaries of the Lochsa and SF Clearwater rivers will also be collected and transferred to DNFH or NPTH. Fish at DNFH will be reared in conjunction with the air-spawned steelhead (section 1.2.1.8). These fish will be on-station from March through October. Surviving LGR transferred kelts will be tagged and returned to the Snake River below LGR.

NPT/CRITFC/UI are continuing their research on steelhead kelt reconditioning. Experiments involving treatments to reduce mortality and improve growth and rematuration, as well as sampling fish to measure physiological responses during reconditioning will be conducted on air-spawned steelhead, as well as LGR transferred steelhead. The release strategy for individual fish may be selected based on maturation status as determined by blood hormone levels.