

**LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN
GRANDE RONDE AND IMNAHA BASINS ANNUAL OPERATION PLAN**

**FOR THE PERIOD OF
JANUARY 1 – DECEMBER 31, 2011**

**PREPARED BY:
OREGON DEPARTMENT OF FISH AND WILDLIFE
CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION
NEZ PERCE TRIBE**

**FOR
LOWER SNAKE RIVER COMPENSATION PLAN
U.S. FWS ADMINISTRATION**

**and
BONNEVILLE POWER ADMINISTRATION**

**Final
March 07, 2011**

In Attendance December 14, 2010 pre-AOP: CTUIR (Crump, McLean, Smith, Wolf), ODFW (Aschenbrenner, Bailey, Chan, Clarke, , Elmore, Fagan, Feldhaus, Gaston, Gribble, Harrod, Hoffnagle, Hook, Woods, Yanke), NPT (Cleary, Harbeck, Vogel, Wolfe, Zollman), FWS (Yundt), PSMFC (Carter).

In Attendance February 01, 2011 AOP: CTUIR (Boe, McLean, Zimmerman), ODFW (Anderson, Aschenbrenner, Averett, Bailey, Chan, Clarke, Eddy, Elmore, Fagan, Feldhaus, Flesher, Gribble, Harrod, Hoffnagle, Keniry, Onjukka, Patterson, Woods, Yanke), LSRCP (Carter, Marshall), NPT (Cleary, Harbeck, Johnson, Vogel, Wolfe), BPA (McCloud).

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Steelhead (*Oncorhynchus mykiss*)

I. Summer Steelhead - 2010 Brood Year (Grande Ronde & Imnaha basins)

This is the third year for releasing smolts from adults returned from fall collected brood stock evaluation. Fall component is 100,000 smolts marked 100% with an AdRV clip and CWT. Portions (~3,600 smolts) are implanted with a PIT tag. The release is paired with smolts from spring-collected brood with similar numbers, AdLV clip, CWT, and PIT tags. The identifying external difference is the ventral fin clip.

A. Allocations –The estimated number of smolts from Irrigon is 1,014,000 fish weighing 221,464 pounds. A total of 840,000 are Wallowa stock transferred at 4.5 fish per pound (fpp). Wallowa fish will be acclimated at the Wallowa and Big Canyon facilities. Wallowa release will occur in two acclimation periods and the Big Canyon release will also have an early group and late group component. A total of 174,000 are Little Sheep stock transferred at 5.0fpp. The Little Sheep stock will be acclimated in the Little Sheep facility and also 44,000 direct released in Big Sheep. Smolt transfers and releases are summarized in Table 1 and Appendix A.

B. Liberations

1. Schedule

- a. Wallowa Acclimation:** Approximately 504,000 smolts will be transferred from Irrigon hatchery to Wallowa acclimation site in 2011.

Early Group: Approximately 378,000 smolts will be released after 5 to 7 weeks of acclimation			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	February 22-23	April 10-Sun	The screens in the lower sections will be pulled on April 10 allowing fish to leave for 1 day. On April 11, the remaining fish will be forced out of the lower section
		April 11-M	
Upper Acclimation Pond	February 23-25	April 11-M	The screens in the upper sections will be pulled on Monday April 11. On April 12, the remaining fish will be forced out
		April 12-T	
Note: Approximately 75,000 smolts released will be used for fall brood evaluations.			
Late Group: Approximately 126,000 smolts will be released after 1 to 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	April 13-15	April 24-Sun	The screens in the lower section will be pulled on April 24 allowing fish to leave for 12 days. On May 6, the remaining fish will be forced out of the upper and lower sections
		May 6-F	
Note: Approximately 25,000 smolts released will be used for fall collected brood evaluations.			

- b. Big Canyon Acclimation:** Approximately 336,000 smolts will be released from the Big Canyon acclimation site, 168,000 in the early group and 168,000 in the late group.

Early Group: Approximately 168,000 smolts will be released after 5 to 7 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	Feb 28 to Mar 1	April 13-W	The screens in the lower sections will be pulled on April 13 allowing fish to leave for 24 hours. On April 14, the remaining fish will be forced out of the lower section
		April 14-Th	
Upper Acclimation Pond	March 1-2	April 14-Th	The screens in the upper sections will be pulled on April 14 allowing fish to leave for 24 hours. On April 15, the remaining fish will be forced out of the lower section
		April 15-F	

Late Group: Approximately 168,000 smolts will be released after 1 to 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	April 18-19	April 26 - T	The screens in the lower section will be pulled on April 26 allowing fish to leave for 13 days. On May 9, the remaining fish will be forced out.
		May 9 - M	
Upper Acclimation Pond	April 20-21	April 27-W	The screens in the upper section will be pulled on April 27 allowing fish to leave for 12 days. On May 9, the remaining fish may be forced out.
		May 9 - M	
Note: Prior to May 10, ODFW Fish Research will sample smolts in the acclimation pond. If >70% of the sample contains males, fish will be enumerated and up to 2,000 released in Wallowa Wildlife pond and 500 in Victor. If outplanted, Fish Research may scan for PIT tags.			

c. Little Sheep Acclimation: Approximately 174,000 smolts will be released in Little Sheep

Acclimation. Approximately 130,000 smolts will be released after 4 to 8 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Acclimation Pond	March 2-4	March 29-T	Screens will be pulled on March 29 allowing fish to leave for a minimum of 28 days. In late April, the river conditions will be assessed and fish may be retained longer to coincide with higher flows. Downstream rotary trap operators will be notified if changes are made to the April 26 release date.
		April 26 - T	
Acclimation. Approximately 44,000 smolts will be released after 3 weeks of acclimation			
Acclimation Pond	April 4	April 26 - T	
Note: Prior to forced release, ODFW Fish Research will sample smolts in the acclimation pond. If >70% of the sample contains <i>males</i> , remaining fish will be enumerated and up to 7,500 fish released in Kinney Lake.			

d. Big Sheep direct release: Because of safety concerns with the bridge to access the release location in Big Sheep, approximately 44,000 smolts targeted for direct release into Big Sheep will instead be reared until April 3 at Irrigon and transferred to Little Sheep Acclimation facilities April 4. These smolts will be released into Little Sheep April 26. The NPT will take the lead in evaluating options for bridge repair.

C. Monitoring and Evaluation

1. Summary of marked steelhead for release in 2011

Comparative survival studies (CSS) continue for the third consecutive year for steelhead with 14,000 PIT tagged fish released in 2011 (Table 5). PIT tagged released fish are a representative sample of the marked population.

a. Wallowa

- 100,000 AdRVCWT
- 150,000 AdLVCWT
- 254,000 Ad only
- 9,300 PIT
- 4,200 PIT CSS

b. Big Canyon marks include:

- 50,000 AdLVCWT
- 286,000 Ad only
- 6,000 PIT
- 2,800 PIT CSS

c. Little Sheep

- 105,000 Ad only
- 25,000 AdLVCWT

- 11,200 PIT
 - 5,200 PIT CSS
- d. **Big Sheep** (direct release) marks include:
- 44,000 Ad only
 - 3,800 PIT
 - 1,800 PIT CSS

2. Fish Research—Fish Research staffs will coordinate efforts with the hatchery staffs for pre-release sampling and other marking efforts (Tables 2).

3. Irrigon Hatchery –Irrigon staff will measure fish lengths for the Big Sheep release.

D. Fish Health—Fish Health will coordinate with hatchery staff to conduct a pre-release health examination (Appendix B). Standard disinfection and sanitation guidelines will apply (Appendix C).

E. Satellite Operation—Wallowa staff will set-up Big Canyon acclimation facility ponds in late-February. Big Canyon adult trap will be deployed in late-January, and adult traps for Wallowa and Little Sheep will be installed in February, weather permitting.

F. Key Contacts

1. ODFW (Harrod) will notify the following Yanke, Anderson and P. Keniry (ODFW) and Michaels and Young (NPT) of steelhead releases

2. ODFW (Woods) will notify juvenile trapping personnel – NPT- (Michaels and Young) of any change in the Big Sheep direct stream smolt releases.

II. Summer Steelhead -2011 Brood Year - Wallowa Stock

The LSRCP mitigation goal is 9,200 adults.

A. Smolt Goal – Produce 800,000 smolts at 4.0fpp for release in 2012. Target production includes:

- 640,000 Production
- 160,000 Early Brood

Note: Production from early brood stock above CWT evaluation needs will be AdRV clipped.

B. Egg Take Goal – Collect 1,241,000 green eggs to produce 1,111,000-eyed eggs (89.5% survival green to eyed eggs). Transfer 1,111,000-eyed eggs to Irrigon Hatchery to produce 800,000 smolts (72% survival eyed eggs to smolt).

C. 2011 Adult Collection

1. Predicted Run (Table 3)

- Marked –4,939
- Unmarked – 103
- Total – 5,042

a. Wallowa Hatchery –

- Marked – 3,020 (1583-4457 95% CI)

b. Big Canyon Satellite –

- Marked –1,919 (704-2729 95% CI)
- Unmarked – 103 (49-159 95% CI)
- Total – 2,022

D. Trap Operations

1. Wallowa Trap Operation – Wallowa trap will be installed when winter conditions allow typically in February. Collections will continue until no fish are caught for 10 consecutive days.

e. Trap/sorting Frequency - Work trap Wednesdays with hatchery staff as needed.

b. Disposition of Trapped Fish - The estimated surplus of Wallowa stock (Wallowa and Big Canyon combined) is 4,461 adults. The majority of surplus fish will be distributed to food banks. ODFW Grande Ronde Fish District has requested stocking 50 fish in Roulet pond and 40 fish in Ladd pond; and ODFW Wallowa district has requested 100 fish in Marr Pond and 70 fish in Wallowa

wildlife pond. Stocking should occur by April 3rd. Stocked fish will be identified by a missing adipose fin and 2-left opercle punches (2-LOP). Fish not outplanted or given to food banks will be buried at Wallowa Hatchery.

- 1) *Unmarked*—Transport unmarked fish to the Fish Hatchery Lane Bridge and release. Sampling shall include genetic (from opercle punch), sex, and length.
- 2) *Residual Steelhead* – Count and sample all residuals weekly, take snouts from all AdLV's and AdRV's, and euthanize all fish marked Ad only. After smolts have been released from acclimation pond, discontinue residual sampling.
- 3) *Bull Trout* – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Send summary to Yanke (ODFW) and Krakker (USFWS).

2. Big Canyon Trap Operations—No broodstock will be required from Big Canyon. The Big Canyon trap will be installed when winter conditions allow which is typically in early-February. Collections will continue until no fish are caught for 10 consecutive days.

a. Period of Trap Operation - From initial start-up through April 14, the ladder will be operated from 5 pm Monday through Friday morning. After sorting on Fridays, the ladder will remain closed through Monday 5 pm to increase hatchery fish availability to anglers. On April 15 the ladder will remain open throughout the trapping operation.

b. Trap/sorting/recycle Frequency - Work trap weekly with a preference for Fridays.

c. Disposition of Trapped Fish

- 1) *Unmarked*--Pass all fish above the weir in Deer Creek. Measure all released fish and mark with a 1-LOP.
- 2) *Marked* – No marked fish will be passed. No marked (AdLV or AdRV) adults will be released, but will be sampled for CWT recovery. Surplus hatchery fish will be outplanted, recycled or provided to local food banks.
- 3) *Recycle fish*--Starting in late February and continuing through 8 April, approximately 100 fish will be recycled in the fishery, outplanted at the Minam boat ramp. Recorded data should include fish checked in creel surveys, release location, OP punch, number of weeks to return to Big Canyon, number fish unaccounted, number that returned to Wallowa Hatchery (stray). Recaptures will be processed to food banks or landfill.
- 4) *Bull Trout* – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Send summary to Yanke (ODFW) and Krakker (USFWS).
- 5) *Residual Steelhead* - Count weekly until first smolt release. Sample all AdLV's and take snouts. Euthanize all Ad only. Efforts will be made to prevent residual steelhead from escaping when working the adult trap.

d. Disposition of Fallback Fish - Staff will collect and sample all fish that fall back on the Deer Creek weir to determine passed to un-passed ratio, h/w ratio, and number spawned out. Staff will collect otolith or head from moribund or dead unmarked steelhead and pass live fish downstream.

E. Hatchery Broodstock/Collection Guidelines

1. Wallowa Hatchery- Wallowa steelhead are held and spawned at Wallowa Hatchery. Production will consist of approximately 80% Production Brood and 20% Early Brood.

- a. Broodstock Needs**—A total of 478 adults should be spawned to meet production goals.
- Males – 239 (191 Ad or AdLV and 48 RV)
 - Females – spawn 239 (191 Ad or AdLV and 48 RV).
- The five-year average fecundity is 5,200 eggs per female.

2. Wallowa Hatchery Spawning Guidelines

a. Expected 1st Spawn – Wednesday, March 16.

b. Spawning Dates – Wednesday.

- March 16 – 34 females (27 Ad or AdLV and 7 RV)
- March 23 -- 45 females (36 Ad or AdLV and 9 RV)
- March 30 -- 53 females (43 Ad or AdLV and 10 RV)
- April 6 -- 48 females (38 Ad or AdLV and 10 RV)
- April 13 -- 38 females (30 Ad or AdLV and 8 RV)
- April 20 – 21 females (17 Ad or AdLV and 4 RV)

A total of 239 females will be spawned.

c. Spawning Strategies - 1:1 ratio and incubate 1 female per tray. Segregate the eggs collected from fall returning broodstock. Males from fall-collected brood may be used twice in the spawning protocols.

F. Incubation Strategies-Wallowa/Irrigon Green eggs will be incubated at Wallowa Hatchery. Embryos will be transferred to Irrigon Hatchery as eyed eggs and will represent six egg takes. Egg groups tested for coldwater disease will be tracked through incubation and early rearing.

G. Rearing Program-Irrigon

Eggs will be hatched and reared at Irrigon Hatchery.

- a. Programmed for Release** - The target transfer size is 4.5fpp for April and May releases.
- b. Grade** – Progeny from fall-collected adults will not be graded. Production releases will be graded. Fish will be fed at differing rates for targeted transfer dates.
- c. Excess** – No excess is expected. However, if survival is greater than expected, eggs can be culled, smolts produced, used for resident trout production, or ODFW will propose release location such as Kinney Lake or Brownlee Reservoir.
- d. Progeny** from early-brood will be segregated. Progeny not required for evaluation will be mixed after AdRV marking used in Wallowa releases.

H. Fish Health

- a. Broodstock** monitoring plan (Appendix B).
- b. Disinfection** and Sanitation Guidelines (Appendix C).

I. Monitoring & Evaluation

a. Proposed marking includes: Progeny from Early Brood will be reared in two release groups. The first release will consist of 75% of the production and the second 25% of the production.

1. Wallowa (480,000 total, 360,000 first acclimation and 120,000 second)

- 100,000 AdLVCWT (Production)
 - 75,000 AdLVCWT first acclimation
 - 25,000 AdLVCWT second acclimation
- 220,000 Ad only
- 6,000 PIT
- 2,800 PIT CSS
- 100,000 AdRVCWT (Early Brood)
 - 75,000 AdRVCWT first acclimation
 - 25,000 AdRVCWT second acclimation
- 60,000 AdRV
- 3,000 PIT
- 1,400 PIT CSS

2. Big Canyon (320,000 total, 160,000 in the each period)

- 50,000 AdLVCWT
- 270,000 Ad only
- 6,000 PIT
- 2,800 PIT CSS

b. Tagged groups are summarized in Table 4.

c. PIT-tagging in each release group.

d. Genetic sampling - ODFW Fish Research (Flesher, Eddy) will collect tissue samples from all brood used in production.

e. Coldwater Disease – U of I and ODFW Fish Health will coordinate sample collections for evaluating methods to assess the prevalence of coldwater bacterial disease (CWD) vertically transferred to steelhead fry.

III. Summer Steelhead - 2011 Brood Year – Little Sheep Stock

Co-managers have agreed to manage production to meet the LSRCP mitigation goal of 2,000 adults. The goal consists of fish returning to Little Sheep, Big Sheep, and compensation area harvest. As an indicator to achieving our goal, a hatchery projection of >950 hatchery-origin adults to Little Sheep will be used as a success return threshold. Guidelines for the program are located in Appendix D.

A. Smolt Goal — Produce 215,000 smolts at 5.0fpp for release in 2012 with >46.7% natural origin adults.

Production and releases include:

- 165,000 Little Sheep Cr. (acclimated) smolts
- 50,000 Big Sheep Cr. (direct stream) smolts

B. Egg Take Goal – A total 313,850 green eggs will be taken to produce 282,152 eyed eggs (89.9%) and 215,000 smolts (76.2% eyed eggs to smolts).

C. Adult Collection

1. Predicted Run – (Table 3).

- Marked – 2,287 (1269-3771 95% CI);
- Unmarked – 231 (114 - 353 95% CI)

D. Weir Management and Trap Operations

1. Little Sheep Trap Operation – Little Sheep trap will be installed when winter conditions allow, typically in late-February. Collections will continue until no fish are caught for 10 consecutive days.

a. Trap/sorting Frequency - Work trap Mondays and Thursdays.

2. Broodstock Needs-

- Males –63
- Females –63
- Broodstock numbers were determined based on a fecundity of 5,000.
 - a. Wild broodstock**–31 males and 31 females needed for brood. Approximately 169 wild fish will be released above Little Sheep weir.
 - b. Hatchery broodstock**–32 males and 32 females are needed for brood. Approximately 81 hatchery adults will be released above the Little Sheep weir.

	Wild – keep 62		Hatchery – keep 64 (+4 males)*	
<u>Week Ending</u>	<u>Avg. % by Week</u>	<u>Number Kept</u>	<u>Avg. % by Week</u>	<u>Number Kept</u>
March 18-	5.4	3	6.9	4
March 25	9.7	6	8.6	6
April 1	8.6	5	12.6	8
April 8	16.0	10	18.8	12 (+1 male)
April 15	16.5	10	19.2	12 (+1 male)
April 22	15.2	9	13.9	9 (+1 male)
April 29	14.8	9	11.6	7 (+1 male)
May 6	9.2	6	5.7	4
May 13	2.6	2	1.8	1
May 20	1.3	1	0.7	1
May 27+	0.7	1	0.2	0
Totals		62		64+4=68

* Keep one extra hatchery male per week in April

* Pass one hatchery fish for every two wild fish passed, match sex ratios

* Last spawn can include the last three fish in the Table and added to the May 13 egg take

* If short for a particular week, make up the difference at the first opportunity

3. Disposition of Trapped Fish

- a) *Wild* – Keep 62 wild fish (total wild fish collected is estimated at 92 males and 139 females). Wild composition in hatchery brood is estimated at 49.2%. The other wild adults collected will be 1-LOP and placed above the weir. Number of wild fish released above the weir is estimated at 169 fish with a wild composition of 68% for natural spawning.
- b) *Hatchery* – Keep 68 hatchery fish or one hatchery fish for every wild fish collected plus one additional fish each time the trap is operated in April. About one hatchery fish should be released above the weir for every 2 wild fish released above the weir. Hatchery fish released above the weir should be opercle punched 1-LOP.
- c) *In season modification* - The run size will be reviewed around April 1 and adjustment can be made for broodstock collections. NPT will provide two people one day per week for Big Sheep adult outplants.
- d) *Bull Trout* – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Send summary to Yanke (ODFW) and Krakker (USFWS).
- e) *Residual Steelhead* – Count and sample all residuals weekly until first smolt release, take snouts from all AdLV's and euthanize all Ad only.
- f) *Genetics tissue samples*. Tissue sample all wild and hatchery fish passed above the weir for genetic analysis by ODFW (for NMFS).
- g) *Big Sheep outplants*. Surplus steelhead trapped and handled on Thursday will be outplanted to Big Sheep. Surplus fish trapped and handled on Monday will be used for distribution. If a third day is required to work through the fish, they can be outplanted in Big Sheep. Live outplanted fish will be opercle punched with 2-LOP. Approximately 1,184 hatchery origin adults are expected to return to Big Sheep from direct stream releases, plus returns of natural adults.
- h) *Surplus fish may be used for distribution (food bank)*.
- i) *Recaptured and fall back fish* -All recaptured Big Sheep (2-LOP) hatchery fish will be processed according to the day re-collected. Fallback (fish passed above the weir but fall back below the weir and recaptured) Little Sheep fish (1-LOP) will be released above the weir again.
- j) *Carcass Disposal*-Spawned fish not suitable for distribution can be placed in the stream for nutrient enhancement or buried in a landfill.
- k) *Strays* – All unidentified marked fish will be sacrificed.
- l) *Scales*—Samples will be collected from all wild adults.

4. Adult Identification Guidelines—Adults returning to Little Sheep trap will have a variety of marks. Summary of marks include:

Mark	Disposition
Ad	Subsistence, carcass, Out plant or pass above the weir
AdLV+CWT	Subsistence, carcass, Out plant, pass above weir, or spawn
No Mark wild	Spawn or pass above weir
No Mark hatchery	Out plant or KNS (miss clip)
AdRV (out of basin)	Kill not spawn (recover CWT)

* For Passed or Outplanted -- record clip, sex, location, genetic sample for passed fish, fork length

* For KNS -- record date and Clip, then save for sampling

* The dorsal fin will be inspected to help identify no mark hatchery fish.

5. Spawning Guidelines

a. Little Sheep Satellite

1) **First Spawn** - March 22.

2) **Expected Spawning Frequency** – Weekly on Tuesdays and/or Thursdays.

b. Spawning Strategies – A 2 x 2 or 3 x 3 spawning matrix will be utilized. A matrix will include at least one natural fish, whenever possible. When eggs have been fertilized, the embryos will be combined into groups of three females. These groups will be tracked.

- Note: Live spawn all wild males retained for broodstock, collect genetic tissue sample, and release above the weir.

6. Incubation Strategies

Green eggs will be incubated at Wallowa Hatchery. Embryos will be transferred to Irrigon Hatchery as eyed eggs and will represent all egg takes.

7. Rearing Program

Embryos will be hatched and fish reared at Irrigon Hatchery.

a. Programmed for Release - 215,000 smolts

- 165,000 Little Sheep
- 50,000 Big Sheep

Target size at transfer is 5.0fpp. Single acclimation is expected with April release.

b. No Little Sheep stock will be graded.

c. Excess production - Fish in excess of program needs will be reared to smolts and incorporated with the Little Sheep Creek release providing they can be acclimated in one release group.

8. Fish Health - Monitoring Plans

a. Broodstock monitoring plan (Appendix B)

b. Disinfection and Sanitation Guidelines (Appendix C).

9. Monitoring & Evaluation

a. Proposed marking includes:

1). Little Sheep:

- 25,000 AdLVCWT
- 140,000 Ad only
- 11,500 PIT
- 5,400 PIT CSS

2). Big Sheep (direct release):

- 50,000 Ad only
- 3,500 PIT
- 1,600 PIT CSS

b. PIT tagging in each release group (Table 5).

c. Pedigree genetic analysis—Little Sheep adults are being evaluated on their origin (hatchery or wild) using genetic samples. All fish released above the weir and used for brood stock are sampled.

10. Key contacts

1. ODFW (Flesher, Clarke) will provide ODFW (Yanke, Fagan), NPT (B. Johnson, Hesse, Vogel, Wolf, Young) and CTUIR (Zimmerman, Boe, McLean) with weekly summary on collected and passed steelhead adults at Little Sheep.

IV. Summer Steelhead Monitoring: Catherine Creek/Grande Ronde River/Lookingglass Creek/Lostine River/Joseph Creek -2011

Goal - to monitor natural escapement and hatchery strays into natural production areas and collect basic life history information for management planning—No fish production goals.

A. Monitoring and Evaluations

1. Adult Enumeration/Weir Collections

a. Weir locations - Catherine Creek (CC), Grande Ronde River (UGRR), Lookingglass Creek (LGCR), Lostine River (LR), and Joseph Creek (JC). CC and UGRR weirs installed, operated and maintained by CTUIR. LGCR weir installed and operated by ODFW and CTUIR. LR and JC weirs installed and operated by NPT.

b. Period of Trap Operation – CC, UGRR, and LGCR will be operated March 1 through August 1, environmental conditions permitting. Few steelhead are captured after mid-June. Lookingglass trap pickets may be pulled in May due to high run-off, but staff will attempt to operate from March 1 through September 10 to collect steelhead, bull trout and spring Chinook. LR weir will begin operating mid-February but may be periodically lowered when debris or high flow threaten the structure. JC weir will begin operating in January.

2. Disposition of steelhead at weirs

a. Catherine Creek, Upper Grande Ronde, and Lookingglass Creek Weirs

- Live, unclipped, first-time captures** – Enumerate, fork length, maturity, migration status, scales, sex, marks/tags, condition, take ONE opercle punch (preserve in vial for genetic analysis) and pass above the weir (or below if kelt). All UGR and LGCR fish will have scales collected. Catherine Creek fish will be sub-sampled for scales (schedule to be given to CTUIR O&M). All steelhead will be scanned for CWTs and PIT tags.
- Live, unclipped, previously punched captures** - Enumerate, fork length, maturity, migration status, sex, marks/tags, and pass above the weir (or below if kelt). Note the

number and position of existing opercle punches and the direction of capture (upstream or downstream).

- iii. **Live, clipped captures or clipped mortalities** - Enumerate, fork length, maturity, migration status, sex, marks/tags, condition. At CC, UGRR, and LGCR weir euthanize Ad- or AdLV-clipped steelhead and collect snouts from AdLV- clipped fish for CWT recovery.
- iv. **Weir/Trap Unclipped Mortalities - (First time captures at CC or UGRR)** Enumerate, fork length, maturity, migration status, scales, sex, marks/tags, condition, take two opercle punches (preserve one in vial for CTUIR), take otolith and preserve with second opercle punch in vial for ODFW-Research (Flesher). Return carcass to stream. **(Recaptures at CC or UGRR)**– Enumerate, fork length, maturity, migration status, sex, marks/tags, condition, take ONE opercle punch and otolith and preserve both in vial for ODFW-Research (Flesher). Return carcass to stream. **(First time capture or recapture at Lookingglass Creek)** Collect same data and tissues as for CC or UGRR. **Retain mortalities in freezer in labeled bag.** Collaborate with Fish Health when working dead fish at any of the three streams.

b. Lostine River Weir

Goal: to quantify natural and hatchery adult escapement and determine life history characteristics (NPT)—No Production goals.

- i. **Adult Escapement** - Enumeration using floating weirs with standoff structures going to the bank and a resistivity weir
- ii. **Live unclipped first time captures** - LR unclipped steelhead will have the following noted: number captured, direction of capture (upstream or downstream), fork length, maturity (green, ripe, or kelt), sex, fin clips/marks/tags, condition. A single right opercle punch will be taken to mark the fish and the tissue will be stored in a uniquely labeled envelope for later genetic analysis. Newly captured steelhead may also be marked with a floy tag or PIT tagged. All steelhead will be scanned for CWTs and PIT tags. Steelhead will be released in the direction in which they were traveling (i.e. fish captured in the upstream trap box will be released upstream of the weir).
- iii. **Live, unclipped, previously punched captures** - Downstream captures of steelhead will occur in the downstream trap box, or by seining and dip netting at the upstream face of the Lostine River weir. No attempt will be made to capture steelhead occupying a redd. Previously captured steelhead will be identified by the presence of an opercle punch and or Floy tag. In addition to the existing opercle punch and or Floy tag ID the following will be noted: number captured, direction of capture (upstream or downstream), fork length, maturity (green, ripe, or kelt), sex, fin clips/marks/tags, condition. All steelhead will be scanned for CWTs and PIT tags.
- iv. **Live clipped first time captures** – LR fin clipped steelhead will be treated the same as unclipped steelhead.
- v. **Live, clipped, previously punched captures** – Recaptured LR fin clipped steelhead will be treated the same as unclipped steelhead.
- vi. **Weir/Trap Mortalities** - Note the location of all steelhead carcasses and mortalities as upstream of weir, in trap box, in pickets, or downstream of weir. Inspect all steelhead carcasses for fin clips/marks/tags and scan for coded wire and PIT tags. Collect fork length, sex, percent spawned (if female) and inspect the operculum plates for a punch. If no punch exists, take a right OP punch for genetic analysis. If no fin clips are present, collect scales. If a fin clip is present, collect the snout. Cut the tail off and place downstream of the weir.

c. Joseph Creek Weir

Goal: to quantify natural and hatchery adult escapement and determine life history characteristics (NPT)—No Production goals.

- i. **Adult Escapement** - Enumeration using floating weirs with standoff structures going to the bank and a resistivity weir.
- ii. **Wild/Hatchery** – No broodstock collection. Trap, collect data, and release only.
- iii. **Kelts** – No broodstock collection. Trap, collect data, and release only.

- iv. **Period of Trap Operation** – January through June, or until 10 days after last capture. Trap is operated on an every other day basis. Meaning trap will be operational to capture fish on one day and then trap will be opened to allow volitional fish passage on the next day.
 - v. **Trapping Strategies**-Traps checked every other day.
 - vi. **Disposition of Steelhead** – Steelhead in the upstream movement box will be dipped out with cotton dip net and placed into a moist canvas sling/measuring box. Steelhead will be scanned for the presence of PIT tags. Data including fin clips, sex, spawning condition (pre/post), and fork length will be recorded. Scales will be collected from just behind the dorsal fin and above the lateral line using a blunt knife and forceps. Tissue from a single right opercle punch will be taken for genetic analysis. Each untagged fish will be PIT and floy tagged. Steelhead captured moving downstream will be examined for the presence of opercle punches, Floy, and PIT tags. Marked fish will be checked for spawning condition (pre or post-spawn) and released downstream. Unmarked steelhead moving downstream will be handled according to the same procedures as upstream moving fish with the exception of a downstream release.
 - vii. **Disposition of Bull trout** – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Report take to US Fish and Wildlife Service Under Section 6 (4d limitation) Bull Trout Permit #TE001598-1 with copy of data to ODFW (Yanke) and LSRC (Krakker).
 - viii. **Disposition of other non-target species** – Enumerated, subsampled for length and released.
 - ix. **Adult Mortalities** – Natural mortalities will be sampled for biological information and their heads retained for otolith extraction.
3. **Disposition of bull trout at weirs** - Record date, number trapped, and estimated fork length (no anesthetics, minimize handling effects). Send summary to Bailey, Jacobs, and Yanke (ODFW) and Krakker (USFWS).
4. **Juvenile *O. mykiss* Sampling**
- a. Operate rotary trap(s) on Lookingglass Creek - Trap year-round, collect data, PIT tag, and release sampled fish below the intake.

B. Remote PIT Tag Array Monitoring Section

The Nez Perce Tribe operates one new (two more will be installed summer of 2011) remote Biomark PIT tag array in the Grande River Basin as part of the larger Integrated Status Effectiveness Monitoring Project (ISEMP) to monitor juvenile and adult salmon and steelhead abundance. 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 at

“www.ptocentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html”. Grande Ronde Basin PIT Arrays, Site code, and GPS locations include:

- Site Code JOC –Joseph Creek — N 46.0301, W 117.016117
- Site Code (to be determined)- Lower Grande Ronde - N 46.044483, W 117.10020- install scheduled for summer 2011.
- Site Code (to be determined)- Lower Grande Ronde - N 46.03979, W 117.12058- install scheduled for summer 2011.

C. Key Contacts

1. CTUIR (McLean). Distribute bull trout and steelhead data collected to ODFW District offices.
2. NPT (Vogel, Hesse, Young, Harbeck). Distribute bull trout and steelhead data collected to ODFW District offices.

V. Summer Steelhead - Imnaha Tributaries (Horse Creek, upper Imnaha tributaries and Camp Creek)

Goal: to quantify natural and hatchery adult escapement and determine life history characteristics (NPT)—No Production goals.

A. Weir Monitoring

1. Adult Escapement - Enumeration using floating weirs with standoff structures going to the bank and a resistivity weir.

- a. *Floating weir locations* - Horse Creek and upper Imnaha tributaries
- b. *Resistivity weir location* - Camp Creek.

2. Trap Operations

- a. *Wild/Hatchery* – No broodstock collection. Trap, collect data, and release only.
- b. *Kelts* – No broodstock collection. Trap, collect data, and release only.
- c. *Period of Trap Operation* – March through June, or until 10 days after last capture.
- d. *Trapping Strategies*-Traps checked twice daily. Data from resistivity weir downloaded weekly.
- e. *Disposition of Fish*

1) Steelhead – Steelhead in the upstream movement box will be dipped out with cotton dip net and placed into a moist canvas sling/measuring box. Steelhead will be scanned for the presence of PIT tags. Data including fin clips, sex, spawning condition (pre/post), and fork length will be recorded. Scales will be collected from just behind the dorsal fin and above the lateral line using a blunt knife and forceps. Tissue from a single right opercle punch will be taken for genetic analysis. Each untagged fish will be PIT tagged. Steelhead captured moving downstream will be examined for the presence of opercle punches and PIT tags. Marked fish will be checked for spawning condition (pre or post-spawn) and released downstream. Unmarked steelhead moving downstream will be handled according to the same procedures as upstream moving fish with the exception of a downstream release.

2) Bull trout – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Report take to US Fish and Wildlife Service Under Section 6 (4d limitation) Bull Trout Permit #TE001598-1 with copy of data to ODFW (Yanke) and LSRCP (Krakker).

3) Other non-target species – Enumerated, subsampled for length and released.

f. Adult Mortalities – Natural mortalities will be sampled for biological information and their heads retained for otolith extraction.

B. Remote PIT Tag Array Monitoring Section

The Nez Perce Tribe operates five new remote Biomark PIT tag arrays in the Imnaha River Basin as part of the larger Integrated Status Effectiveness Monitoring Project (ISEMP) to monitor juvenile and adult salmon and steelhead abundance. 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 at "www.ptoccentral.org/dbaccess/InStrmDtctn/InStrmDtctn_query.html". Imnaha Basin PIT Arrays, Site code, and GPS locations include:

- *Site Code IR1 -Imnaha River as Cow Creek Bridge —N 45.76107, W 116.75065*
- *Site Code IR2 - Imnaha River upstream of confluence to Lightning Creek - N 45.74279, W 116.76456*
- *Site Code COC – Cow Creek - N 45.767742, W 116.744037*
- *Site Code BSC- Big Sheep Creek - N 45.50957, W 116.85271*
- *Site Code (to be determined)- Upper Imnaha - N 45.49004, W 116.80393- install scheduled for week of February 7th, 2011.*

C. Key Contacts

1. NPT (Vogel, Hesse, Young, Harbeck)

CHINOOK (*O. tshawytscha*)

Eleven raceways will be prioritized for Grande Ronde tributary production and 7 raceways for Imnaha production at Lookingglass Hatchery. Priorities for the adult ponds have not been determined. Current priorities include:

- Lostine; 4 raceways
- Upper Grande Ronde; 4 raceways
- Catherine Creek; 3 raceways
- Lookingglass Creek; AHP's
- Imnaha; 7 raceways

VI. Grande Ronde Basin - 2009 Brood Year Spring/Summer Chinook– Catherine Creek, Lookingglass Creek, U. Grande Ronde & Lostine River

Smolts target size was 25fpp (actual~ 31.5fpp) by October 31 with an expected release size of 22fpp in April.

A. Allocation — The estimated number of smolts for the Grande Ronde Subbasin 2011 release is 569,260 fish weighing 33,068 pounds (Appendix A). Breakdown by tributary is as follows:

1. Catherine Creek (CC) - 159,450
 - Conv-58,900
 - CBS-100,550
2. Lostine River (LR) - 63,110
 - CBS-1,910
 - Conv-61,100
3. U. Grande Ronde (UGR) - 243,700
 - CBS-53,250
 - Conv-190,450
4. Lookingglass (LGCR) - 103,000
 - Conv-103,000

B. Liberations

1. Schedule—All facilities will be set-up and operational at least 2 days prior to scheduled delivery of smolts. Weather permitting; the Lostine is scheduled for delivery of fish on March 11, Catherine Creek on March 14 & 15, and the Upper Grande on March 16, 17, 31, and April 1. Acclimation facility operator will notify Jack Woods if their facility is not operational on scheduled dates. Release number will be determined by last physical inventory minus mortality. Facility operators will report final numbers to the ODFW LGH staff or Shari Beals.

a. Lostine Acclimation schedule

Approximately 63,110 smolts will be released after 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH ½ R9 to pond A	March 11	April 8	The screens will be pulled on April 8 allowing fish to leave for 12 days. On April 19, the remaining fish will be forced out
LGH ½ R9 to pond B		April 19	

b. Catherine Creek

Catherine Creek Acclimation				
Location	Transfer in date	Vol. Rel Date	For. Rel Date	Comments
LGH ½ R1 to pond A	Mar 14 M	Mar 30 W	Apr 14 Th	Conventional
LGH ½ R1 to pond B	Mar 14 M	Mar 30 W	Apr 14 Th	Conventional
LGH ½ R2 to pond C	Mar 14 M	Mar 21 M	Mar 29 Tu	Captive
LGH ½ R2 to pond D	Mar 14 M	Mar 21 M	Mar 29 Tu	Captive
Late Group				
LGH ½ R3 to pond C	Mar 30 W	Apr 5 Tu	Apr 14 Th	Captive
LGH ½ R3 to pond D	Mar 30 W	Apr 5 Tu	Apr 14 Th	Captive
Approximately 159,540 smolts will be released after 3 to 4 weeks of acclimation.				

c. Upper Grande Ronde

Upper Grande Ronde Acclimation				
Location	Transfer in date	Vol. Rel Date	For. Rel Date	Comments
LGH R4 to pond A	Mar 15 Tu	Mar 22 Tu	Mar 30 W	Captive
LGH R4 to pond B	Mar 15 Tu	Mar 22 Tu	Mar 30 W	Captive
LGH R6 to pond C	Mar 15 Tu	Mar 22 Tu	Mar 30 W	Conventional
LGH R6 to pond D	Mar 15 Tu	Mar 22 Tu	Mar 30 W	Conventional
Approximately 108,000 smolts will be released after 3 weeks of acclimation.				
Late Group				
LGH R5 to pond A	Mar 31 Th	Apr 6 W	Apr 14 Th	Conventional
LGH R5,7 to pond B	Mar 31 Th	Apr 6 W	Apr 14 Th	Conventional
LGH R7,8 to pond C	Mar 31 Th	Apr 6 W	Apr 14 Th	Conventional
LGH R8 to pond D	Mar 31 Th	Apr 6 W	Apr 14 Th	Conventional
Approximately 135,000 smolts will be released after 3 weeks of acclimation.				

d. Lookingglass Creek

Approximately 103,000 smolts will be released into Lookingglass Creek			
Location		Release dates	Comments
LGH R16, R17	NA	April 1 - through April 14	The screens will be pulled on April 1 allowing fish to leave for 14 days. On April 15, the remaining fish will be forced out

Notes: Contingency— Fish may be released earlier than scheduled if conditions warrant. Downstream rotary trap operators should be notified immediately and co-manager within 24 hours: Scott Favrot, Mike Anderson, Pat Keniry, Steve Boe, Steve Yundt.

All acclimation mortalities will be scanned for PIT tags. Tags or code numbers will be provided to NPT (Cleary) and ODFW (Jonasson). Mortalities will be provided to fish health for examination.

C. Monitoring and Evaluation— A variety of M&E efforts are ongoing (Tables 2 and 6).

1. **Genetic tissue collection** for monitoring and pedigree analysis, 50 samples/stock.
2. **Pre-liberation sampling** – in each raceway
 - a. Collect 50 weights
 - b. Collect 250 lengths
 - c. Check 500 fish for tag retention and fin clip quality
3. **Monitor:**
 - a. Downstream migration survival and rate
 - b. PIT survival studies (CSS) for Catherine Creek and Lostine River
 - c. Captive vs. Conventional production, growth and survival
 - d. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)
4. **Studies**
 - a. CSS

D. Marked Groups.

- a. Catherine Creek
 - 58,900 ADCWTVIE (green VIE tag)
 - 100,500 AdCWT
 - 21,000 PIT CSS
- b. Lostine River
 - CV 61,100 CWT
 - 1,000 PIT
 - CB 1,910 CWT
 - 1,000 PIT
- c. Upper Grande Ronde
 - CV 190,450 CWT
 - CB 53,250 ADCWT
 - 2,000 PIT
- d. Lookingglass Creek-
 - CV 103,000 ADCWT
 - CB 0 Ad
 - 2,000 PIT

E. Fish Health - Fish Health will coordinate with hatchery staff on pre-release health examinations (Appendix E). Standard disinfection and sanitation guidelines will apply (Appendix C).

F. Key contacts

1. **Hatcheries:** CTUIR (McLean), ODFW (Elmore), NPT (Wolfe, Zollman).
2. **Fish Research:** CTUIR (Boe) ODFW (Hoffnagle, Feldhaus), and NPT (Hesse, Harbeck, Vogel, Cleary, Young).

VII. Grande Ronde Basin - 2010 Brood Year Spring/Summer Chinook – Catherine, Lookingglass, Lostine & U. Grande Ronde

Smolt target size is 30fpp by October 31 and 25fpp at release for Catherine, Lostine and Upper Grande Ronde. The CTUIR would prefer a smolt target release size of 20fpp . Expected transfer size is 26fpp. Lookingglass Creek target release size is 20fpp.

A. Allocation –Scheduled for transfer target size of 26fpp in mid-March 2012.

1. **Anticipated Grande Ronde basin production** is 964,945 smolts for release in 2012 produced from Lookingglass Hatchery.

- a. **Estimated Conventional brood** numbers are:
 - Catherine Creek 151,650 – (3 raceways)

- Lostine River 290,500 – (4 raceways)
- U. Grande Ronde 278,160 – (4 raceways)
- Lookingglass Creek 244,635 – (adult ponds A, B, C, D)

B. Final Rearing—LGH fry will be transferred outside in April or early May. Up to 250,000 fry will be transferred to Irrigon in April and returned to Lookingglass in late September (Appendix F).

C. Monitoring and Evaluation

1. Monitor
 - a. Downstream migration and survival rate
 - b. PIT tag survival studies (CSS) for Catherine Creek and Lostine River
 - c. Captive vs. Conventional production, growth, and survival
 - d. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)
2. Studies
 - a. Fall Volitional Release – Lookingglass Creek
 - b. CSS

D. Marking Program-

1. **AD/CWT** is scheduled for August 2011.

Catherine Creek

- 101,100 AdCWT
- 50,500 Ad only

Lostine River

- 137,500 AdCWT
- 137,500 Ad only

Lookingglass Creek

- 122,500 AdCWT
- 122,500 Ad only

Upper Grande Ronde

- 140,000 AdCWT
- 140,000 Ad only

Note: During marking, equipment will be disinfected between stocks. Within a stock, operations will start with low titer group and progress to higher titer groups. Raceways with abnormal mortality rates will be marked last by stock. Additional efforts will be made for equipment disinfections.

2. **PIT tagging** is scheduled for October 2011 (Table 6). Numbers by stock include:

- Catherine Creek—21,000 CSS
- U. Grande Ronde—2,000
- Lostine (conventional)—6,000
- Lookingglass Creek-3,000

E. Fish Health

An Aquamycin medicated feed treatment (2.25%) is planned for 2010 brood year progeny in July 2011. Lookingglass Creek progeny transferred to Irrigon Hatchery will receive one Aquamycin medicated feeding in June after marking is completed.

1. **Disinfection** and Sanitation Guidelines (Appendix C).
2. **Juvenile health monitoring and disease treatments** (Appendix E).

F. Key contacts

1. **Fish Marking** (Haugen, Onjukka, Harbeck, Vogel, Feldhaus, LaPoint and Jonasson)

VIII. Grande Ronde Basin-Conventional - 2011 Brood Year - Spring/Summer Chinook Catherine, Lookingglass, Lostine, and Upper Grande Ronde

The LSRCP production goal is 900,000 smolts to produce 5,720 adults. However, co-managers will target 900,000 smolts for release in 2013.

A. Smolt Production -

1. Production targets include:

- Catherine Creek - 150,000 smolts
- Lookingglass Creek - 250,000 smolts
- Lostine - 250,000 smolts
- Upper Grande Ronde - 250,000 smolts

B. Anticipated Egg Needs – A total of 1,071,429 green eggs should be collected to produce 900,000 conventional smolts based on 84% green eggs to smolts survival. Safety Net component can be used to supplement production numbers.

C. 2011 Adult Collection

1. **Predicted Runs** (Tables 7, 8, 9, 10) female contribution estimated at 50% of adults.

a. Catherine Creek

ODFW- 543 adults (174 jacks)

- Natural-229 adults (plus 17 jacks)
- Hatchery-314 adults (plus 157 jacks)

1) CTUIR - 516 adults (unknown jacks)

- Natural-310 adults (unknown jacks)
- Hatchery-206 adults (unknown jacks)

b. Lostine River

ODFW-1,251 Adults (1152 jacks)

- Natural-421 adults (plus 81 jacks)
- Hatchery-830 adults (plus 1071 jacks)

NPT-1,252 Adults (460 jacks)

- Natural-421 adults (plus 60 jacks)
- Hatchery-831 adults (plus 400 jacks) – in addition, some adult returns from the hatchery parr released in 2008 can be expected in 2011.

c. Upper Grande Ronde

ODFW-616 adults (143 jacks)

- Natural-80 adults (plus 7 jacks)
- Hatchery-536 adults (plus 136 jacks)

CTUIR - 622 adults (unknown jacks)

- Natural-162 adults
- Captive-121 adults
- Conventional-339

d. Lookingglass Creek --

ODFW-752 adults (252 jacks)

- Natural-133 adults (126 jacks)
- Hatchery-619 adults (126 jacks)

CTUIR - 377 adults

- Natural-76 adults
- Hatchery-301 adults

2. **Wallowa River**—fishery will target Lostine River hatchery-origin adults (Appendix G).

a. Open Season: May 28 - July 10, may extend if wild fish impact allows

b. Bag Limit: Two adipose clipped adult Chinook per day, bonus bag of 5 jack salmon per day (consistent with Oregon salmon bag limits)

c. Open area: Willowa River from a deadline at the lower end of Minam State Park upstream to the confluence of the Lostine River.

Expected and Maximum Harvest (ODFW est.)

- Maximum hatchery fish harvest rate: 19.2% of expected return, 160 fish.
- Maximum incidental wild mortality of 12 fish from Willowa-Lostine population (1.9%) and 4 fish on Minam (1.0%)
- Additional harvest of ad-clipped (114) and natural-origin (58) Chinook is expected in tribal fisheries.

Monitoring:

We plan to estimate harvest with a statistical creel survey.

3. Lookingglass Creek – fishery will target Lookingglass Creek hatchery-origin adults (and surplus Catherine Creek, if available) (Appendix S).

a. Open Season: May 28 – July 1, may extend if harvest goal is not reached

b. Bag Limit: Two adipose clipped adult Chinook per day, bonus bag of 5 jack salmon per day (consistent with Oregon salmon bag limits)

c. Open area: Lookingglass Creek from confluence with the Grande Ronde River upstream to the confluence of Jarboe Creek.

Expected and Maximum Harvest (ODFW est.)

- Maximum hatchery fish harvest rate: 17% of expected return (including Catherine Creek outplants), 143 fish.
- Incidental N-O mortality of 3 Lookingglass-origin fish is estimated.

Monitoring:

We plan to estimate harvest with a statistical creel survey.

4. Broodstock needs are based on fecundity and green egg to smolt survival summarized in Appendix H.

a. CC—A target of 41 pairs should be collected (39 females spawned) to produce 130,000 smolts. The estimate is based on a female survival of 95%, fecundity of 3,831, and green eggs to smolt survival of 85.4%.

b. LGCR—An estimated number of 79 pairs should be collected to produce 250,000 smolts. This is based on performance history of the CC stock. Additional production can be obtained from the Catherine Creek captive brood production.

c. LR—A target of 70 pairs should be collected (67 spawned) to produce 250,000 smolts. These estimates are based on female survival of 95%, fecundity of 4,448, and 84.3% green egg to smolt survival.

d. UGR— A target of 85 a pairs should be collected (77 spawned) to produce 250,000 smolts. This is based on a female survival of 90%, fecundity of 3,952, and 82.3% survival from green egg to smolt.

D. Trap Operation

1. CC and UGR Trap Operation (CTUIR) – Trapping will begin in March 2011 to monitor steelhead abundance. Overnight staffing will occur after April 15 and trapping will continue, if river conditions allow, through July 31.

2. LR Trap Operation (NPT) - Trapping for Chinook salmon brood on the Lostine River will begin in May and continue until 10 days without capturing a fish after September 1. LR trap operation will begin in mid-February for steelhead brood and continue through Chinook broodstock collection.

3. Lookingglass (ODFW) — The intake trap at Lookingglass Hatchery will be operated from March (as environmental conditions allow) through mid-September. If pickets are removed due to debris and high water, notes will be made on the trap sheet.

4. General Guidelines

a. Trapping facilities will be checked daily.

- b.** Water temperature data will be collected. It is expected that as water temperatures increase, facility operators will adjust their schedule to best coincide their work with the coolest water temperatures. Water temperatures can be monitored with Onset temperature loggers. When water temperature exceeds 68°F on the Upper Grande Ronde, the trap will be removed.
- c.** Surveys will be conducted by walking the streambank below each weir. Survey frequency ranges from daily to weekly depending on water temperatures and fish activity. Information is used to determine if salmon are accumulating below the weirs. Surveys may include snorkeling.
- d.** Attempts will be made to haul captured adults on a daily basis. Adults in CC and UGR will be worked on a M, W, F schedule, but will be worked more often during the peak of the run, if necessary. Fish may be held up to 72 hours.

5. Weir Management Guidelines

a. Catherine Creek - The projected run estimates range from 321 to 765. The average of projections is 543 adults. The range for the natural run is 156 to 302 with an average of 229. The adult sliding scale for collection with run exceeding 500 adults is ≤20% of wild. Hatchery-origin adults released above the weir should be ≤50% of the total. Ten percent of the males above the weir may be age-3 hatchery males. The goal is to have 56% (46 of 82) brood stock from natural origin adults with a minimum of 51% (42 of 82) brood stock of natural origin under current projections. In-season PIT tag projections will be used to reassess the run.

Catherine Creek Spring Chinook broodstock/upstream passage management guidelines

Estimated total adult escapement to the mouth (hatchery plus natural) ^a	Ratio of hatchery to natural adults at the mouth	Maximum % of natural adults to retain for broodstock	% of hatchery adults to retain for broodstock ^b	% of adults released above the weir can be of hatchery origin	Minimum % of broodstock of natural origin	% strays allowed above the weir ^c
<250	Any	40	40	d	d	≤5
251-500	Any	20 ^d	20	≤70	≥20	≤5
>500	Any	≤20	e	≤50	≥30	≤5

^aPre-season estimate of total escapement
^bConventional hatchery adults only, all captive brood adults released to spawn naturally or outplanted
^cFor hatchery adults originating from different gene conservation groups (Rapid River stock or strays from outside the Grande Ronde basin)
^dNot to exceed 130,000 smolt production initially
^eNot decision factor at this level of escapement, percentage determined by other criteria

1) Catherine Creek

	19% nat. coll.	56%			44%	
	Broodstock	Nat		2 wild	Hatchery	
	78 + 4 jacks	44		2 hatchery	34	
		Males	Females	Jacks	Males	Females
6-May	0	0	0		0	0
13-May	0	0	0		0	0
20-May	1	1	1		0	0
27-May	2	2	2		0	0
3-Jun	3	3	3	1	3	2
10-Jun	4	4	3	1	2	2
17-Jun	6	6	5	1	6	5
24-Jun	3	3	3	1	4	4
1-Jul	2	2	2		2	2
8-Jul	1	1	1		1	1
15-Jul	1	1	1		0	0
22-Jul	0	0	0		0	0
29-Jul	0	0	0		0	0
5-Aug	0	0	0		0	0
	23	23	21	4	18	16

- Pass 1 hatchery fish per 1 natural fish above the weir, surplus hatchery adults can be transferred to Lookingglass Creek and released below the hatchery or in Indian Creek.

b. U. Grande Ronde

1) **UGR** – The projected run estimate is 616 adults. The projected natural run is 80 adults. Grande Ronde conventional program calls for collection of 50% of natural fish and up to 100% of conventional return. Pass 100% of captives.

	25%			75%	
Broodstock	Nat		4 wld	Hatchery	
162 +8 jacks	40		4 hat	122	
	Males	Females	Jacks	Males	Females
13-May	0	0		0	0
20-May	0	0		0	0
27-May	2	2		1	1
3-Jun	5	5	2	6	6
10-Jun	2	2	1	6	6
17-Jun	4	4	2	14	14
24-Jun	2	2	2	5	5
1-Jul	2	2	1	10	10
8-Jul	2	2		11	11
15-Jul	0	0		2	2
22-Jul	1	1		2	2
29-Jul	0	0		1	1
5-Aug	0	0		2	2
	20	20	8	61	61

C. Lostine

1) **Lostine River** -- At the projected run level of 421 natural adults, 30% of the broodstock should be from natural adults and 50% of the natural escapement should be from hatchery-origin adults (released above the weir). The basic collection guidelines are as follows:

Date	Natural	Hatchery
May 31	1	1
June 7	1	1
June 14	3	4
June 21	4	8
June 28	7	16
July 5	8	19
July 12	5	15
July 19	3	10
July 26	1	2
August 2	0	1
August 9	0	1
August 16	1	2
August 23	4	7
August 30	3	8
Sept 6	2	2
Totals	43	97

Surplus is expected. Priority of use for surplus fish includes:

1. Fish can be recycled for a fishery and released at private property on the Wallowa River upstream from the Minam confluence (RM 11).
2. Fish can be used for tribal and non-tribal distribution.

NPT estimates approximately 180 surplus fish at the Lostine weir will be available for out-planting after July 20.

- Fish will be outplanted to the Wallowa River in proximity to the McDaniel’s and 6-Rance restoration projects.
- Outplanted fish will have representative age and sex structure to those captured at the Lostine weir after July 20.
- A subset of outplanted fish will be radio tagged to evaluate site fidelity, straying to other tributaries, and returns to the weir. NPT will monitor radio-tagged fish.
- Both restoration reaches will be surveyed to evaluate spawning activity and carcass recoveries. Only the McDaniel reach will require an additional survey.
- Outplants to the restored reaches of the Wallowa River will be experimental in 2011. Co-managers will evaluate site fidelity and spawning success before continuing these outplants in future years.
- Surplus fish beyond those outplanted in Wallowa River will be outplanted in previously agreed to streams.

Fish may be transferred to Wallowa hatchery for distribution. Fish held for distribution will be sampled according to Appendix I.

Note: CTUIR does not agree with the current spring Chinook disposition plans at the Imnaha and Lostine River weirs.

d. Lookingglass Creek—Work trap as needed.

Date	Natural	Hatchery
May 20 - June 6	2	3
June 7-20	20	46
June 21-July 4	14	40
July 5 - 18	1	6
July 19 – August 1	2	2
August 2 - 16	3	4
August 17 –31	5	10
	47	111

- 1) Adults (ad clipped and unmarked) will be held at Lookingglass Hatchery until July 4th. Hatchery broodstock will be injected. Fish allocated for natural production will be identified with an opercle punched (1-LOP), held, and released after July 4th. Fish collected through the remaining trapping period will continue to be allocated for broodstock (injected) or passed above the weir (no injections and opercle punched on the day of handling fish). Only brood stock will receive prescribed injections.
- 2) Surplus hatchery jacks can be euthanized.
- 3) All Chinook passed upstream of the intake trap will have tissue collected (opercle punch) for future genetic analysis (pedigree)
- 4) Additional information can be found in the Lookingglass Creek Spring Chinook Management Plan, finalized January 2011.

Notes: General comments—No marked fish from other streams or basins will be passed upstream. UGR fish will be added to the broodstock or held for return to the Upper Grande Ronde River. CC fish can be used consistent with Lookingglass Creek management. Captive brood jacks may be sacrificed for CWT recovery.

6. Disposition of Trapped Fish --

- a. Bull Trout** – Enumerate and estimate length (minimize handling). Data and reports sent to ODFW (ODFW District and Regional offices), and LSRCP (Krakker).
- b. Steelhead** -- Enumerate and determine hatchery or wild origin. Ad clipped fish can be euthanized. Data and reports sent to ODFW (ODFW District and Regional offices), and LSRCP (Krakker).
- c. Chinook Captive Brood (F₁)** – Pass surplus or out plant. Data collection should include fish length, genetic (tissue), and sex prior to release above the weir. Excess CC and UGR jacks may be sacrificed for CWT recovery.

d. Unmarked Chinook can be anesthetized with CO₂ or MS 222 prior to handling. A data sheet should be provided to Lookingglass Hatchery for all transferred fish (AAT). Each fish trapped will be measured to the nearest mm fork length, sex determined, and tissue sampled (opercle or caudal punches) for genetic analysis. Fish passed above the weir will be allowed to fully recover in sheltered flow before being released. Fish placed above the weir will be opercle punched (UGR=1ROP, CC=1ROP, LR=1 LOP) for population estimates. Lookingglass fish will not receive an opercle punch at the trap, but outplants will receive a ROP prior to release above the Lookingglass Hatchery weir. Opercle tissues are used for both a mark/recapture population estimate and for genetics analysis. LR fish taken to Lookingglass Hatchery will receive one opercle punches (1-ROP) and white Tyvek tag. Wild fish from Upper Grande Ronde transferred to Lookingglass will have a green Tyvek tag and hatchery fish a yellow Tyvek tag.

e. Hatchery Chinook trapped on Lookingglass Creek, and identified as CC or UGR, will be disposed of as follows: UGR returned to UGR, CC released below the weir or added to CC or LG broodstock if needed.

f. Trapping mortalities – Because of take permit issues, trapped mortalities will be processed as kept fish and transported to Fish health, fresh if possible, for examination. Fish dead for less than 24 hrs keep on ice. Fish dead more than 24 hours freeze. Weir mortalities or other pre-spawning mortalities discovered during stream bank surveys or unusual loss will be coordinated with Fish Health. Data will be sent to ODFW Fish Research (Feldhaus). Following examination, the carcasses may be disposed of in the landfill.

g. Wallowa Hatchery – Surplus Chinook can be transferred to Wallowa Hatchery for Tribal and non-Tribal subsistence, or recycled in a sport fishery. Subsampling for CWT while fish are held at Wallowa Hatchery will follow the guidelines in Appendix I.

Note: Tumors- Fish will be inspected for tumors along the gum line. If a tumor is suspected, fish will be held for consultation.

7. Broodstock Transportation Procedures – CTUIR will provide transportation of adult fish from CC and UGR and NPT will provide transportation from the Lostine. ODFW Regional Transport coordinator will provide back-up transportation.

a. Attempt to haul broodstock adults daily. Adults will not be held more than 72 hours.

b. Driver is responsible to complete a transfer data sheet to the Lookingglass Hatchery staff upon arrival for data entry in the HMIS system.

c. Thermal shock will be minimized during transport. Hauling will normally occur in the morning to take advantage of cooler stream temperatures. Temperature differences between transport container and facility water will not exceed 10°F or 5.6°C. Tempering may be necessary to reduce temperature difference.

d. Fish Handling- Fish will be netted from the transport tank and placed in holding tanks at Lookingglass Hatchery. Lookingglass Hatchery personnel will record all observations on data sheets and report to Fish Health at the end of the season.

8. Adult holding -- The adult holding plan includes:

- **Catherine Creek** – Endemic building
- **Lookingglass Creek** - one adult holding pond
- **Lostine River** - one adult holding pond
- **Imnaha** – one adult holding pond. Outplants will be held at Imnaha facility
- **Upper Grande Ronde**—one adult holding pond

E. Spawning Guidelines (for each stock)

1. Anesthetic - MS222

2. Sorting – The first sort will occur the week of August 8th

3. Expected First Spawn – The week of August 15th

4. Spawning Frequency - Once per week or as required (deceased females will not be spawned). Tentative Schedule: Tuesday-IM, LR; Thursday-UGR, CC, LG CR. (Roger would like to add two additional days during peak of spawning on Wednesday to spawn LR and IM fish due to both stocks being held in AHPs).

5. Spawning Strategies - All surviving brood stock collected will be spawned at Lookingglass Hatchery. Sorting and spawning to take place the same day. Hatchery and co-manager staffs will determine fertilization matrices. All Tyvek tag numbers will be recorded on the spawning matrix sheets. A maximum of 10% of the eggs can be fertilized with three year old males and a minimum of 30% of the eggs will be spawned with assumed five year old males (UGR and CC males >80cm and LR males >85cm). Large males may be spawned up to 3 times. Jack spawning will be conducted with 1 female to 6 jack matrix. Most adult spawning matrices will be 2 females x 2 males, but matrices of 1 x 1, 1 x 2, 2 x 1, or 3 x 2 can be used if necessary. Fertilized eggs will be incubated at Lookingglass hatchery. Fecundity will be determined at eye-up. If a ripe female is observed during sorting and no ripe male is available, the female will be returned to the holding pond until a ripe male is located. Ripe male gametes can be collected in an emergency (priority intended):

- **Sperm on ice** from fish passed at weirs - These fish will be given a ILOP opercle punch so they can be identified during spawning surveys and counted as “taken”.
- **Cryopreserved sperm** - Fill out request form (Appendix J.)
- **If milt is not available after 7 days** of holding a ripe female, transport female(s) to river of origin.

a. General fertilization techniques

- Sort and euthanize ripe females
- Collect eggs preventing addition of outside containments (other body parts)
- Store individual female eggs separately
- Drain ovarian fluid from eggs
- Sort males, spawn in dry cup
- Mix sperm with eggs, activate with pathogen free water (~100mls)
- Wait 60 seconds, rinse eggs
- Fertilized and rinsed eggs in 100 ppm iodophore solution for minimum of 45 minutes
- Tray eggs, 1 female eggs per tray

F. BKD Management.

Progeny are categorized based on their maternal parent. Titles of the groups were changed from moderate-low to moderate and moderate-high to high in 2010, but no changes in the categories.

Categories include:

- ≤ 0.199 = Low
- $0.2 - 0.399$ = Moderate
- $0.4 - 0.799$ = High
- 0.800 –above= Clinical

Note – Production groups are based on (R. Salmoninarum) antigen levels of the maternal parent. Antigen levels are determined by enzyme-linked immunosorbent assay (ELISA). Fish Health recommends rearing progeny from only parents with low BKD titer levels.

G. Incubation Strategies – All stocks will be incubated at Lookingglass Hatchery using a combination of chilled and un-chilled well water, UV treated (>60,000 uw/cm²/sec) creek water and Moist Air Incubator (Lookingglass Creek stock).

1. Hatchery Program – Each female’s eggs will be incubated in one tray until disease screening profiles results are completed. Eggs may be combined after fecundity estimates are completed.

2. Moist Air incubator will be used on a cross section of Lookingglass Creek adults.

Approximately 30 females will be used (contingent on positive results from Wallowa). Additional moist air incubators will be acquired with the capacity to incubate approximately 500,000 eggs. When acquired stocks and eggs to incubate will be determined.

H. Early Rearing Program –

1. **Lookingglass** – Catherine, Grande Ronde, Lostine, and Lookingglass (CC captive brood) fry will be loaded at 30 to 50 thousand per trough.
2. **Segregation of eyed-eggs and progeny will occur based on BKD ELISA** values of kidneys from spawned females. The degree of segregations is based on allowable space.
3. **Catherine Creek, Lostine, and Grande Ronde** smolts produced will target ~250fpp April 30, 2012 and 30fpp October 2012.
4. **Lookingglass Creek** production may be transferred to Irrigon for rearing in April and returned in September 2012 and released from the adult holding ponds in April 2013. The intent is to pressure wash, disinfect, and dry the holding pond for a minimum of one week before fish are transferred.

I. Monitoring and Evaluation

1. Spawning ground surveys
 - a. Carcasses – count, length, marks/tags, snout/scales, kidney sample, genetic sample
 - b. Live fish – count
 - c. Redds – count, GPS
2. Hatchery Spawning
 - a. Data collection – length (all fish), weight (females), marks/tags, eyed egg weights, individual fecundity
 - b. Tissue collection – snout/scales, kidney sample, genetic sample
3. Weir/trap morts
 - a. Data collection – count, length, marks/tags
 - b. Tissue collection – snout/scales, kidney sample, genetic sample
4. Monitor
 - a. Captive vs. Conventional production, growth and survival
 - b. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)
 - c. PIT tag detections at dams and weirs for run timing – Catherine Creek and Lostine River
5. Studies
 - a. Fall Volitional Release – Lookingglass Creek
 - b. CSS
6. Fish Health Monitoring Plans
 - **Disinfection** and Sanitation Guidelines (Appendix C).
 - **Broodstock** monitoring and treatment plan (Appendices J, K, L)
 - **Collect 30** kidneys from natural spawning females above the weir (Appendix J).
7. Hatchery versus Natural egg weights at eyed egg stage

J. Key Contacts

1. Transportation

- a. **Facility Operators (NPT and CTUIR)** will coordinate all hauling and notify LGH (Elmore) of the stock, number being hauled and estimated arrival time.
2. **Adult records (AAT's)** will be completed weekly by ODFW (requires timely completion of weekly trapping data).
3. **Communications** - Weekly or bi-weekly draft summaries of adult collections will be distributed to co-managers. Wallowa hatchery will provide a summary of fish provided for subsistence.

IX. Grande Ronde Basin - 2011 Safety Net Spring/Summer Chinook Grande Ronde

Smolt production (F_1) and potential outlets of production will be consistent with locations identified by co-managers. The program will transition into a safety net for Upper Grande Ronde population.

A. Allocation – In 2011 all Grande Ronde Captive brood will be spawned to complete the egg vs. parr experiment being conducted by that program. Eggs from this experiment will be outplanted into Meadow

and/or Sheep Creek. No anticipated need for eggs for smolt production of the 2011 broodyear. Future production will be utilized as follows:

1. If production from the conventional program is anticipated to be 150,000 smolts or more in a given year, mature SNAP adults will be outplanted into Meadow and/or Sheep Creek.
2. If less than 150,000 smolt production from the conventional program is anticipated in a given year, all mature SNAP adults will be spawned.
3. Enough eggs will be retained and reared to smolt in order to maintain a total release program of 150,000 (conventional + SNAP). The remaining SNAP eggs will be outplanted into Meadow and/or Sheep Creek.

B. Spawning - See Safety Net/Captive Brood 2011 AOP.

C. Incubation

1. Safety net/Captive Brood incubation to eyed stage at Oxbow Hatchery. If needed, eyed eggs will be inventoried, culled as prescribed in disease profiles, and shipped to Lookingglass Hatchery.

D. Key Contact

1. Safety Net/Captive Brood TOT project leader (Hoffnagle, McLean)
2. Oxbow Hatchery manager (Banks)

X. Imnaha - 2009 Brood Year-Spring/Summer Chinook

A. Anticipated smolt release – A total of 253,000 smolts at 22fpp (current size 28fpp).

- Acclimated: 253,000
- Direct stream: 0

B. Liberations (See Appendix A)

1. Transfer and Acclimation – Approximately 253,000 smolts will be transferred to Imnaha Satellite between March 9 and 10 and held for acclimation. Satellite personnel will begin volitional release March 30. Any remaining fish will be forced out on April 14. Release number will be determined by transfer inventory minus mortality.

C. Imnaha Satellite Operation

- 1. Schedule and Operations** – Open road to facility and begin set-up the first week in March. Close down facility in late April.
- 2. Scan mortality for PIT tags by ODFW staff**

D. Monitoring and Evaluation

- 1. Imnaha** summary of marked Chinook for release in 2011.
 - 180,00 AdCWT
 - 73,00 Ad only
 - 21,000 PIT
- 2. Fish Research** staffs will coordinate efforts with hatchery staff for pre-release sampling efforts (Table 2).
- 3. Genetic tissue collection for monitoring and pedigree analysis** – 50 samples
- 4. Pre-liberation sampling** – in each raceway
 - a. Collect 50 weights
 - b. Collect 250 lengths
 - c. Check 500 fish for tag retention and fin clip quality
- 5. Monitor**
 - a. Downstream migration survival and rate
 - b. PIT tag survival studies (CSS)

c. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)

6. Studies

a. CSS

E. Fish Health - Fish Health will coordinate with hatchery staff to conduct a pre-release health examine (Appendix E). Standard disinfection and sanitation guidelines will apply (Appendix C).

F. Key Contacts

1. ODFW - Deal will notify NPT (B. Johnson, Hesse, Harbeck, Young, Vogel, Michaels, and Wolf), ODFW (D. Eddy, Feldhaus, Hoffnagle), CTUIR (McLean, Zimmerman), LSRCP office and FPC (Tuomikoski (503-230-4287)) of date and numbers of fish released.

XI. Imnaha –2010 Brood Year-Spring/Summer Chinook

A. Smolt Production - An estimated 447,930 smolts will be produced at a target size of 25fpp at release.

a. Early Rearing – Fry will be reared in double deep troughs at Lookingglass Hatchery on UV treated Lookingglass Creek water. Fish will be transferred outside to raw creek water in April or May.

b. Final Rearing - After marking, fish will be divided into 7 raceways with approximately 63,900 fish per raceway (Appendix F). In July, a therapeutic Aquamycin 2.25% feed treatment will be administered to control BKD.

B. Monitoring and Evaluation

1. Fish marking- All fish will be ad clipped August 2011. Approximately 250,000 fish will receive a CWT.

2. PIT tag- 21,000 fish will be PIT tagged in October 2011 for CSS (Table 6).

3. Monitor

a. Downstream migration survival and rate

b. PIT tag survival studies (CSS)

c. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)

4. Studies

a. Acclimated vs. Direct Release

b. CSS

C. Marking Program –

1. AdCWT – 255,960

2. AD – 191,970

3. Pit tag – 21,000 CSS

D. Fish Health

1. Disinfection and Sanitation Guidelines (Appendix C).

2. Juvenile health monitoring and treatments (Appendix E).

E. Key Contacts

1. Lookingglass (Elmore)

2. Fish Health (Onjukka)

3. Fish Research (Feldhaus and Vogel)

XII. Imnaha –2011 Brood Year-Spring/Summer Chinook

The production goal is 420,000 smolts for the Imnaha River reared in 6 raceways. NEOH the long- term goal will be to produce 490,000 smolts.

A. Smolt goal - 420,000 smolts at 25fpp for release 2013.

B. Adult Collection

1. Predicted Runs- Total estimated return to river is 3,105 adults and 1,599 jacks. The breakdown includes 2,203 hatchery origin and 902 natural origin adults. Approximately 59% of fish entering the Imnaha River are expected to be collected at the weir and the collection of adults and jacks are estimated at: 2,127 hatchery-origin and 413 natural-origin (Table 11).

C. Imnaha Fishery Proposal Summary –The projected return of 3,105 (902 wild and 2,203 hatchery) Chinook salmon to the Imnaha River in 2011 will exceed the necessary escapement levels for natural spawning, outplanting and broodstock. We plan to use 228 adults (68 wild and 160 hatchery) for artificial propagation, allowing surplus hatchery and the remaining wild adults and jacks to spawn in the Imnaha River at a 1:1 ratio (50% hatchery), and release up to 300 hatchery adults and possibly some hatchery jacks into Big Sheep and Lick Creeks. Therefore, recreational and tribal fisheries are recommended (Appendix N).

Proposed Recreational Fishery:

1. Season – May 28 through July 10, may extend if wild fish impact allows

- **Bag Limit:** Two adipose clipped adult Chinook per day, bonus bag of 5 jack salmon per day (consistent with Oregon salmon bag limits)
- **Open area:** Imnaha River from mouth upstream to Summit Cr. Bridge

Expected and Maximum Harvest

- Maximum hatchery fish harvest rate: 20% of expected return, 440 fish.
- Maximum incidental wild mortality of 18 (1.9%)
- Additional harvest of ad-clipped (325) and natural-origin (133) Chinook is expected in tribal fisheries.

2. Monitoring:

- We plan to estimate harvest with a statistical creel survey.

D. Trap Operations

1. Period of Trap Operation – Install trap as soon as river conditions allow and operate until September 11 or until the last scheduled survey.

2. Trap/sorting Frequency—The trap will be worked weekly or more often if needed.

3. Disposition of Trapped Fish

a. Bull Trout - Enumerate and estimate length (minimize handling). Data and reports sent to ODFW (ODFW District and Regional offices), and LSRCP (Krakker).

b. Steelhead - enumerate, estimate length and determine hatchery or wild origin. Ad clipped fish will be euthanized. Data and reports sent to ODFW (ODFW District and Regional offices), and LSRCP (Krakker). Wild fish collected in the trap will be released upstream and wild kelts downstream of the weir.

c. Chinook Adults and jacks – Only fish retained for broodstock will be injected, intraperitoneally (IP), with erythromycin and oxytetracycline (Appendices J, K, and L). Hatchery-origin jacks and hatchery-origin adults, collected above broodstock and natural escapement guidelines, can be distributed at Imnaha facility for Tribal and non-Tribal distribution. If fish are exposed to MS-222, a 21-day period is required before they are used for consumption. Surplus is expected. Priority of use for surplus fish includes:

- Fish can be recycled for a fishery and released at the Imnaha or Freezeout bridge;

- 300 adults can be outplanted to Big Sheep and Lick Creek tributaries combined;
- Fish can be used for tribal and non-tribal distribution;
- Carcasses can be placed in Imnaha River and other out planted sites; and
- Surplus live jacks can be released in Big Sheep after the last redd count survey.

Fish held for distribution will be sampled according to Appendix I.

d. Adult Recycle Transportation - Fish can be recycled for a fishery and released back into the Imnaha River in co-manager agreed locations on agreed to dates. The Nez Perce Tribe will provide fish culture support as needed, including transport of recycled fish for the fishery and assistance with out-planting.

e. Tumors - Chinook will be inspected for tumors along the gum line. If a tumor is suspected, fish with will be held for consultation.

f. Adults for outplanting in Big Sheep and Lick Creek. Up to 300 hatchery origin adults can be outplanted. Adults collected prior to July 12th and targeted for out-planting, can be held at Imnaha. Adults collected after July 12th, and targeted for out-planting, can be direct stream released.

g. Disposition of Carcasses. Trapping mortalities will be processed as kept fish. The first 20, or as many as possible, weir mortalities will be labeled, frozen, and provided to Fish Health for examination. Following Fish Health examination, carcasses will be disposed in the landfill. Additional mortalities collected on the weir through mid-August (prior to redd surveys) will be sampled by the Imnaha staff (length, sex, pre-spawn status, scales (natural fish), recapture (opercle punch), and origin). After mid-August, the redd survey crews will collect weir mortality data. Carcasses should be clearly identified as sampled (tails removed) and returned to the river below the weir. Biological data will be sent to ODFW Fish Research (Feldhaus).

Note: CTUIR does not agree with the current spring Chinook disposition plans at the Imnaha and Lostine River weirs.

E. Hatchery Broodstock Collection Guidelines

1. Weir management—at 902 natural origin Chinook escapement, the sliding scale guidelines suggests that: ≤50% of the fish released above the weir can be of hatchery origin; ≥30% broodstock of natural origin. Natural jacks will be released above the weir and hatchery jacks maybe released above the weir to meet a jack composite of 10% of the total males. Typically, natural jacks exceed 10% of the males.

2. Broodstock Needs

a. Egg take- Need 512,200 green eggs at 95% survival of females, 82% survival from green egg to smolt, and estimated five-year fecundity average of 4,482 (3 year average of 4,697).

b. Adult Collection- Based on adult survival of 95%:

Males – 114 (spawn 108)

- 34 natural (spawn 32)
- 80 hatchery (spawn 76 adults or jack equivalent; 6 jacks equals one male)

Females – 114 (spawn 108)

- 34 natural (spawn 32)
- 80 hatchery (spawn 76)

3. Brood collections guidelines: The current projection for adult spring/summer Chinook returns to Imnaha River is 3,105 adults (2,203 Ad-clipped and 902 unmarked). However, it is expected that only 59% of the run will be intercepted at the weir. Fish collected and released above the weir will be managed at 50% hatchery and 50% wild origin ratio (pass 1 wild:1 hatchery).

Estimated Totals:	Estimate 59%		Release	
Escapement to mouth	collected	Broodstock	OP	above the weir
2,203-Hatchery	1,300	160	300	464

902-Wild 532 68 0 464
 Estimate 1,000+ surplus hatchery adults (plus jacks) without harvest.

Collection guidelines for Imnaha spring Chinook in 2011.

	June 1-22	June 23-30	July 1-8	July 9-16	July 17-23
HOB-160	6	21	33	33	23
NOB-68	3	8	19	16	8
Outplants		up to 50	up to 75	up to 75	up to 75
Recycle, C/S or food bank		Balance	Balance	Balance	Balance

	July 24-31	Aug 1 - 8	Aug 9 - 16	Aug 17 - 23	Aug 24 - Sep	Sept 1 - 15
	18	14	2	2	6	2
	7	3	2	0	2	0
Out plants		25				
C/S or food bank		Balance				

- *Pass 1 wild adult per 1 hatchery adult above the weir
- *Release all wild jacks
- *Retain all hatchery-produced jacks until the run is reassessed in late July.

The intent is to collect broodstock in pairs or female and jack-male equivalent. Jacks and adults can be transferred to Wallowa Hatchery for M&E recovery of CWT.

F. Spawning Guidelines

1. **Anesthetic Used** – MS222.
2. **Expected First Spawn** - Tuesday, August 16th.
3. **Spawning Frequency** – Once per week or as needed.
4. **Spawning Strategies** - All surviving brood stock collected will be spawned and eggs incubated at Lookingglass Hatchery. Sorting and spawning to take place the same day. Hatchery and co-manager staffs will determine fertilization matrices. A maximum of 10% of the eggs can be fertilized with three year old males and a minimum of 30% of the eggs will be spawned with assumed five year old males (>85cm). Large males may be spawned up to 3 times. Jack spawning will be conducted with 1 female to 6 jack matrix. Most adult spawning matrices will be 2 females x 2 males, but matrices of 1 x 1, 1 x 2, 2 x 1, or 3 x 2 can be used if necessary. Fecundity will be determined at eye-up.
5. **Adult Spawning** - The Nez Perce Tribe will provide fish culture support for spawning of the Imnaha River adults.

G. Incubation

1. **Imnaha eggs** will be incubated to eyed stage at Lookingglass Hatchery. The intent is to incubate one female’s eggs per tray. After eye-up, eggs will be enumerated and segregated by disease profile.
2. **Water Sources** –Lookingglass-chilled and un-chilled well water and UV treated Lookingglass Creek. Possible use of Moist Air Incubators for BY11.
3. **Egg Picking and Fish Culture for Resulting Juveniles** – The Nez Perce Tribe will provide fish culture support for the resulting progeny of the Imnaha River program starting with egg care through the release.

H. Fish Health Monitoring plans

1. **Disinfection** and Sanitation Guidelines (Appendix C).
2. **Broodstock** monitoring and treatment plan (Appendices J, K, L)

I. Monitoring and Evaluation

1. Spawning ground surveys
 - a. Carcasses – count, length, marks/tags, snout/scales, kidney sample, genetic sample
 - b. Live Fish – count
 - c. Redds – count, GPS
2. Hatchery spawning
 - a. Data collection – length (all fish), weight (females), marks/tags, eyed egg weights, individual fecundity
 - b. Tissue collection – snout/scales, kidney sample, genetic sample
3. Weir/trap morts
 - a. Data collection – count, length, marks/tags
 - b. Tissue collection – snout/scales, kidney sample, genetic sample
4. Monitor
 - a. Hatchery vs. Natural production, growth and survival (in collaboration with ODFW Early Life History Project)
 - b. PIT tag detections at dams and weir for run timing
5. Studies
 - b. CSS

J. Key Contacts

1. **Lookingglass** (Elmore, Deal) monthly reports to ODFW (La Grande & Wallowa fish districts and Hoffnagle, Feldhaus), CTUIR (Zimmerman and McLean), NPT (B. Johnson, Hesse, Young, Harbeck, Wolfe, Zollman), LSRC office.
2. **Fish Health** (Onjukka) monthly reports to ODFW (La Grande & Wallowa fish districts, and Research), CTUIR (Zimmerman and McLean), NPT (B. Johnson, Hesse, Harbeck, Young, Wolfe).
3. **Fish Research** (Feldhaus) monthly trap reports to ODFW (La Grande & Wallowa fish districts, and Hoffnagle), CTUIR (Boe, James, McLean), NPT (B. Johnson, Hesse, Vogel, Wolfe, Zollman).

XIII. Snake River –2010 Brood Year-fall Chinook

The production goal is 1.4 million sub-yearling smolts for the lower Grande Ronde and upper Snake rivers.

A. Allocation – Fall Chinook production at Irrigon hatchery is prioritized in the US v Oregon tables. Priorities 13 and 16 target a total production of 400,000 sub-yearlings scheduled for release in the Grande Ronde River around May 24 at 50fpp. Marks include:

- 200,000 AdCWT
- 200,000 no marks

Priorities 15 and 17 target a total production of 1 million sub-yearlings scheduled for release in the Snake River at Hells Canyon Dam on May 24th and 26th at 50fpp. Marks include:

- 200,000 AdCWT
- 600,000 Ad only

B. Adult collections and Spawning - See Lyons Ferry 2012 AOP.

C. Incubation/rearing

1. **Fall Chinook** incubation occurs at Lyons Ferry. After eye-up, inventory, and disease profiles, Lyons Ferry staff will combine eggs and ship to Irrigon Hatchery in December. Only eggs from females below BKD titers levels 0.2 are transferred.

D. Key Contact

1. **Lyons Ferry Hatchery** (Schuck, Mendel)

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D. Key Contact

1. **Lyons Ferry Hatchery** (Schuck, Mendal)

Table 1 (10/18/10)
2011 Irrigon Summer Steelhead Transport Schedule
(10 brood)

<u>Date</u>	<u>Stock</u>	<u>From Ponds</u>	<u>To</u>	<u>Number</u>	<u>Est. Pounds</u>
Feb. 21-23	5610	7*,8,9*,10*,11*	Wallowa Lower Acc	189,000	42,000
Feb. 23-25	5610	12*,13,14*,16	Wallowa Upper Acc	189,000	42,000
Feb.28-Mar. 1	5610	17*,19	Big Cany. Lower Acc	84,000	18,666
Mar. 1-2	5610	18,20	Big Cany. Upper Acc	84,000	18,666
Mar. 3-4	2910	27,28,29*	Little Sheep Acc	130,000	26,000
Apr. 4	2910	30	Big Sheep (Direct)	44,000	8,800
Apr. 13-15	5610	15*,25*,26	Wallowa Lower Acc	126,000	28,000
Apr. 18-19	5610	21,23*	Big Cany. Lower Acc	84,000	18,666
Apr. 20-21	5610	22,24	Big Cany. Upper Acc	<u>84,000</u>	<u>18,666</u>
				1,014,000	221,464

~Denotes partial pond

*Denotes CWT pond

Table 2. Juvenile spring Chinook salmon and summer steelhead sampling schedule at LSRCF facilities, 2011. PS = Periodic sampling which includes length and weight. RS = Release sampling which includes length and weight by fin clip. CWT = retention sampling for CWT and associated fin clips. GS = Genetic monitoring using 50 fish samples. TBD = To Be Determined.

Sample Date	Stock	Location	Pond	Purpose
<u>Spring Chinook</u>				
Feb. 7-11	Catherine (09)	Lookingglass	1-2, C19	CWT, RS, GS
Feb. 7-11	Catherine (09)	Lookingglass	3-4, AHP C&D	CWT, RS, GS
Feb. 7-11	U. Grande Ronde (09)	Lookingglass	5-8	CWT, RS, GS
Feb. 7-11	Lostine (09)	Lookingglass	9-12	CWT, RS, GS
Feb. 7-11	Imnaha (09)	Lookingglass	13-18	CWT, RS, GS
June 4-5	All (10)	Lookingglass	1-18	PS
<u>Summer Steelhead (brood 10)</u>				
December 2010	Wallowa	Irrigon	7, 9, 11, 15	CWT
December 2010	Imnaha	Irrigon	10, 12, 14, 17, 23, 25, 29	CWT
December 2010	Imnaha	Irrigon	29	CWT
March 29	Imnaha	Little Sheep	AP	RS, GS
April 1	Imnaha	Irrigon	32	RS (FL only)
April 08	Wallowa	Wallowa	LAP, UAP	RS
April 12	Wallowa	Big Canyon	LAP, UAP	RS, GS
April 22	Wallowa	Big Canyon	LAP	RS, GS
April 25	Wallowa	Big Canyon	LAP, UAP	RS
April 26	Imnaha	Little Sheep	AP	sex ratio
May 9	Wallowa	Big Canyon	AP	sex ratio
<u>Summer Steelhead (brood 11)</u>				
November 2011	Wallowa	Irrigon	TBD	CWT
December 2011	Wallowa	Irrigon	TBD	CWT
December 2011	Imnaha	Irrigon	TBD	CWT

Table 3. Summer Steelhead run projections to LSRCP Facilities in 2011.

2011 PROJECTED Returns to Wallowa Hatchery					
MARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	1,245	753	1,998	
Marked	1:2	285	712	997	
Marked	2:1	11	10	21	
Marked	2:2	1	3	4	
Total		1,542	1,478	3,020	1,583-4,457

2011 PROJECTED Returns to Big Canyon Facility					
MARKED AND UNMARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	643	568	1,211	
Marked	1:2	173	525	698	
Marked	2:1	5	5	10	
Subtotal		821	1,098	1,919	704-2,729
Unmarked	2:1	14	17	31	
Unmarked	2:2	9	18	27	
Unmarked	3:1	16	13	29	
Unmarked	3:2 & 4:1	5	11	16	
Subtotal		44	59	103	49-159
Total		865	1,157	2,022	

2011 PROJECTED Returns to L. Sheep Cr. Facility					
MARKED AND UNMARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	909	775	1,684	
Marked	1:2	118	466	584	
Marked	2:1	10	7	17	
Marked	3:1	0	2	2	
Subtotal		1,037	1,250	2,287	1,269-3,771
Unmarked	2:1	47	66	113	
Unmarked	2:2	13	39	52	
Unmarked	3:1	27	21	48	
Unmarked	3:2 & 4:1	5	13	18	
Subtotal		92	139	231	114-353
Total		1,129	1,389	2,518	

Table 4. Estimated numbers of tagged fish to be released in 2012 from 2011 brood summer steelhead and 2010 brood spring Chinook salmon.

Species, Stock	Number Marked	Type of Mark	Marking Period	Marking Location
Summer Steelhead				
<u>2011 Brood Year (Ad clipped in September)</u>				
Little Sheep	25,000	Ad-LV+CWT	November	Irrigon
Wallowa	150,000	Ad-LV+CWT	November	Irrigon
Wallowa	100,000	Ad-RV+CWT	November	Irrigon
Spring Chinook Salmon				
<u>2010 Brood Year</u>				
Imnaha River	256,000	Ad+CWT	August	Lookingglass
Imnaha River	191,000	Ad only	August	Lookingglass
Catherine	100,000	Ad+CWT	August	Lookingglass
Catherine	50,000	Ad only	August	Lookingglass
Lostine	150,000	Ad+CWT	August	Lookingglass
Lostine	150,000	Ad only	August	Lookingglass
U. Grande Ronde	140,000	Ad+CWT	August	Lookingglass
U. Grande Ronde	140,000	CWT only	August	Lookingglass
Lookingglass	122,500	Ad+CWT	August	Irrigon
Lookingglass	122,500	Ad only	August	Irrigon

Section 1.02

Table 5. PIT-tagging schedule for 2010 brood summer steelhead at Irrigon Hatchery scheduled for December 2011. Raceways need to be off feed 2 days prior to PIT-tagging to reduce tag loss. Comparative Survival Study (CSS) will provide 141K tags to supplement the LSRCP tagging and achieve a 70% LSRCP and 30% CSS split. The tagging trailer, modified for PIT tagging, will be used and it should take 7 or 8 days to complete. The trailer will be set-up Monday and tagging will begin Tuesday. A long-handled magnet will be used in raceways to recover shed tags. WAP indicates Wallowa Acclimation Ponds at Wallowa Hatchery, BC is Big Canyon Facility.

Stock, group	Raceway (projected location)	LSRCP tags	CSS tags	Total tags^A
Wallowa stock				
WAP, forced April	10, 12	2,600	1,200	3,800
WAP, forced April	14	1,200	600	1,800
WAP, volitional May	25	1,500	700	2,200
WAP, early brood April	7, 9,	2,000	1,000	3,000
WAP, early brood April	11	1,000	400	1,400
WAP, early brood May	15	1,000	300	1,300
BC, forced April	17	3,000	1,400	4,400
BC, forced May	23	3,000	1,400	4,400
Subtotal		15,300	7,000	22,300
Imnaha stock				
Little Sheep, volitional April	27, 29	11,200	5,200	16,400
Big Sheep, direct stream April	30	3,800	1,800	5,600
Subtotal		15,000	7,000	22,000
Grand total		30,300	14,000	44,300

^A PIT-tag a random sample by crowding each raceway to obtain target number. When tagging, note whether the fish is Ad, AdLV, or AdRV.

Table 6. Fish PIT-tagging numbers for spring Chinook salmon at Lookingglass Fish Hatchery, October 2011 (BY2010). Note: Fish must be off feed 2 days prior and 2 days after PIT tagging to reduce tag loss.

Experimental group	Raceway	Estimated # per raceway	Number to PIT tag
Catherine Conventional	1	50,550	7,000
Catherine Conventional	2	50,550	7,000
Catherine Conventional	3	50,550	7,000
Lookingglass Creek	AHP A	62,500	500
Lookingglass Creek	AHP B	62,500	500
Lookingglass Creek	AHP C	62,500	500
Lookingglass Creek	AHP D	62,500	500
U. Grande Ronde Conventional	4	69,540	750
U. Grande Ronde Conventional	5	69,540	750
U. Grande Ronde Conventional	6	69,540	750
U. Grande Ronde Conventional	7	69,540	750
Lostine Conventional	8	72,625	1,500
Lostine Conventional	9	72,625	1,500
Lostine Conventional	10	72,625	1,500
Lostine Conventional	11	72,625	1,500
Imnaha	12	63,990	3,000
Imnaha	13	63,990	3,000
Imnaha	14	63,990	3,000
Imnaha	15	63,990	3,000
Imnaha	16	63,990	3,000
Imnaha	17	63,990	3,000
Imnaha	18	63,990	3,000
Grand total		1,412,875	52,000

Table 7. ODFW Projected spring Chinook salmon returns to Catherine Creek in 2011.

Origin	Estimated Total Return to the River	Confidence Interval (+/-)	Estimated % Trapped at the Weir	Estimated Trapped at the Weir
Hatchery age 3	157	47	0.9	141
Hatchery age 4	269	125	0.9	242
Hatchery age 5	45	24	0.9	41
Total Hatchery Return	471			424
Total Hatchery Adults	314			283
Natural age 3	17	9	0.9	15
Natural age 4	92	72	0.9	83
Natural age 5	137	1	0.9	123
Total Natural Return	246			221
Total Natural Adults	229			206

Table 8. ODFW Projected spring Chinook salmon returns to the Upper Grande Ronde River in 2011.

Origin	Estimated Total Return to the River	Confidence Interval (+/-)	Estimated % Trapped at the Weir	Estimated Trapped at the Weir
Hatchery age 3	136	170	0.4	54
Hatchery age 4	246	464	0.5	123
Hatchery age 5	290	26	0.5	145
Total Hatchery Return	672			322
Total Hatchery Adults	536			268
Natural age 3	7	5	0.4	3
Natural age 4	13	16	0.5	7
Natural age 5	67	61	0.5	34
Total Natural Return	87			43
Total Natural Adults	80			40

Table 9. ODFW Projected spring Chinook salmon returns to the Lostine River in 2011.

Origin	Estimated Total Return to the River	Confidence Interval (+/-)	Estimated % Trapped at the Weir	Estimated Trapped at the Weir
Hatchery age 3	1,071	255	0.9	964
Hatchery Adults	830	208	0.9	747
Total Hatchery Return	1,901			1,711
Natural age 3	81	44	0.9	73
Natural Adults	421	86	0.9	379
Total Natural Return	502			452

Table 10. ODFW Projected spring Chinook salmon returns to Lookingglass Fish Hatchery in 2011.

Origin	Estimated Total Return to the River	Confidence Interval (+/-)	Estimated % Trapped at the Weir	Estimated Trapped at the Weir
Hatchery age 3	126	9	0.9	113
Hatchery age 4	603	16	0.9	543
Hatchery age 5	16	73	0.9	14
Total Hatchery Return	745			671
Total Hatchery Adults	619			557
Natural age 3	126	9	0.9	113
Natural age 4	120	3	0.9	108
Natural age 5	13	6	0.9	12
Total Natural Return	259			233
Total Natural Adults	133			120

Table 11. ODFW Projected spring Chinook salmon returns to the Imnaha River in 2011.

Origin	Estimated Total Return to the River	Confidence Interval (+/-)	Estimated % Trapped at the Weir	Estimated Trapped at the Weir
Hatchery age 3	1521	872	0.66	1,004
Hatchery age 4	1570	438	0.51	801
Hatchery age 5	633	182	0.51	323
Total Hatchery Return	3,724			2,127
Total Hatchery Adults	2,203			1,124
Natural age 3	78	38	0.39	30
Natural age 4	733	301	0.43	315
Natural age 5	169	240	0.40	68
Total Natural Return	980			413
Total Natural Adults	902			383

Appendices

APPENDIX A. PROPOSED JUVENILE SALMONID RELEASES IN THE GRANDE RONDE (GR) AND IMNAHA (IM) BASINS IN 2011

Basin	Species	Stock	Hatchery	Number ⁽¹⁾	Lbs	fpp	Location	In Facility	In River	Pond # ⁽²⁾	Release Method ⁽³⁾	Marks
GR	STS	5610	IR	189,000	42,000	4.5	Wallowa Lower Acc	Feb 22-23	Apr 10,11	7*, 8,9*,10*,11*	Forced	100K AdRVCWT; 150K
GR	STS	5610	IR	189,000	42,000	4.5	Wallowa Upper Acc	Feb 23-25	Apr 11-12	12,*13,14*,16	Forced	AdLVCWT; 254K Ad only,
GR	STS	5610	IR	84,000	18,666	4.5	Big Canyon Lower	Feb 28-Mar. 1	Apr 13-14	17*,19	Forced	25K AdLVCWT; 59K Ad
GR	STS	5610	IR	84,000	18,666	4.5	Big Canyon Upper	Mar. 1-2	Apr 14-15	18,20	Forced	84K Ad
IM	STS	2910	IR	130,000	26,000	5.0	Little Sheep Acc	Mar 2-4	Mar 29-Apr 26	27,28,29*	Volitional	25K AdLVCWT; 105K Ad
IM	STS	2910	IR	44,000	8,800	5.0	Little Sheep Acc	April 4	Apr 26	30	Volitional	44K Ad only
GR	STS	5610	IR	126,000	28,000	4.5	Wallowa Lower Acc	April 13-15	Apr 24	15*,25*,26		
GR	STS	5610	IR	84,000	18,666	4.5	Big Canyon Lower Acc	Apr 18-19	Apr.26-May 9	21,23*	Volitional	25K AdLVCWT; 59K Ad
GR	STS	5610	IR	84,000	18,666	4.5	Big Canyon Upper Acc	Apr 20- 21	Apr 27-May 9	22,24	Volitional	84K Ad
				1,014,000	221,464	4.58						
GR	CHS	80F09	LG	53,250	2,130	25	Grande Ronde Acc	Mar. 15	Mar 22-30	4	Volitional	53K AdCWT
GR	CHS	8009	LG	55,150	2,206	25	Grande Ronde Acc	Mar .15	Mar 22-30	6	Volitional	55KCWT
GR	CHS	8009	LG	135,300	5,412	25	Grande Ronde Acc	Mar .31	Apr 6-14	5,7,8	Volitional	135K CWT
GR	CHS	200F09	LG	1,910	90	21	Lostine Acc	Mar. 11	Apr 8-19	9	Volitional	2K CWT
GR	CHS	20009	LG	61,100	2,444	25	Lostine Acc	Mar. 11	Apr 8-19	9	Volitional	61K CWT
GR	CHS	20109	LG	58,900	2,356	25	Catherine Creek Acc	Mar. 14	Mar 30Apr 14	1	Volitional	59K AdCWTVIE
GR	CHS	201F09	LG	50,250	2,010	25	Catherine Cr Acc	Mar 14	Mar 21-29	2	Volitional	50K AdCWT
GR	CHS	201F09	LG	50,300	2,010	25	Catherine Cr Acc	Mar. 30	Apr 5-14	3	Volitional	50K AdCWT
GR	CHS	8109	LG	103,000	4,290	24	Lookingglass Creek	NA	Apr 1-14	16,17	Volitional	103 K AdCWT
IM	CHS	2909	LG	253,000	10,120	25	Imnaha Acc	March 9-10	Mar. 30-Apr 14	11,12-15,18	Volitional	180K AdCWT; 73K Ad only
				1,289,900	58,800	22						

⁽¹⁾ Numbers of fish based on recent hatchery estimates, not AOP goal numbers

⁽²⁾ * Indicates CWT groups, Brood evaluation groups include: AdLVCWT (12,13,14,16) or AdRVCWT (7,8,9,10,11)

⁽³⁾ Forcing occurs following a minimum 24 hr. volitional opportunity. Volitional and forced releases are all acclimated.

Appendix B. Steelhead Fish Health Monitoring Plan & Disease Treatments

Location	BY	Sp.	Stock	Examination Category	Protocol	Comment
Irrigon Hatchery	2010 & 2011	StS	Wallowa (56) and Little Sheep (29)	Monthly & Preliberation	-10 mort/moribund per stock examined -kidney smears on TYE-S agar -Gill culture smears on agar if suspect gill disease -Gill and skin wet mounts from a combination of moribund and healthy fish	Treat CWD with Florfenicol under a Veterinary Feed Directive (VFD)
Irrigon Hatchery	2010	StS	56 or 29	Annual Myxobolus cerebralis	60 smolts that have been on the water supply for at least 6 months	Prefer using saved mortalities
Steelhead acclimation sites – WA, BI & LI	2010	StS	56 & 29	Preliberation	Steelhead acclimated more than 3 weeks will be monitored as in monthly protocol above	Fish Health guidelines are that these non-migrants (infected with the agent of Whirling Disease) should not be stocked to other areas
Wallowa Hatchery		Rb		Annual Myxobolus cerebralis	Need to rear and test 60 Rb brought in as eyed eggs on spring water, Spring Creek and Wallowa River water. In addition, legal rainbow will be sampled for Mc before release.	Must be on water supply for 6 months
Wallowa & Little Sheep	2011	StS	56 & 29	Adult Spawners	Minimum of 60 per stock for culturable viruses (up to 30 from returning early brood) using ovarian fluid and caeca/kidney/spleen sample pools not to exceed 5 fish per pool. . Sub-sample LI adults for Mc if used for nutrient enrich.	A weekly sample (N=24) of ovarian or milt fluid may be sampled. 60 WA females for CWD bacteria screen research (kidney, spleen and OF)
Wallowa & Little Sheep	2011	StS	56 & 29	Adult Mortality	-kidney smears on TYE-S agar -A minimum of 20 or all mortality less than 20 will be examined	
Lookingglass Creek	2011	StS or Sp		Adults	-mortalities examined for culturable viruses, bacteria, R. salmoninarum by ELISA -If possible viral samples (ovarian fluid or milt) will be taken from “ripe” steelhead passed above Lookingglass Hatchery.	The scope of what can be learned from these mortalities will depend on the degree of degradation.

Appendix C (page 1 of 3): Disinfections and Sanitation Guidelines for all LSRCP Hatcheries

Goal: To bring all individuals involved in activities at all LSRCP facilities in the Grande Ronde and Imnaha Basin program to an understanding of what is expected and what is reasonable in minimizing infectious disease risk factors. **Prevention** of infectious fish disease problems is the overall goal.

Background: Since the La Grande Fish Pathology Laboratory was established in 1987, there have been disinfection and procedural recommendations made when needed by the responsible fish pathologist. In 1998 and 1999 two documents (cited below) summarized fish disease data and included recommendations to reduce the impacts of infectious disease. The concepts behind most of the specific operational recommendations included in the attachment (page 2) are taken from these documents. In 1999 there were efforts made through placards and the AOP process to alert everyone to a higher standard of sanitary practices for disease prevention at Lookingglass Hatchery. Given that Lookingglass Hatchery was and still is used as a fish culture facility for multiple ESA programs, an increased awareness and application of **Quarantine Mode of Operation** should exist. With the passage of anadromous adults and the presence of resident fish above Lookingglass Hatchery intake there is the certain risk of pathogen introduction into the creek water supply. Aside from the Lookingglass Hatchery situation, it is important to note that the statewide fish health management policy (September 12, 2003) states that preventative and therapeutic fish health strategies must be implemented at all facilities. The recommended guidelines in this AOP should be consistent with this state policy and be standard practice at all LSRCP facilities.

Groberg, W., S.T. Onjukka, and K.A. Brown. July 22, 1998. A Synopsis of Infectious Disease in Fish at Lookingglass Hatchery.

Groberg, W., S.T. Onjukka, K.A. Brown and R.A. Holt. November 30, 1999. A Report of Infectious Disease Epidemiology among Spring Chinook Salmon at Lookingglass Hatchery.

Definitions:

Quarantine - At Lookingglass Hatchery and other LSRCP facilities there are multiple programs on station. Each program and raceway within each program must be treated as an isolated unit with the goal to prevent cross-contamination with fish pathogens among the many ESA and non-ESA stocks. All personnel (ODFW, Tribal, volunteers and the visiting public) need to be aware of these guidelines for maximum disease prevention benefit.

Disinfection - A process that substantially reduces or completely eliminates all pathogenic microorganisms except spores. The possibility of a disinfected object transmitting disease-producing organisms is greatly reduced.

Examples: Disinfection of gear and equipment (boots, bibs or raingear, nets, crowders, raceways, lib trucks, PIT tag needles). Note: Disinfection only occurs if proper procedures are implemented to maintain proper concentration of disinfectant and exposure time.

Sanitation – A process that brings microbial contamination to a “safe” level.

Examples: Quick sanitation (decontamination step) – use of footbaths while moving from one area to another, dipping hands in a tub of iodophor disinfectant.

Note: A summary of recommended disinfectants and for what applications follows on page 3 of this attachment.

**Appendix C (page 2 of 3): Disinfections and Sanitation Guidelines for all LSRCP Hatcheries
Specific Operational Recommendations**

Applies to Who?	Prevention Control Measure or Sanitary Practice	Guideline Comment
All	Disinfect all gear/equipment prior to entering or leaving hatchery grounds	-As per attached iodophor protocol -Hatchery crew responsible for providing tub of 100 ppm iodophor
All	Disinfect equipment when moving from raceway to raceway or tank to tank for <u>any</u> fish handling or pond cleaning activities	-As per per attached iodophor protocol -Includes CWting, fin clipping and PIT tag operations. See footnote for marking*.
All	Use footbaths upon entering or leaving the work area for a given program	-Use larger tub of disinfectant if involved in a spawning
All	Use a new disposable apron or disinfected personal rain gear while working with fish	
CTUIR Personnel operations at Lookingglass Hatchery	Disinfect all gear/equipment prior to entering or leaving hatchery grounds, Lookingglass Creek, or the intake building and when done with operations at intake	-CTUIR personnel responsible to maintain and use a tub of 100 ppm iodophor at intake building workstation
Hatchery Crew	Assure that individual raceway and tank mortality “picker equipment” is in place at each raceway and tank	-All use these for the specifically designated Raceway
Hatchery Crew	Sanitize each raceway prior to use for the next brood year. (see page 3 for recommendation)	-dry for a minimum of three days
Hatchery Crew	Keep footbaths located at strategic locations refreshed with disinfectant	-As per iodophor label, refreshed as needed
People at Spawning	Disinfect the spawning table and spawning work area between stocks and at the end of the day	-As per attached iodophor protocol
Research, Hatchery Crew & Pathology Personnel	Handle and necropsy dead fish only in designated areas	-Adult morts: use concrete pad outside spawn area or concrete pad in endemic building at LGH -Juvenile morts: store in freezer in designated area for this purpose.
PIT taggers	-PIT tagging supervisors maintain and keep footbaths by each door of PIT tagging trailer for use during operations -Assure that PIT tagging needles are new or clean and sharp -Disinfect in 70% Isopropyl alcohol -No re-use of PIT tag needles until air dried	-if PIT tag needles are re-used disinfect as per isopropyl protocol attached
Lib Truck Operators	Assure proper disinfection of tank and equipment prior to collection or transfer of fish	-As per attached disinfectant application Summary
Safety Net Operations	See Captive Broodstock AOP	-Appendix 6 Captive Broodstock AOP

*Footnote: Within a stock, operations will start with low BKD segregation groups or groups determined to be of lowest disease risk proceeding to raceways of higher disease risk. The latest fish health information should be used to determine the least risky raceway sequence.

**Appendix C (page 3 of 3): Disinfection and Sanitation Guidelines for all LSRCP hatcheries
Summary of Recommended Disinfectants (Concentration and time) and for what Application**

Disinfectant*	Application	Concentration	Time	Comment
Iodophor	Nets, gear and equipment, clipping & tagging van, PIT tag stations, large tub disinfectant containers, spawning colanders and buckets, lib truck, footbaths, floors Note: For raceway sanitization** – thoroughly clean the unit to remove dirt, spray or brush on 75-100 ppm iodophor and let this remain for a minimum of 10 minutes. Leave it to dry for a minimum of 3 days. Allow iodophor to dry and break down with exposure to light. **If the above recommendation cannot be done then sanitize raceways by thoroughly cleaning them and leaving to dry for a minimum of 3 days.	100 ppm Note: to make 100 ppm solution mix 6.7 oz of jug strength iodophor to 5 gallons H ₂ O or 6.7 oz.=189ml	10 min.	-Equipment should be pre-rinsed to remove dirt, mucus or other organic material which reduces the efficacy of disinfection and sanitization -Rinse equipment to remove harmful residue if equipment is going into standing water containing fish or fish are being placed into the equipment (tank or bucket). Remember that iodine at 1:20,000 is harmful to fish. -Argentyne or other buffered iodophors such as Western Chemicals “PVP iodine” would be acceptable. Note: if DRAW 476 is used remember this product is 1.75% active iodine and unbuffered so should not be used for water- hardening eggs
	Water hardening eggs	100 ppm	Minimum 15 minutes	This is the statewide general practice
	Egg transfers - disinfection at receiving station	100 ppm	10 minutes	Usually applies to Captive Broodstock eggs received
Virkon Aquatic	Footbaths, nets, boots & gear			As per label
Chlorine or Aqueous solution as sodium hypochlorite (Household Bleach)	Lib truck tanks	10 ppm	10 min.	Organic matter binds and neutralizes
	Raceway disinfection	100 ppm		Left to dry and breakdown in sun. Need to assure that no bleach goes to effluent.

***All chemical use will be done in accordance with label use and reporting requirements. Disinfecting and disinfected water must be disposed of in an approved manner.**

Appendix D. Imnaha/Little Sheep steelhead program draft guidelines

Steelhead smolts production will range from 215,000 to 330,000 smolts to provide a return of 2,000 adults to/above Ice Harbor Dam for harvest, broodstock, and natural escapement.

Escapement goals:

- Big Sheep -500 adults
- Little Sheep -250 adults

The base production program consists:

- Little Sheep-165,000 ad clipped smolts, 25,000LVCWT and 9,300PIT
- Big Sheep-50,000 ad clipped smolts, 3,500 PIT

Sliding scale production levels:

- Increase production to meet adult return goal up to 330,000 smolts
- If broodstock and escapement goals are not attained at full production (330,000 smolts), unclipped smolts can be released

Weir Management guidelines

Big Sheep- Big Sheep escapement would be estimated from PIT tagged adults crossing Lower Granite Dam. Goal is 500 fish escapement

Little Sheep-Goal of 250 fish escapement

- < 100 natural adults, no management of the proportion of hatchery/natural fraction (PNI) to meet 250 fish natural escapement.
- 101-150 natural adults, manage the PNI between 36-48% natural fish escapement.
- 151-200 natural adults, manage the PNI between 48-60% natural fish escapement. Total release up to 250.
- 201-250 natural adults, manage the PNI at 60-72% or less hatchery to wild. Total release up to 250
- > 251 natural adults, manage the PNI at >72% wild adults, no limit of wild fish above the weir.

Broodstock Management guidelines

Approximately 126-137 adults are required to produce the base program of 215,000 smolts. The guideline for the proportion of natural fish in the broodstock is as follows:

- At less than or equal to 100 natural returns, use 10% of natural run for broodstock
- At greater than 100 natural returns, use 10 natural fish plus 40% of the natural run greater than 100 for broodstock (examples below).
 - Examples:
 - 100 wild - 10 natural adults for broodstock
 - 150 wild - 30 natural adults
 - 200 wild – 50 natural adults
 - 250 wild - 70 natural adults
 - 300 wild – 90 natural adults

Surplus Adults: Adult returns to Little Sheep can be transferred to Big Sheep to meet escapement goal, given to the Tribes for C/S, used for nutrient enhancement, given to local food banks, or placed in the landfill.

Appendix E. Juvenile Chinook Fish Health Monitoring Plan & Disease Treatments

Location	Brood year	Stock	Examination Category	Protocol	Comment/Disease Treatment
Lookingglass Hatchery	2010	200W 201W 80W 29 81	Monthly	-10 mort/moribund per stock, kidney smears on TYE-S agar, gill culture smears if suspect gill disease, R. salmoninarum (BKD), Gill & skin wet mounts from a combination of moribund and healthy fish. -tissues (gill/ kidney/spleen) will be assayed for culturable viruses from a sub-sample of fish -5 grab-sampled fish every other month and any moribund fish for EIBS (blood smears and hematocrits).	One Aquamycin feeding will be implemented for all fish in July. Disease outbreaks - treated on a case-by-case basis. Therapies and remedial measures are based on conventional and available treatments, new information, and innovation. Warm water temperature therapy would be used if EIBS became a problem on a priority basis determined by co-managers. Formalin treatments would be implemented for Ichthyobodo infestations. Fungus - Formalin flushes (1 hour) are prescribed after fin clipping, PIT tagging, VIE tagging, coded wire tagging and after transfer back from IFH for 8110 fish for two consecutive days. Formalin is used under a local veterinarian prescription. Coldwater disease – Treat with florfenicol under a Veterinary Feed Directive (VFD).
Irrigon Hatchery	2010	81	Monthly Pre-transfer	-10 mort/moribund and wet mounts for parasites as per Lookingglass Hatchery -Monthly plus 30 grab-sampled for BKD ELISA and culturable viruses	-One Aquamycin medicated feeding at Irrigon Hatchery in June.
Lookingglass Hatchery	2009	200W 200F 201W 201F 80W 80F 81 29	Monthly Pre-transfer & Annual Myxobolus cerebralis testing	Monthly: As above Pre-transfer: 60 grab-sampled smolts per stock -R. salmoninarum by ELISA -tissues (gill/kidney/spleen) from 3 fish pools for culturable viruses -wet mounts of skin & gill tissue from a minimum of 5 fish -sub-sample for EIBS -one stock (60 fish) for Myxobolus cerebralis	Pre-transfer grab-sample numbers may vary depending on disease history and number of fish for a given brood year.
Chinook acclimation IM, LR, CC & UGR	2009		Pre-liberation	-Smolt groups held at acclimation sites longer than 3 weeks will be evaluated with a lesser number of “grab-sampled” fish as in pre-transfer protocol above. -Mortalities will be examined (as in monthly)	Pre-liberation grab-sample numbers at acclimation sites may vary depending on disease history and number of fish for a given brood year.

Appendix F. Production plan for 2011 at Lookingglass Hatchery

Group	Strategy Treatment	BKD	Fry (Dec 17 2009)	Initial Ponding (fry)	Initial Raceway#		Smolts marked	Final Pond #	Smolt Numbers	Mark	Release Site
Catherine Creek	Conventional	Low	159,642	50,550	1	From rcy 1 into 1	50,550	1	50,550	AdCWT	CC
Catherine Creek				50,550	2	From rcy 2 into 2	50,550	2	50,550	AdCWT	CC
Catherine Creek				50,550	3	From rcy 3 into 3	50,550	3	50,550	Ad	CC
							151,650				
Lookingglass	Conventional	Low/Mod Low	257,513	244,635	Irrigon	From Irrigon to Adult A,B,C,D	244,635	Adult A,B,C,D	122,500 122,500	AdCWT Ad	Look
							244,635				
U. Grande Ronde	Conventional	Low	292,813	69,540	4	From rcy 4 into 4	69,540	4	69,540	AdCWT	UGR
U. Grande Ronde				69,540	5	From rcy 5 into 5	69,540	5	69,540	AdCWT	UGR
U. Grande Ronde				69,540	6	From rcy 6 into 6	69,540	6	69,540	CWT	UGR
U. Grande Ronde				69,540	7	From rcy7 into 7	69,540	7	69,540	CWT	UGR
							278,160				
Lostine River	Conventional	Low	305,785	72,625	8	From rcy 8 to 8	72,625	8	72,625	AdCWT	LR
Lostine River				72,625	9	From rcy 9 to 9	72,625	9	72,625	AdCWT	LR
Lostine River				72,625	10	From rcy 10 to 10	72,625	10	72,625	Ad	LR
Lostine River				72,625	11	From rcy 11 into 11	72,625	11	72,625	Ad	LR
							290,500				
Imnaha River	Conventional	Low	471,519	63,990	12	From 12 into 12	63,990	12	63,990	AdCWT	IM
Imnaha River				63,990	13	From 13 into 13	63,990	13	63,990	AdCWT	IM
Imnaha River				63,990	14	From 14 into 14	63,990	14	63,990	AdCWT	IM
Imnaha River				63,990	15	From 15 into 15	63,990	15	63,990	AdCWT	IM
Imnaha River				63,990	16	From 16 into 16	63,990	16	63,990	Ad	IM
Imnaha River				63,990	17	From 17 into 17	63,990	17	63,990	Ad	IM
Imnaha River				63,990	18	From 18 into 18	63,990	18	63,990	Ad	IM
							447,930		Total 1,412,875		

Appendix G. 2011 Grande Ronde Spring Chinook Sport Fishery Proposal

Introduction

The Grande Ronde River spring Chinook hatchery program is part of the Lower Snake River Compensation Plan (LSRCP) developed to mitigate for fish production after construction of the four lower Snake River dams. Hatchery Chinook salmon are produced at LSRCP hatcheries in Washington, Idaho and Oregon. Subsequent adult returns are intended to provide tribal and recreational fisheries and, in some cases, to enhance natural-origin (N-O) spawner numbers. Components of the Grande Ronde River spring Chinook hatchery program operate within the Lostine River, Catherine Creek, upper Grande Ronde River and Lookingglass Creek. This 2011 fishery proposal focuses on hatchery returns to the Lostine River component of the program.

Management of the Lostine hatchery program is guided by a Hatchery Genetic Management Plan (HGMP) that incorporates an adult sliding scale which uses hatchery fish to boost N-O spawner numbers during low N-O returns and manages against negative impacts of the hatchery program by limiting; 1) the number of hatchery fish spawning naturally and 2) the number of hatchery fish in the broodstock and as N-O runs increase. The sport fishery's ability to selectively remove hatchery fish from the system supports the direction provided in the HGMP and acts as an integral part of program management.

Consistent with the Grande Ronde spring Chinook Fishery Management and Evaluation Plan (FMEP) submitted to NOAA in July 2010, and other management agreements, the following proposal details a proposed sport fishery plan including; 1) 2011 run projections, 2) a description of the proposed fishery, 3) an analysis of the allowable harvest impacts as it relates to FMEP guidelines, 4) fishery expectations and resulting adult distribution and 5) fishery monitoring and enforcement plans.

Run Projections

Run projections are not available for the Wallowa River and tributaries outside the Lostine River. Therefore, we utilized relationships between redds counted in the Lostine River, Minam River, upper Wallowa River, Bear Creek and Hurricane Creek to estimate adult returns for: 1) the upper Wallowa basin excluding the Lostine River and 2) the Minam River. Those data suggest, on average, the Lostine River accounts for 40% of the spawning in the Wallowa basin, the Minam River accounted for another 40% and other Wallowa River tributaries accounted for the remaining 20%. Assuming this relationship is consistent in 2011, we estimate 632 and 421 unmarked, N-O Chinook salmon will return to the Wallowa-Lostine and Minam rivers, respectively (Table 1).

Allowable Sport Fishery Impact

The Grande Ronde Spring Chinook FMEP establishes criteria for implementation of sport fisheries based on expected N-O adult run relative to critical and viable levels for each population in the basin. Run projections suggest that only the Wallowa–Lostine population will achieve N-O and hatchery adult numbers large enough to consider a fishery (Table 1).

Table 1. 2011 preseason spring Chinook (age 4 and 5 only) projections by population.

<i>Population</i>	<i>Projected Run Size</i>		
	Natural	Hatchery	Total
Catherine Creek	229	314	543
Lookingglass Creek	133	619	752
Upper Grande Ronde River	80	536	616
Wallowa/Lostine River	632	830	1,462
Minam River	421	0	421

At the projected run size, and as described by the FMEP, we expect a N-O fish impact of approximately 12 (1.9%) fish from the Wallowa-Lostine population, and 5 (1.0%) fish from the Minam River population (Table 2). Given: 1) the relationship between N-O and hatchery run components, 2) an assumption that natural and hatchery fish will be caught at comparable rates, 3) the 10% handling mortality for natural fish handled in the fishery (per FMEP), the sport fishery could harvest up to 160 hatchery fish without exceeding the designated N-O impact level (Table 2). The proposed harvest allowance provides the potential to substantially reduce surplus hatchery fish numbers. Reduction in hatchery fish escapement through harvest complements HGMP guidelines that reduces the use of hatchery fish for broodstock and limits the number of hatchery fish spawning naturally at projected escapement levels.

Inclusion of a two mile reach of the Wallowa River below the Minam River confluence in the proposed fishery increases sport harvest opportunity and potential to reduce hatchery fish surplus numbers. However, it also creates a mixed stock fishery and potential for impact to the Minam River population. The projected Minam escapement is 0.6 times the ICTRT viable threshold. FMEP criteria provide an allowable N-O fish impact of 1.0% or 4 fish for the Minam population's projected 421 natural fish return (Table 2). With an assumed handling mortality of 10% (per FMEP), anglers would have to handle more than 40 Minam Chinook to exceed allowable impacts.

Description of Past Fisheries

Catch estimates from the 1960's and 1970's, when spring Chinook harvest in the Wallowa River was last allowed, do not partition Grande Ronde River catch to tributaries. As a result, estimates of harvest from those earlier fisheries provide little insight into potential sport fishery impacts for the proposed fishery. A brief fishery in 2008 resulted in no catch (based on estimates generated from creel data) due to high stream flows during the season. The 2009 fishery opened on June 13, and was extended to July 12. Anglers reported harvesting 10 hatchery-origin Chinook, and handling 11 N-O Chinook during the season. The 2010 fishery opened on May 22 and was extended to July 25. High flows early in the fishery hindered angler success. We estimated that anglers harvested 45 adult hatchery Chinook, and handled 47 N-O Chinook during the 2010 season.

Proposed 2011 Fishery

Consistent with hatchery program goals, FMEP criteria, and existing management agreements, ODFW proposes a 2011 Imnaha River spring Chinook sport fishery.

- Open season:** *May 28 through July 10 (may be extended if impact limit and water conditions allow)*
- Bag limit:** *Two adipose fin-clipped adult Chinook per day. Five adipose fin-clipped jacks per day, two daily bag limits in possession. (consistent with statewide Oregon salmon bag limit)*
- Open area:** *Wallowa River from a deadline at the lower end of Minam State Park upstream to the confluence with the Lostine River (Figure 1)*
- Gear:** *Statewide salmon gear restrictions apply (2011 Oregon Sport Fishing Regulations. www.dfw.state.or.us)*

Expected Outcomes

FMEP guidelines provide for a hatchery fish sport harvest. However it is unlikely, given normal run-off patterns, in the Wallowa River that harvest will approach the allowable limits. Recent experience for Imnaha River spring Chinook sport fisheries suggest angler success is inversely proportional to flow during spring run-off. We expect a similar relationship for the proposed Wallowa fishery, although creel surveys provide the necessary means to track cumulative impact during the fishery. Data from creel surveys outlined below will be utilized to determine fishery impact on a weekly basis. The season will be closed if projected impact is expected to exceed allowable natural or hatchery fish impact during the following week.

As a result of flow and access issues, we expect a hatchery fish harvest of less than 160 adult Chinook and an incidental impact of less than 12 wild Chinook from the Wallowa-Lostine population. Our expectation is that fewer than 40 adult Minam River Chinook will be handled in the proposed fishery (resulting 4 fish impact, Table 2).

Following recently modified draft HGMP guidelines we plan to allow hatchery fish above the Lostine weir at a one to one ratio with N-O fish (50% natural; Table 2). Based on run projections, expected sport harvest, management strategies and estimated trapping efficiency, implementation of this fishery proposal will result in the following distribution of adults:

- 312 or 46% wild adult fish spawning in the Lostine River;
- 365 or 54% hatchery adults spawning in the Lostine River;
- 43 natural and 99 hatchery adults utilized for hatchery broodstock (30% wild);
- An expected recreational harvest of 160 hatchery adults;
- An expected incidental handling mortality of 12 and 4 naturally-produced adults for the Wallowa–Lostine and Minam populations, respectively.

These estimates do not account for tribal harvest of wild and hatchery fish. Decisions regarding outplant numbers are generally made in a co-management forum and will likely affect composition of natural spawners in spawning areas outside the Lostine River. At the proposed run level, the intent of Lostine River hatchery program is to maintain broodstock and natural spawner composition in the

Lostine River above the weir as identified in lines 21 and 24 in Table 3, respectively. This fishery plan is an integral component of hatchery program management and is intended to provide an alternate outlet for hatchery fish identified as surplus to broodstock and natural spawning. Hatchery fish indicated in line 25 in Table 6 as “available for outplanting or other use” includes fish likely to be allocated by co-managers for tribal distribution.

The proposed fishery location in the upper portion of the Wallowa River watershed avoids impact to Chinook populations outside the Wallowa system (Figure 1). In addition to incidental hooking and handling of N-O spring Chinook, we expect ESA-listed Snake River summer steelhead kelts and ESA-listed adult bull trout may also be handled in the fishery. However, we expect angler effort and success will be restricted by high stream flow until after mid-June. As a result, most steelhead and bull trout will have moved from the fishery area prior to peak angler activity. Incidental catch and impact to these species is expected to be low, limited to a few individuals, but will be monitored.

Table 2. Distribution of Wallowa–Lostine 2011 adult spring Chinook run indicating, harvest, broodstock, fish available for outplant and other uses and resulting expected spawner compositions.

2011 Lostine - Wallowa Spring Chinook Run Projections and Distribution						
DRAFT 1-4-11						
Projections, Allocations and Predicted Results				Wild	Hatchery	Total
<u>Run Projections and Expected Harvest Impacts</u>						
1	Projected adult run to Lostine		421	830		1,251
2	Projected run to Wallowa – Lostine		632	830		1,462
3	Projected composition (Wallowa - Lostine)		43.2%	56.8%		100.0%
4	Allowable Wild Impact from FMEP (Wallowa-Lostine)		12			
5	Allowable Wild Impact Rate (Wallowa - Lostine)		1.93%			
6	Allowable Wild Fish Handle @ 10% Hooking Mortality		122			
7	Resulting maximum hatchery fish sport harvest			160		
8	Alternative maximum impact & harvest @ 50% of defined surplus		15	196		
9	Proposed sport harvest impact and harvest (lesser of row 7 and 8)		12	160		172
10	Anticipated Tribal Harvest (estimated here as 50% harvest share for our purposes)		58	114		172
11	Projected Minam River Return		421	0		421
12	Allowable Wild Impact from FMEP (Minam)		4			
13	Allowable Wild Impact Rate (Minam)		0.95%			
14	Allowable Wild Fish Handle @ 10% Hooking Mortality		40			
<u>Post Harvest Allocations and Predicted Results</u>						
15	Post Sport Harvest Adult Escapement (Wallowa - Lostine)		562	520		1,082
16	Post Sport Harvest Adult Escapement (Lostine)		355	520		875
17	Escapement to Weir (0.85)		302	442		744
18	Escapement above Weir Before Weir in Place (0.2)		60	88		148
19	Fish Expected to Be Handled at Weir		242	354		596
20	Broodstock Composition Target		30%	70%		100%
21	Broodstock (per AOP)		43	99		142
22	Post Broodstock Escapement Handled At Weir		199	255		454
23	Target Percentage Passed above weir		50%	50%		
24	Target Passed Above the Weir		199	199		398
25	Available for Outplanting and Other Use		na	56		56
<u>Spawner Composition - Lostine</u>						
26	Spawning Upstream of Weir		259	287		546

27	Composition of Natural Spawners above Weir	47%	53%	100%
28	Spawning Downstream of Weir (.15 of line 16)	53	78	131
29	Composition of Natural Spawners Downstream of Weir	40%	60%	100%
30	Lostine River Natural Spawners	312	365	677
31	Composition of Lostine River Natural Spawners	46%	54%	100%
	<u>Spawner Composition - Wallowa/Lostine</u>			
32	Natural Spawners w/ sport harvest w/o outplants & tribal harvest	366	571	937
33	Comp. of Natural Spawners w/sport harvest w/o outplants & tribal harvest	39%	61%	100%
34	Natural Spawners w/o sport harvest, outplants and tribal harvest	378	731	1109
35	Comp. of Natural Spawners w/o sport harvest, outplants and tribal harvest	34%	66%	100%

Monitoring and Enforcement Plan

We will conduct a statistical creel survey designed to quantify: 1) angler effort, 2) harvest of marked Chinook and 3) catch and release of unmarked Chinook, bull trout and steelhead. Creel surveys will be conducted during three to four randomly-selected days per week. Sample days will be stratified to emphasize sample collection on weekends and survey start times (early or late) will be varied randomly to insure coverage of dawn and dusk periods. Harvest and catch data will be analyzed on a weekly basis to inform decisions regarding fishery. Weekly updates and a post-season fishery report will be produced and provided to NOAA staff and co-managers.

We will coordinate with local Oregon State Police (OSP) game enforcement staff during our annual Coordinated Enforcement Program meeting. Enforcement of angling regulations during the proposed sport fishery will be designated a “high” priority activity for that time period and OSP will develop patrol strategies to address expected enforcement needs.

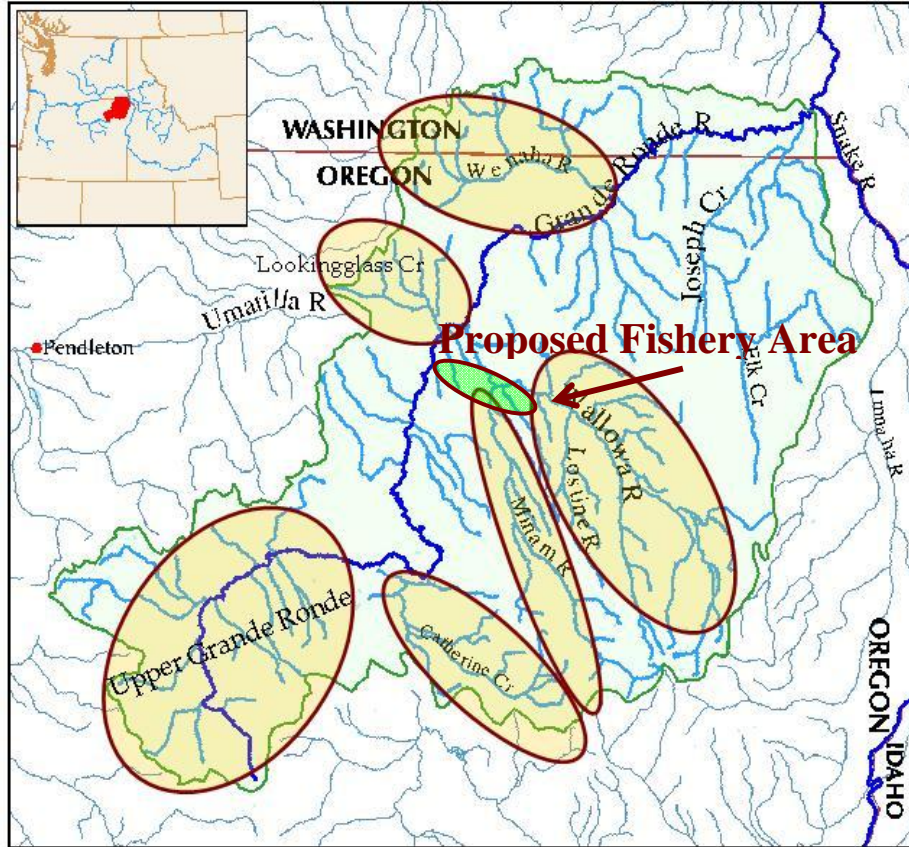


Figure 1. Map of The Grande Ronde sub-basin indicating proposed spring chinook fishery area (green) and spring Chinook population areas (yellow).

References

Oregon Department of Fish and Wildlife (ODFW). 2010. Fisheries Management and Evaluation Plan for Snake River Spring/Summer Chinook – Grande Ronde Subbasin (draft submitted to NOAA Fisheries, July 2010).

Appendix H. Catherine Creek, Lostine, Upper Grande Ronde, and Imnaha fish culture production metrics summarized for Grande Ronde and Imnaha sub-basin Chinook stocks.

Catherine Creek spring/summer Chinook salmon spawning data for the 2001-10

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Fry Poned	Smolt releases
2001	0	12	100%	1.71:1	3,651	43,813	26,426	24,392
2002	0	20	100%	1.18:1	4,096	81,926	71,750	70,959
2003*	0	28	100%	1.47:1	4,639	129,888	123,394	120,753
2004	0	9	100%	1.50:1	2,912	26,204	24,465	23,216
2005	9	8	47.1%	1.42:1	3,149	53,533	49,222	49,696
2006	28	8	22.2%	1.24:1	3,642	131,139	121,868	116,882
2007	30	15	33.3%	1.45:1	3,801	171,065	146,207	138,854
2008	21	11	31.3%	1.6:1	3,885	124,317	117,605	111,800
2009	30	13	30.2%	0.93:1	3,843	165,263	154,481	
2010	32	10	23.8%	0.95:1	4,200	176,409		
	150	134	47.1		3,781	1,103,557	835,418	
*Inventory correction; Since 2004, eggs have been electronically counted Numbers in blue current inventory 2001-07 brood, estimate survival from green egg to smolt at 85.4%								

Upper Grande Ronde River spring/summer Chinook salmon spawning data 2001-10

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Fry Poned	Smolt releases
2001	0	8	100%	1.00:1	4,420	35,360	*25,339	26,923
2002	0	25	100%	1.09:1	3,454	86,355	70,250	70,088
2003	0	23	100%	1.10:1	5,249	120,733	105,374	104,347
2004	0	7	100%	1.00:1	2,979	20,850	19,057	18,901
2005	37	3	7.5%	1.54:1	3,877	155,080	119,963	118,803
2006	71	13	15.5%	1.45:1	3,539	297,244	269,439	259,932
2007	25	6	19.4%	1.14:1	3,960	122,750	99,136	94,148
2008	8	4	33.3%	1:1	3,950	47,402	42,458	42,400
2009	52	9	14.7%	0.97:1	4,281	261,136	226,773	
2010	68	14	17.0%	0.94:1	3,890	318,953		
Total	261	112	30.0%		3,959	1,465,863	952,450	693,494
*Inventory correction; In 2004, eggs have been electronically counted Numbers in blue current inventory 2001-07 brood, estimate survival from green egg to smolt at 82.3%.								

Lostine River spring/summer Chinook salmon spawning data, 1997-2010

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Fry Poned	Smolt releases
1997	0	4	100%	0.92:1	4,496	17,000	12,000	11,871
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	8	100%	0.66:1	4,329	34,630	32,000	31,490
2001	11	25	69%	1.06:1	4,463	*160,680	105,000	101,012
2002	1	27	96%	1.03:1	4,766	133,444	130,000	116,370
2003	0	21	100%	1.31:1	5,078	106,646	103,000	102,557
2004	29	22	43%	1.30:1	4,351	221,888	206,421	199,716
2005	39	17	30%	1.37:1	4,182	234,192	207,291	205,000
2006	45	12	21%	1.26:1	4,393	241,715	206,313	194,861
2007	41	20	32.8%	1.13:1	4,290	261,719	227,838	**185,750
2008	37	19	33.9%	0.95:1	4,783	267,834	247,274	**185,410
2009	32	25	43.8%	0.98:1	4,639	255,139	245,394	
2010	58	18	23.7%	1.08:1	4,368	331,956		
	293	218	42.7%		4,511	2,266,843	1,477,137	962,877

*Inventory correction due to large losses with egg shipment;

**Does not include 41,997 parr released in the Lostine River Km 21 June 25, 2008, and 54,166 released June 5, 2009

In 2004, eggs have been electronically counted

Numbers in blue current inventory

2001-07 brood, estimate survival from green egg to smolt at 84.3%

Imnaha River spring/summer Chinook salmon spawning data, 1990-2010.

Brood Year	Marked Males Spawned	Marked Females Spawned	Unmarked Males Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take (1,000's)	Fry Poned (1,000's)	Smolts releases (1,000's)
1990	35	49	39	25	43.2%	1.00	4,414	327	270	263
1991	11	24	27	15	54.5%	1.03	4,954	193	163	158
1992	46	86	69	28	42.4%	0.99	4,754	542	465	439
1993	134	139	58	54	29.1%	1.01	5,425	1,047	1,010	873
1994	15	13	6	9	34.9%	1.05	5,082	112	96	91
1995	16	9	30	6	59.0%	0.33	4,541	68	51	51
1996	15	7	37	17	71.1%	0.46	4,276	103	102	93
1997	54	50	8	7	12.6%	0.92	4,962	283	206	195
1998	53	33	31	28	40.7%	0.59	5,059	309	183	180
1999	183	31	14	6	8.5%	*0.16	4,566	169	126	123
2000	240	58	46	10	15.8%	*0.19	5,048	334	311	304
2001	114	56	54	49	37.8%	*0.38	4,371	459	275	268
2002	117	83	14	14	12.3%	0.62	4,695	455	397	398
2003	125	72	24	26	20.2%	0.65	5,081	498	434	435
2004	74	79	32	25	27.1%	0.98	4,652	488	447	442
2005	108	88	21	29	20.3%	0.90	4,545	532	437	433
2006	85	74	28	24	24.6%	0.86	4,138	406	363	349
2007	82	72	23	21	21.6%	0.88	4,391	408	300	294
2008	123	82	82	22	33.6%	0.50	4,627	472	409	390
2009	73	75	33	34	31.2	1.02	4,710	513	437	
2010	61	80	38	29	26.6%	1.10	4,756	518		

Appendix I. Coded Wire Tag (CWT) Sampling Guidelines for the 2011 Northeast Oregon Annual Operation Plan

Recovery of coded-wire tags is an integral part of evaluating the effectiveness of our hatchery programs. Each tag provides us with the age of the fish and the raceway in which it was reared at Lookingglass Fish Hatchery (which also provides us with the stock to monitor straying). We also measure the length of each fish and, with that known age, we can estimate the age of untagged or unsampled fish. This provides us with the age composition of the run. CWT data can also point out whether one raceway is performing particularly well or poorly. If that happens, it will allow us to examine our fish culture practices.

Minimum sample size is a tricky thing to determine; generally a minimum of 35 CWT fish sample from each 65K treatment group/raceway is targeted (Hesse et al. 2006). With multiple (typically four) treatment groups per hatchery release, a minimum sample of 140 CWT per hatchery cohort (35 x 4 raceways = 140) is minimally needed. Our desire is to collect as many tags as possible, given the logistic constraints. As a guideline we try to collect at least 50 tags per tag group per year so that a single recovered tag does not exert too much influence over the estimates that we calculate. In 2011, we are planning to sample 100% of the Captive Broodstock returns designated for distribution because of the small number of fish that are expected. A sampling rate of 20% of the tagged fish from the Conventional hatchery program available for distribution is expected to provide us with a sufficient number of tags, given the uncertainty of estimating the number of fish that will return to each river and the proportion of those fish that we will capture.

Tags from ages 4 and 5 adults are commonly collected from carcasses recovered on spawning ground surveys and from fish retained for broodstock at Lookingglass Fish Hatchery. Tags from age 3 adults (jacks) are more difficult to recover because few jack carcasses are found on the spawning grounds and we collect few hatchery jacks for use in broodstock. Other potential recovery sources are the sport and tribal harvest, but the sport harvest is of very short duration, with few fish being harvested and the tribal harvest is not sampled. The best source of tag recoveries for jacks is the distribution collections.

Distribution of hatchery origin spring Chinook salmon to the tribe and food banks programs provides an opportunity for efficient CWT recovery sampling. Wallowa Hatchery has served as live holding location for distribution fish in recent years. The following bullets are meant to help facilitate CWT sampling of fish destined for distribution.

- 1) ODFW and NPT intend to alternate distribution fish pick up weeks for both Lostine and Imnaha river fish in 2011. The rotation will begin with ODFW picking up any available fish during the week of May 16. NPT will pick up any available fish during the following week of May 23. The rotation will continue with ODFW, and then NPT, picking up fish during subsequent weeks until one or both parties no longer desire available fish, or operation of the weir is discontinued for 2011.
 - a. Wallowa Fish Hatchery will report how distribution fish were allocated (i.e. ODFW food bank, picked up by NPT, or out-planted for nutrients) on a weekly basis.
- 2) ODFW research staff will conduct sampling. Joseph Feldhaus will coordinate sampling dates, times, and locations with Ron Harrod and Roger Elmore.

- 3) NPT production (Bruce McLeod/Nancy McAllaster) will communicate NPT distribution pick dates and times with Ron Harrod and Roger Elmore. Current plan is for Tuesday pick-up.
- 4) Innaha River - 20% sampling rate of all CWT fish destined for distribution.
 - a. If possible, tagged fish to be sampled for CWT will be transported to Wallowa Fish Hatchery for CWT collection. Otherwise, ODFW Research will conduct collections at Innaha Weir.
 - b. The preferred approach is to transport 20% of all CWT fish destined for distribution to Wallowa Hatchery weekly and sample all of those fish for CWTs.
 - c. Alternatively to 4b. above, 40% of CWT fish may be sampled over a four week period (during an ODFW week) if 20% sampling was not accomplished during the previous week that ODFW scheduled for sampling. ODFW may collect additional CWT samples at Innaha weir on NPT distribution weeks, as long as it doesn't interfere with loading fish for NPT distribution.
 - d. Post-sampled carcasses will be sent to a food bank OR provided for tribal distribution.
- 5) Lostine River – 20% sampling rate of conventional production adults destined for distribution.
 - a. Sampling 40% every other ODFW week is not ideal but acceptable.
 - b. Post-sampled carcasses will be sent to a food bank OR provided for tribal distribution.
- 6) Lostine River – 100% sampling rate of captive broodstock adults destined for distribution.
 - a. Post-sampled carcasses will be sent to a food bank OR provided for tribal distribution.

Appendix J. Adult Chinook Fish Health Monitoring Plan & Disease Treatments at Lookingglass Hatchery in 2011

Stock	Examination Category	Protocol	Comment
200W 201W 80W 29 81	Adult Spawners (Broodstock)	*All spawned fish will be sampled for culturable viruses – individual fish ovarian fluid and milt, minimum of 60 or all fish if <60 using caeca/kidney/spleen sample pools not to exceed 5 fish. - All females for BKD by ELISA	ELISA results will be used to implement BKD prevention control through culling of eggs known to be of higher risk. *Imnaha stock: virus sample a minimum of 60 fish – a minimum of 24 subsamples per week of sex fluids (ovarian fluid or milt)
200W 201W 80W 29 81	Adult HP Mortality	All mortality less than 20: -Kidney sampled for BKD by ELISA -systemic bacteria by culture	Note: additional mortality may be sampled Lookingglass Creek mortalities will be worked up with CTUIR staff to assure data collection covers all the needed information
81 LG-CK	Spawning Ground Survey	-Collect a minimum sub-sample of 30 kidney samples from adult Chinook above the weir (hatchery intake)	Fish Health Request

Disease Treatments and other Drugs for Adult Chinook Broodstock

Location	Brood year	Stock	Treatment for	Chemical/Drug	Protocol	Comment
Lookingglass	2011	200W 201W 80W 2900 81	Fungus Control	Formalin Hydrogen Peroxide	Formalin administered a minimum of 3 days per week at 167 ppm for 1 hr. (Veterinary prescription) Hydrogen peroxide 3 days per week at 100 ppm	If formalin cannot be used then use hydrogen peroxide (second choice) Continue treatments throughout the entire spawning season.
Lookingglass, Catherine Creek, Upper Grande Ronde and Lostine River weirs	2010	200W 201W 80W 29W 81	BKD Furunculosis-Enteric Redmouth	Erythromycin Oxytetracycline	Injection 20 mg/kg (Veterinary Prescription) Injection 10 mg/kg (Veterinary Prescription)	Erythromycin 100. Product is available New charts will be provided, if needed. Injected fish are not for human consumption

Appendix K. Adult Collection Fish Health Injection Protocols for Grande Ronde and Imnaha Chinook

Arrival Dates	Injection ^a (Yes or No)		When	Which Fish	Comment
	Erythro-100 @20mg/Kg	Oxytetracycline @ 10mg/Kg			
Whole season up to spawning	Yes	Yes	Upon Collection	broodstock	Only fish kept for broodstock Re-injection will be done only if deemed necessary based on mortality rate and pathogens detected in mortality. Do not inject fish that are fully ripe or are going to be spawned by the next day

Injection Route Plan for 2011

Stock/Group	Erythromycin	Oxytetracycline	Comment
Imnaha & Lostine	IP	IP	
CC & GR Conventional	DS	DS	
LG-CR production fish	DS	DS	Swim-ins or fish trucked require 21 detox period if released or no injection. All brood stock will be injected

Appendix L. Imnaha and Grande Ronde Broodstock Antibiotic Injection Protocols
Modified by Sam Onjukka for 2011
Oregon Department of Fish and Wildlife
La Grande Fish Health Services Laboratory

The La Grande Fish Health Services Laboratory provides fish health support services for these programs. The required prescriptions for the antibiotic treatments will be obtained from state veterinarians Dr. Collin Gillin or Dr. Julia Burco via ODFW Fish Health staff. These prescriptions and protocols apply to the injection of the antibiotics erythromycin and oxytetracycline. Note: Erythromycin-100 is available for purchase from a variety of vendors, see below.

<http://www.calvinsequine.com/bmd001525201.html> - \$14.99/100 ml bottle
http://www.twincitypoultrysupplies.com/store/index.php?main_page=product_info&cPath=46&products_id=771 - \$20.95/100 ml bottle
<http://www.jefferslivestock.com/gallimycin-100/camid/LIV/cp/A2-GL/cn/1101454/> - \$8/100 ml bottle
<http://www.pbsanimalhealth.com/details/Gallimycin-100/37-50.html> - \$11.09/100 ml bottle

1) At collection sites

Injection schedule: All broodstock are to be injected upon collection. The goal is to inject all broodstock, however, do not inject fish that are going to be spawned by the next day (Appendix K)

Methods:

- 1) Use erythromycin or gallimycin 100 and oxytetracycline 200 (200 mg/mL).
- 2) For Intraperitoneal (IP) injections use 1 inch 20 gauge needle. For Dorsal Sinus (DS) use a 1 inch or 1 ½ inch 20 Gauge needle. Though both needle lengths can be used, stick with one needle length for DS injections so the technique for injecting the dorsal sinus is consistent and accurate. More leakage will occur if you are not injecting the erythromycin into the sinus.

Use a separate syringe and needle for each antibiotic and fish. See points below to minimize egg mass loss with IP injection of erythromycin. Use of injector guns is another option. If injector guns are used, needles should be changed between each fish or sanitized between fish. A word of caution regarding injector guns: there is an increased risk of drug toxicity when administering this route or any method that administers a volume of drug based on bracketed size ranges.

Dosage:

Inject a volume of each antibiotic according to the fish specific length or weight corresponding to the 10 mg/Kg OXY-200 chart for Oxytetracycline and the 20 mg/Kg Ery-100 chart for Erythromycin. Note: injections may also be given based on bracketed size ranges (as per information provided in 2006). Fish Health Services will provide specific charts and information in May 2011, if needed.

2)

3) At Lookingglass Hatchery

Re-injection will be done only if deemed necessary based on mortality rate and pathogens detected in mortality. Do not inject fish that are fully ripe or are going to be spawned by the next day. Dispose of all needles in sharps containers and all will be properly disposed of at Waste Pro recycling at the end of the season.

To minimize egg mass loss due to IP injections:

Insert needle no deeper than necessary. Place the bevel of needle towards the body wall of fish so drug goes out against the wall rather than the eggs or body cavity. Keep the head slightly down to help shift away the egg skein from the injection location.

Appendix M. Lookingglass Creek Management Guidelines

Management Guidelines

The goal of the Lookingglass Creek spring Chinook hatchery program is to reintroduce spring Chinook into Lookingglass Creek using Catherine Creek stock to support tributary harvest, natural population restoration, and maintenance of a gene bank for the Catherine Creek stock.

Current production targets for Catherine Creek and Lookingglass production, per the *2008-2017 United States v. Oregon* Management Agreement is outlined in Table 1.

Table 1. Lookingglass Creek and Catherine Creek production outlined in Table B1 of the *2008-2017 United States v. Oregon* Management Agreement.

Release Site	Rearing Facility	Stock	Life Stage	Target Release Number	Primary Program Purpose	Funding
Lookingglass Creek	Lookingglass/Captive Brood	Catherine Creek	Smolt	250,000	Fishery/Reintroduction	LSRCP/BPA
Catherine Creek	Lookingglass/Captive Brood	Catherine Creek	Smolt	150,000	Supplementation/Fishery	LSRCP/BPA

All Lookingglass Creek adults arriving at the Lookingglass Hatchery intake weir prior to July 4 will be ponded into the adult holding ponds. Disposition of these adults will occur in early July according to the guidelines in Table 2, and adults designated to be passed upstream will be outplanted at that time. Disposition of Lookingglass Creek adults arriving after July 4 will be based on the percentages outlined in Table 2. All adults passed upstream will have genetic samples taken.

Table 2. Disposition of Lookingglass Creek adult spring Chinook salmon arriving at the Lookingglass Hatchery intake weir.

Escapement Level	% Pass Above	% Keep for Brood
150	67	33
200	60	40
250	55	45
300	50	50
>300 – adjustments will be made based on brood needs. If brood need has been met, remainder to be released upstream.		

An estimated 158 adults (47 natural origin and 11 hatchery origin) required to meet 250,000 smolt production level. Broodstock for the program will be collected from returns to either the Lookingglass Hatchery weir or the Catherine Creek weir. Either conventional or captive hatchery adults may be used for brood. The goal for broodstock composition will be to incorporate 30% natural origin adults, with no more than 25% of the returning natural origin steelhead retained for brood. If a shortage of natural origin adults occurs, then additional hatchery adults will be collected to meet the brood target.

Appendix N. 2011 Imnaha River Spring Chinook Sport Fishery Proposal

Introduction

The Imnaha River spring Chinook hatchery program is part of the Lower Snake River Compensation Plan (LSRCP) program developed to mitigate for fish production lost after construction of the four lower Snake River dams. Hatchery Chinook and steelhead smolts are produced at LSRCP hatcheries in Washington, Idaho and Oregon. Subsequent adult returns are intended to provide tribal and recreational fisheries and, in some cases, enhance natural-origin (N-O) spawner numbers.

From 2001-2005, Imnaha River spring Chinook sport fisheries were authorized by NOAA Fisheries through a Nez Perce Tribal Resource Management Plan (TRMP) and harvest sharing agreements outlined in a U.S. vs. Oregon stipulated order. Since that time Oregon Department of Fish and Wildlife (ODFW) developed Fishery Management and Evaluation Plans (FMEP) for Imnaha River spring Chinook and have submitted versions to NOAA Fisheries, most recently in July 2010. Current in-season projections suggest that the 2011 spring Chinook escapement to the Imnaha River will exceed 3,000 adult fish. The projected N-O and hatchery run size will provide opportunity for both tribal and sport harvest under TRMP and FMEP guidelines, respectively. This recreational fishery proposal is developed from criteria outlined in the FMEP and is intended to be authorized under that process.

Management of the Imnaha spring Chinook hatchery program is guided by a Hatchery Genetic Management Plan (HGMP) incorporating an adult sliding scale that uses hatchery fish to boost natural spawner numbers during low N-O return years and manages against negative impacts of the hatchery program by limiting: 1) the number of hatchery fish spawning naturally and 2) the number of hatchery fish in the hatchery broodstock as N-O runs increase. The sport fishery's ability to selectively remove hatchery fish from the system supports the direction provided in the HGMP and acts as an integral part of program management.

Consistent with the Imnaha Spring Chinook Fishery Management and Evaluation Plan (FMEP) submitted to NOAA in July 2010 and other management agreements, the following proposal details a 2011 Imnaha River spring Chinook sport fishery plan including: 1) 2011 run projections, 2) a description of the proposed fishery, 3) an analysis of the allowable harvest impacts as it relates to FMEP guidelines, 4) fishery expectations and resulting fish distribution and 5) fishery monitoring and enforcement plans.

(b) Run Projections

ODFW expects a relatively large return of ESA-listed spring/summer Chinook salmon to the Imnaha River in 2011. Initial projections suggest a run heavily weighted toward hatchery fish, including 2,203 marked hatchery adults. Unmarked, N-O adults are expected to number 902 (Table 2). We will update run projections based on detections of PIT-tagged hatchery Chinook salmon, in conjunction with historic migration timing, at Lower Granite Dam. Since adequate PIT tag information is not available for the N-O component of the run, we will update projections for the N-O component proportional to the hatchery component. During the fishery, updated run projections from PIT tag detections will be compared with sport harvest creel on a weekly basis to assess sport harvest impacts. Updated run

projections and sport harvest impacts will be communicated to NOAA fisheries and co-managers on a weekly basis in a multi-agency harvest forum.

Allowable Sport Fishery Impact

Using the current in-season projections, FMEP guidelines provide for an allowable sport fishery impact of 18 natural fish or 2.0% of the run. Given: (1) the relationship between N-O and hatchery run components, (2) an assumption that N-O and hatchery fish will be caught at comparable rates, and (3) the 10% handling mortality for N-O handled in the fishery (FMEP), the sport fishery could harvest up to 440 hatchery fish without exceeding the designated N-O impact level (Table 1).

Table1. Imnaha River adult Spring Chinook run projections, proposed allocations (indicating maximum expected sport harvest rate on hatchery fish) and expected outcomes for 2011.

Imnaha River Spring Chinook Run Projections and Distribution, 2011 DRAFT 02-9-11				
Projections, Allocations and Predicted Results		Wild	Hatchery	Total
<u>Run Projections and Expected Harvest Impacts</u>				
1	Projected adult run	902	2,203	3,105
2	Projected composition	29.0%	71.0%	100.0%
3	Allowable Wild Impact from FMEP	18		18
4	Allowable Wild Fish Handle @ 10% hooking mortality	180		180
5	Allowable Wild Impact Rate	2.00%		
6	Resulting maximum hatchery fish harvest		440	
7	Maximum hatchery fish harvest as 50% of defined surplus		642	
8	Proposed sport harvest impact (lesser of row 6 and 7)	18	440	458
9	Anticipated Tribal Harvest (estimated here as 50% harvest share for our purposes)	133	325	458
<u>Post-Harvest Allocations</u>				
10	Post Harvest Adult Escapement	751	1,439	2,190
11	Escapement to Weir (.75 of line 10)	563	1,079	1,642
12	Escapement above Weir Before Weir in Place (.35 of line 11)	197	378	575
13	Fish Expected to Be Handled at Weir (.65 of line 11)	366	701	1,067
14	Broodstock Composition Target	30%	70%	100%
15	Broodstock (per AOP)	68	160	228
16	Post Broodstock Escapement At Weir	298	541	839
17	Target Wild Percentage Passed above weir	50%		
18	Passed Above the Weir	298	298	596
19	Available for Outplant or Other Use	na	298	298
20	To Big Sheep Creek (≤ 300 fish)	na	298	298
21	Available for Alternative Use	na	0	0
<u>Spawner Composition w/ Tribal and Sport Harvest</u>				
22	Spawning Upstream of Weir	495	676	1,171
23	Composition of Natural Spawners above Weir	42.2%	57.8%	100.0%
24	Spawning Downstream of Weir (.273 of line 11)	188	360	548
25	Composition of Natural Spawners Downstream of Weir	34.3%	65.7%	100.0%
26	Imnaha River Natural Spawners (w/o B. Sheep)	683	1,036	1,719
27	Composition of Imnaha River Natural Spawners (w/o B. Sheep)	39.7%	60.3%	100.0%

Description of Past Fisheries

Prior to 2001, the Imnaha basin was closed to sport harvest of salmon since 1979. Before then, a modest fishery occurred during the late-spring and early-summer. Estimates of harvest from punch card returns (adjusted for non-response bias and reports of catch outside of the spring season) ranged from 0 to 201 Chinook from 1957 through 1978 (Beamesderfer et al. 1997). Creel surveys estimate between 15 and 433 unmarked, N-O Chinook salmon were handled in sport fisheries from 2001 to 2010, resulting in a mean handle rate of 10.2% (range: 1.7-19.5%, Table 2). With an assumed handling mortality of 10%, impacts for N-O fish from 2001-2010 ranged from 0.2% to 1.9% with a mean of 1.0% (Table 2).

The relatively higher handle rate observed in 2001 (19.5%) likely resulted from low-flow conditions that are associated with higher catch rates, coupled with the relatively large return of unmarked Chinook salmon (Table 2). As a result, the season was closed early on 6/21/01. On average, the Imnaha River sustains high flows during the month of June and stream flows above 1000 cfs generally produce difficult angling conditions with low catch rates. Estimated harvest of marked hatchery Chinook ranged from 22 to 336 fish during 2001-2010 fisheries (impact range: 2.0-14.2%, Table 2).

Table 2. Imnaha River spring Chinook sport fisheries impact for years 2001 through 2010. Adult abundance did not support sport harvest in 2006 and 2007.

Year	Sport Season	Escapement to River ¹ (H/W) ²	Harvest (95% CI)	Released (95%CI)		Impact ³	
			(H)	(H)	(W)	N (W)	% (H/W)
2001	6/2-6/21	2,665/2,215	302 (226-378)	21 (8-34)	433 (306-560)	43	11.3/1.9
2002	6/1-6/30	3,211/858	152 (73-231)	9 (1-17)	15 (6-24)	2	4.7/0.2
2003	6/7-7/1	2,326/1,445	125 (43-207)	22 (4-56)	83 (20-156)	8	5.4/0.6
2004	6/19-7/5	1,355/366	192 (81-303)	21 (5-39)	29 (9-56)	3	14.2/0.8
2005	6/25-7/4	1,084/301	22 (2-23)	54 (5-123)	22 (2-50)	2	2.0/0.7
2008	7/4-7/15	2,540/234	64 (0-191)	0	17 (0-73)	2	4.7/0.8
2009	6/13-7/12	1,565/268	197 (0-489)	0	50 (0-127)	5	12.6/1.9
2010	5/22-7/25	3,053/791	336 (0-1167)	48 (0-166)	108 (0-318)	11	11.0/1.4

¹ J. Feldhaus, ODFW, personal communication 1/4/11

² (H) = Hatchery fish, (W) = Wild fish

³ Sport impact includes an 10% fishery mortality for both hatchery and wild fish caught and released

Proposed 2011 Fishery

Consistent with hatchery program goals, FMEP criteria, and existing management agreements, ODFW proposes a 2011 Imnaha River spring Chinook sport fishery.

Open season: May 28 – July 10 (may be extended if impact limit and water conditions allow)

Bag limit: Two adipose fin-clipped adult Chinook per day. Five adipose fin-clipped jacks per day, two daily bag limits in possession. (consistent with statewide salmon bag limit)

Open area: Imnaha River from mouth upstream to Summit Cr. Bridge (Figure 1)

Gear: Statewide salmon gear restrictions apply (2011 Oregon Sport Fishing Regulations. www.dfw.state.or.us)

Expected Outcomes

We expect a hatchery fish harvest of less than 440 marked hatchery-origin Chinook salmon and an incidental impact of less than 18 unmarked Chinook salmon from the Imnaha population.

Following draft HGMP guidelines, we plan to allow hatchery fish above the Gumboot weir at a one hatchery fish to one N-O fish ratio (50% natural) and outplant up to 300 hatchery adults into Big Sheep Creek (Table 1).

Without consideration of natural and hatchery fish harvest in tribal fisheries and based on run projections, harvest expectations, management strategies and estimated trapping efficiency, implementation of this fishery proposal will result in the following distribution of adults:

- 689 or 40% wild adult fish spawning in the Imnaha River,
- 1,042 or 60% hatchery adults spawning in the Imnaha River,
- 253 hatchery spawners outplanted to Big Sheep Creek,
- 62 N-O and 144 hatchery adults utilized for hatchery broodstock (30% wild),
- a recreational harvest of less than 440 hatchery adults,
- an incidental handling mortality of less than 18 N-O adults

To give us an indication of potential (but unlikely provided normal flow conditions) maximum fishery impacts, we reviewed weekly catch data from the 2001-2010 fisheries. Maximum one-week harvest rate observed in those fisheries was 9.0% in 2001. At 9.0% we estimate at most, 198 adult hatchery Chinook would be harvested and 81 naturally-produced Chinook would be handled in one week. With an assumed 10% handling mortality (per FMEP) we estimate a maximum one-week fishery impact of 8 unmarked fish. With the projected return of N-O adults the fishery could persist for more than two weeks with maximum harvest rates previously observed in the 2001 fishery.

In addition to incidental hooking and handling of naturally-produced Chinook, fluvial adult bull trout and summer steelhead kelts may also be intercepted in the fishery. Incidental impact to fluvial bull trout is expected to be similar to the 2001-2010 fisheries when between 23 to 321 bull trout (mean = 152/year) were caught and released. During the past 8 fisheries from 2001-2010, steelhead kelts were only intercepted in 2005 when 11 were caught and released.

We believe that levels of incidental take associated with the proposed recreational fishery will not rise to a level that will operate to the disadvantage of listed spring/summer Chinook salmon, summer steelhead or bull trout in the Imnaha basin. Furthermore, removal of hatchery fish as proposed will benefit natural spawning population by reducing the number of hatchery fish relative to natural fish.

HGMP and FMEP guidelines attempt to manage risk related to hatchery programs by limiting the use of hatchery fish in broodstock and natural spawning in years when naturally produced adults exceed critical levels as projected for 2011. Given the large numbers of hatchery Chinook expected in 2011, the proposed sport fishery should improve our ability to manage within the guidelines of the HGMP by removing hatchery fish prior to their arrival at the Imnaha weir.

Monitoring and Enforcement Plan

We will conduct a statistical creel survey similar to that done in 2002-2005, and 2008-2010 designed to quantify: 1) angler effort, 2) harvest of marked Chinook and 3) catch and release of unmarked Chinook, bull trout and steelhead. Creel surveys will be conducted during three to four randomly selected days per week. Sample days will be stratified to emphasize sample collection on weekends and survey start times (early or late) will be varied randomly to insure coverage of dawn and dusk periods. Harvest and catch data will be analyzed weekly to track hook and release of N-O Chinook. Estimates of effort, harvest, and incidental catch and release will be developed for the season and presented in a post season fishery report.

We will coordinate with local Oregon State Police (OSP) game enforcement staff during our annual Coordinated Enforcement Program meeting. Enforcement of angling regulations during the proposed sport fishery will be designated a “high” priority activity for that time period and OSP will develop patrol strategies to address expected enforcement needs.

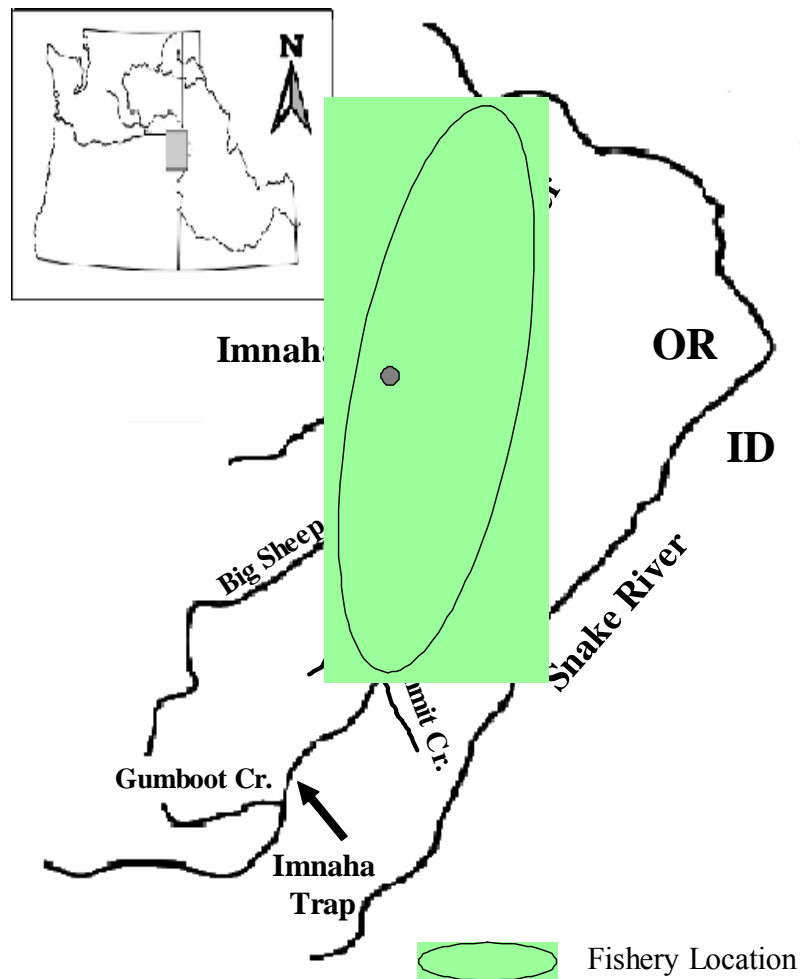


Figure 1. Map of the Imnaha River indicating boundaries of the proposed 2008 spring Chinook sport fishery.

(c) **References**

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Appendix O. Preliminary CTUIR data from Catherine Creek releases between 1998 and 2010 summarized by ODFW.

Brood Year	Release Year	Release Type	Number	Return Years			Total Return	SAR Percent
				<u>2001</u>	<u>2002</u>	<u>2003</u>		
1998	2000	Conventional	0	-	-	-	-	-
		Captive	38,149	157	205	57	419	1.10
		Natural-Redds	34	46	190	192	428	
1999	2001	Conventional	0	-	-	-	-	-
		Captive	136,833	19	204	19	242	0.177
		Redds-40	Adults		17	60	8	85
2000	2002	Conventional	0	-	-	-	-	-
		Captive	180,343	78	570	25	673	0.373
		Redds-34	Adults		2	45	6	53
2001	2003	Conventional	24,392	29	47	1	77	0.316
		Captive	105,292	35	75	2	112	0.106
		Redds-133	Adults		2	40	4	46
2002	2004	Conventional	70,071	25	160	15	200	0.285
		Captive	91,791	8	56	5	69	0.075
		Redds-158	Adults		3	109	32	144
2003	2005	Conventional	120,753	5	109	7	121	.100
		Captive	68,827	2	37	2	41	.060
		Redds-167	Adults		12	42	12	66
2004	2006	Conventional	23,216	8	73	2	83	0.358
		Captive	45,604	27	79	3	109	0.239
		Redds-96	Adults		6	77	27	110
2005	2007	Conventional	49,783	100	127	87	314	0.632
		Captive	21,647	9	27	0	36	0.167
		Redds-74	Adults		5	98	28	131
2006	2008	Conventional	116,882	431	845			
		Captive	0	0	0			
		Redds-117	Adults		42	446		

2007	2009	Conventional	138,843	<u>2010</u>	<u>2011</u>	<u>2012</u>
		Captive	0	98		
		Redds-59	Adults	0		
				29		
				<u>2011</u>		
2008	2010	Conventional	111,000			
		Captive	35,000			
		Redds-101	Adults			

Appendix P. Preliminary CTUIR data from Upper Grande Ronde releases between 1998 and 2010 summarized by ODFW.

Brood Year	Release Year	Release Type	Number	Adults Return Years			Total Return	SAR Percent
				<u>2001</u>	<u>2002</u>	<u>2003</u>		
1998	2000	Conventional	0					
		Captive	1,508	0	3	4	7	0.4644
		Natural adults						
		Redds-42		0	78	220	298	
				<u>2002</u>	<u>2003</u>	<u>2004</u>		
1999	2001	Conventional	0					
		Captive	2,560	0	6	6	12	0.469
		Natural adults						
		Redds-0 ¹		1	10	0	11	
				<u>2003</u>	<u>2004</u>	<u>2005</u>		
2000	2002	Conventional	0					
		Captive ^{2,3}	228,385	59	545	26	630	0.276
		Natural adults						
		Redds-20		3	43	10	56	
				<u>2004</u>	<u>2005</u>	<u>2006</u>		
2001	2003	Conventional	26,923	15	95	0	110	0.409
		Captive ⁴	210,113	72	276	7	355	0.169
		Natural adults						
		Redds-15		6	12	3	21	
				<u>2005</u>	<u>2006</u>	<u>2007</u>		
2002	2004	Conventional	69,856	9	144	13	166	0.238
		Captive	75,063	0	0	0	0	0.0013
		Natural adults						
		Redds-23 ¹		0	51	13	64	
				<u>2006</u>	<u>2007</u>	<u>2008</u>		
2003	2005	Conventional ⁵	104,350	2	36	3	41	0.039
		Captive	1,019	0	0	0	0	0.0000
		Natural adults						
		Redds-40		4	23	11	38	
				<u>2007</u>	<u>2008</u>	<u>2009</u>		
2004	2006	Conventional	18,901	30	56	58	144	0.762
		Captive	76	0	0	0	0	0.0000
		Natural adults						
		Redds-186		0	53	28	81	
				<u>2008</u>	<u>2009</u>	<u>2010</u>		
2005	2007	Conventional	118,803	376	373	69	818	0.686
		Captive	20,620	95	28	44	167	0.810
		Natural adults						
		Redds-91 ¹		15	61	10	86	
				<u>2009</u>	<u>2010</u>	<u>2011</u>		
2006	2008	Conventional	259,932	397	<u>2,244</u>			
		Captive	0	0	<u>0</u>			
		Natural adults						
		Redds-28 ¹		13	117			
				<u>2010</u>	<u>2011</u>	<u>2012</u>		
2007	2009	Conventional	94,148	<u>32</u>				

		Captive	52,404	<u>24</u>		
		Redds-1 ¹	Natural adults	<u>14</u>		
2008	2010	Conventional	41,819	<u>2011</u>	<u>2012</u>	<u>2013</u>
		Captive	190,531			
		Redds-31 ¹	Natural adults			
2009	2011	Conventional	190,500	<u>2012</u>	<u>2013</u>	<u>2014</u>
		Captive	52,500			
		Redds ¹ -	Natural adults			
2010	2012	Conventional		<u>2013</u>	<u>2014</u>	<u>2015</u>
		Captive	0			
		Redds ¹ -	Natural adults			

¹ No survey in Vey Meadows. Unknown number of redds.

² 76,941 were released as parr.

³ Does not include 50,100 smolts lost in acclimation pond accident prior to release

⁴ 32,800 released as parr in Sheep Creek

⁵ 11,800 smolts were lost in downstream trap accident

Appendix Q. Preliminary estimates of juvenile abundance (as estimated by ODFW) and adult return data, and smolt-to-adult return rates for Lostine River Chinook salmon as estimated by NPT. Returns by age class were determined from annual percentages of known age returns.

Origin (program)	Brood Year	Release Year	Smolts Released	Returns			Total Return	SAR Percent
				Age 3	Age 4	Age 5		
Hatchery (conventional)	1997	1999	11,179	99	225	25	349	3.12
	1998	2000						
	1999	2001						
	2000	2002	29,129	60	202	11	273	0.94
	2001	2003	97,803	152	322	28	502	0.51
	2002	2004	114,287	26	224	53	303	0.27
	2003	2005	99,728	18	263	15	296	0.3
	2004	2006	193,786	28	743	59	830	0.43
	2005	2007	193,821	292	1,198			
	2006	2008	189,917	1,300				
	2007	2009	186,368					
2008	2010	182,665						
Hatchery (captive)	1998	2000	34,782	60	336	84	480	1.38
	1999	2001	124,967	41	179	22	242	0.19
	2000	2002	70,220	39	492	51	582	0.83
	2001	2003	139,519	110	279	9	398	0.29
	2002	2004	123,451	53	132	6	191	0.15
	2003	2005	60,403	9	45	1	55	0.09
	2004	2006	39,008	0	15	1	16	0.04
	2005	2007	24,108	2	22			
	2006	2008	10,199	72				
	2007	2009	62,102					
	2008	2010	60,997					
Natural	1997	1999	25,554	21	330	58	409	1.6
	1998	2000	7,900	6	341	170	517	6.54
	1999	2001	8,183	10	130	43	183	2.24
	2000	2002	10,112	14	214	16	244	2.41
	2001	2003	20,415	29	127	28	184	0.9
	2002	2004	NA	13	168	54	235	NA
	2003	2005	33,646	8	139	206	353	1.05
	2004	2006	30,202	2	414	71	487	1.61
	2005	2007	24,900	127	402			
	2006	2008	16,720	86				
	2007	2009						
	2008	2010						

Appendix R. Preliminary data from Imnaha River releases between 1982 and 2010.

Brood Year	Release Year	Release Type	Number	Returns			Total Return	SAR Percent
				Age 3	Age 4	Age 5		
1982	1984	Conventional	29,184	156	48	4	208	0.713
		Redds-129	Natural Adults	358	704	147	1,209	
1983	1985	Conventional	59,578 ¹	24	18	38	80	0.134
		Redds-95	Natural Adults	77	406	580	1,063	
1984	1986	Conventional	35,035	55	40	16	111	0.317
		Redds-119	Natural Adults	14	129	154	297	
1985	1987	Conventional	123,530	101	96	9	206	0.167
		Redds-462	Natural Adults	40	189	81	310	
1986	1988	Conventional	199,066	183	269	47	499	0.250
		Redds-284	Natural Adults	59	184	113	356	
1987	1989	Conventional	142,320	69	243	72	384	0.270
		Redds-183	Natural Adults	15	151	100	266	
1988	1990	Conventional ²	249,793	261	917	700	1,878	0.752
		Redds-237	Natural Adults	24	180	386	590	
1989	1991	Conventional	398,909	98	438	94	630	0.158
		Redds-116	Natural Adults	15	147	95	257	
1990	1992	Conventional	262,586	32	59	12	103	0.039
		Redds-115	Natural Adults	15	87	7	109	
1991	1993	Conventional	157,659	6	76	8	90	0.057
		Redds-178	Natural Adults	1	95	41	137	
1992	1994	Conventional	271,353	102	87	9	198	0.073
		Redds-240	Natural Adults	140	317	51	508	
1993	1995	Conventional ³	590,069	64	446	218	728	0.123
		Redds-468	Natural Adults	18	134	157	309	

Brood Year	Release Year	Release Type	Number	Returns			Total Return	SAR Percent
				Age 3	Age 4	Age 5		
1994	1996	Conventional	91,240	9	64	15	88	0.096
		Natural -Redds-154	Adults	7	101	97	205	
1995	1997	Conventional	50,911	79	421	16	516	1.014
		Natural Redds-60	Adults	15	330	54	399	
1996	1998	Conventional	93,108	259	453	145	857	0.920
		Natural Redds-136	Adults	42	388	324	754	
1997	1999	Conventional	194,967	1,225	2,512	334	4,071	2.088
		Natural-Redds	224	258	1,927	294	2,479	
1998	2000	Conventional	179,716	1,084	2,877	1,065	5,026	2.795
		Natural-Redds	135	100	564	702	1,366	
1999	2001	Conventional	123,014	460	1,261	75	1,796	1.460
		Natural-Redds	189	59	743	76	878	
2000	2002	Conventional	303,737	1,677	1,280	105	3,062	1.008
		Natural-Redds	261	32	290	74	396	
2001	2003	Conventional	268,426	758	979	40	1,777	0.662
		Natural-Redds	635	29	227	29	285	
2002	2004	Conventional	398,469	244	1,021	87	1,352	0.339
		Natural-Redds	1,111	12	198	71	281	
2003	2005	Conventional	435,186	156	851	264	1,271	0.292
		Natural-Redds	727	8	102	47	157	
2004	2006	Conventional	441,680	<u>2007</u> 655	<u>2008</u> 2,276	<u>2009</u> 175	3,106	0.703
		Natural-Redds	495	27	187	47	261	
2005	2007	Conventional	432,572	<u>2008</u> 2,243	<u>2009</u> 1,390	<u>2010</u>	3,633	337
		Natural-Redds	349	116	221			
2006	2008	Conventional	349,000	<u>2009</u> 3,588	<u>2010</u>	<u>2011</u>		
		Natural-Redds	235	96				
2007	2009	Conventional	294,500	<u>2010</u>	2011	2012		
		Natural-Redds	252					
2008	2010	Conventional	399,000	<u>2011</u>	<u>2012</u>	<u>2013</u>		
		Natural-Redds	536					

¹ Does not include 56,211 Parr released with no marks.

² Includes only Ad marked hatchery releases and returns.

³ Does not include 195,814 smolts released with LV mark.

Appendix S. 2011 Lookingglass Creek Spring Chinook Sport Fishery Proposal

Introduction

The Grande Ronde River spring Chinook hatchery program is part of the Lower Snake River Compensation Plan (LSRCP) developed to mitigate for fish production after construction of the four lower Snake River dams. Hatchery Chinook salmon are produced at LSRCP hatcheries in Washington, Idaho and Oregon. Subsequent adult returns are intended to provide tribal and recreational fisheries and, in some cases, to enhance natural-origin (N-O) spawner numbers. Components of the Grande Ronde River spring Chinook hatchery program operate within the Lostine River, Catherine Creek, upper Grande Ronde River and Lookingglass Creek. This 2011 fishery proposal focuses on hatchery returns to the Lookingglass Creek component of the program.

Management of the Lookingglass Creek spring Chinook hatchery program is guided by the recently developed Lookingglass Creek Spring Chinook Management Plan. The Program goal as state in the Management Plan is to “reintroduce spring Chinook into Lookingglass Creek using the Catherine Creek stock to support tributary harvest, natural population restoration, and maintenance of a gene bank for the Catherine Creek stock.” This plan will serve as the foundation for the development of a Hatchery Genetic Management Plan (HGMP) for the Lookingglass Creek Program. An emphasis of this Program, as evidenced by the goal, is to provide tributary harvest to make use of abundant hatchery returns to both Lookingglass Creek and Catherine Creek.

Consistent with the Management Plan and recommended revisions (to be submitted in the near future) to the Grande Ronde spring Chinook Fishery Management and Evaluation Plan (FMEP) submitted to NOAA in July 2010, the following proposal details a sport fishery plan including; 1) 2011 run projections, 2) description of an alternative harvest regime for Lookingglass Creek under the new Management Plan, 3) a description of the proposed fishery, 4) fishery expectations and resulting adult distribution, and 5) fishery monitoring and enforcement plans.

Run Projections

ODFW run projections of age 4 and 5 Chinook salmon returning to Lookingglass are: 619 hatchery-origin (H-O) and 133 N-O fish (Table 1).

Allowable Sport Fishery Impact

The Grande Ronde Spring Chinook FMEP establishes criteria for implementation of sport fisheries based on expected N-O adult run relative to critical and viable levels for each population in the basin. Within this proposal ODFW is proposing an alternative harvest management regime for Lookingglass Creek based on the Management Plan and consistent with the approach described in the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Tribal Resource Management Plan (TRMP) (CTUIR 2010). ODFW will provide suggested revisions to the FMEP in the near future.

Table 1. 2010 preseason spring Chinook (age 4 and 5 only) projections by population.

<i>Population</i>	<i>Projected Run Size</i>		
	Natural	Hatchery	Total
Catherine Creek	229	314	543
Lookingglass Creek	133	619	752
Upper Grande Ronde River	80	536	616
Wallowa/Lostine River	632	830	1,462
Minam River	421	0	421

Under the current levels of N-O Chinook returning to fishery areas in the upper Grande Ronde, it is not anticipated that the opportunity to open fisheries in these areas will be realized for the foreseeable future, even though relatively large returns of hatchery fish can reasonably be expected. It is for this reason that ODFW and CTUIR suggest an alternative approach to implementing fisheries in Lookingglass Creek.

The proposed alternative fishery approach is based on the following facts: there is an on-going hatchery program in Lookingglass Creek, the Lookingglass Creek population of spring Chinook are functionally extinct according to the Interior Columbia Technical Recovery Team (ICTRT), restoration of a genetically independent Lookingglass population to a “viable status” is not necessary to achieve viable status of the Grande Ronde Major Population Group (MPG), and the co-managers desire to have a location in the upper Grande Ronde to provide opportunities to harvest H-O Chinook in the upper Grande Ronde per LSRCMP mitigation goals. Per the Management Plan and other agreements, hatchery origin fish available for harvest in Lookingglass Creek could be both from juvenile releases into Lookingglass Creek and adult out-plants from the Catherine Creek Program.

As described in the CTUIR TRMP, we propose to manage fisheries in Lookingglass Creek based on the composite return of hatchery and natural origin fish rather than N-O impacts. Management of harvest would be based on the total projected return of hatchery and natural origin fish, consistent with the rates described in the CTUIR TRMP (Table 2). The recreational sport harvest would include only adipose fin-clipped H-O fish and an estimated impact on N-O fish due to catch and release mortality.

In addition to direct adult returns to Lookingglass Creek from smolt releases, there is the potential for adult out-plants from Catherine Creek. Based on pre-season projections, 229 N-O and 314 H-O adults are estimated to return to Catherine Creek. After needs for broodstock and natural production are met (based on sliding scale management), a surplus of 95 H-O fish is projected. It is proposed that these fish be out-planted into Lookingglass Creek to be made available for sport and tribal harvest based on the rate described in Table 2. Those fish that escape the fishery will be passed upstream of the hatchery weir.

Including projected adult out-plants, 714 H-O and 133 N-O adult Chinook are expected to return to Lookingglass Creek for a composite total of 847. Per Table 2, we are planning the fishery H-O harvest rate of 20%. Under the projected return, our harvest goal is then 143 H-O fish with an estimated catch and release handling of 27 N-O fish leading to a impact of 2.7 N-O fish based on an estimated 10% catch and release mortality.

Table 2. Abundance based harvest sliding scale for non-tribal recreational fisheries in Lookingglass Creek.

Adult Run Size (N-0 and H-O Composite)	Maximum Combined Tribal/non-tribal Harvest Rate*	H-O Sport Harvest Rate	H-O Harvest Level	Estimated N-O Impact Rate
<150	0.03	No Fishery	No Fishery	No Fishery
150-500	0.17	0.085	20-43**	≤0.02
501-750	0.34	0.17	85-128	≤0.02
751-1,000	0.40	0.20	150-200	≤0.02
>1,000	0.68	0.34	>340	<0.034

*Per the CTUIR TRMP

**Sport fisheries will only be opened when at least an estimated 20 fish could be harvested

Description of Past Fisheries

Prior to 2001, available records indicate that a season had not been open for salmon in Lookingglass Creek since the late 1930's or early 1940's. No data is available for fisheries at this time, nor would data of this era be relevant today.

In both 2001 and 2002, fisheries were opened to harvest H-O fish of the Rapid River stock, which were being phased out of the hatchery program at that time. The fishery that occurred in 2002 was of relatively small scale, limited to juvenile anglers. A substantial fishery occurred in 2001 that provides good information on what to expect for future spring Chinook fisheries in Lookingglass Creek.

The 2001 season was open May 26 – July 1 with a bag limit 2 adipose/RV clipped salmon per day. Based on statistical creel survey, an estimated 575 fish were harvested with an estimated 34% harvest rate. An estimated 82.6 marked Chinook were caught and released as were 84.4 unmarked Chinook.

During 2001 a total of 647 marked and 54 unmarked Chinook were trapped at the Lookingglass Hatchery trap. Of these, 459 marked and 54 unmarked Chinook were released below the hatchery to be recycled through the fishery. It is estimated that approximately 30% of the fish harvested were fish that had been recycled through the fishery.

The harvest rate experienced in 2001 is likely a maximum of what could be expected for a similar length season for the following reasons: 1) recycling of a large portion of the run back through the fishery, and 2) much below average stream flows that occurred during the season. Success of spring Chinook anglers in northeast Oregon is greatly influenced by stream flow as these fisheries typically occur during annual peak flows.

Proposed 2011 Fishery

Consistent with hatchery program goals, FMEP criteria, and existing management agreements, ODFW proposes a 2011 Lookingglass Creek spring Chinook sport fishery.

- Open season:** *May 28 through July 1 (may be extended if harvest rate and water conditions allow)*
- Bag limit:** *Two adipose fin-clipped adult Chinook per day. Five adipose fin-clipped jacks per day, two daily bag limits in possession. (consistent with statewide Oregon salmon bag limit)*
- Open area:** *Lookingglass Creek from the mouth to confluence of Jarboe Creek (approximately 2 miles)*
- Gear:** *Statewide salmon gear restrictions apply (2011 Oregon Sport Fishing Regulations. www.dfw.state.or.us)*

Expected Outcomes

Based on expected average stream flows and the lack of fish recycling, it is estimated that the 2011 fishery could achieve a 20% harvest rate for a similar season as implemented in 2001.

Recent experience for Imnaha River spring Chinook sport fisheries suggest angler success is inversely proportional to flow during spring run-off. We expect a similar relationship for the proposed Lookingglass fishery, although creel surveys provide the necessary means to track harvest during the fishery. Data from creel surveys outlined below will be utilized to determine harvest on a weekly basis. The season will be closed if projected harvest is expected to exceed the planned H-O Chinook harvest.

We will manage the fishery not to exceed the targeted harvest of H-O fish in order not to exceed estimated N-O impacts shown in Table 2. We expect a H-O fish harvest of 143 with an estimated catch and release handling of 27 N-O fish leading to a impact of 2.7 fish based on an estimated 10% catch and release mortality.

These estimates do not account for tribal harvest of wild and hatchery fish. Decisions regarding outplant numbers are generally made in a co-management forum that will determine the actual number of Catherine Creek origin adults released into Lookingglass Creek. Should actual returns to Catherine Creek not meet projections or co-managers choose to release these fish in an alternative location, then the harvest scenario would be managed differently.

In addition to incidental hooking and handling of N-O spring Chinook, we expect ESA-listed Snake River summer steelhead kelts and ESA-listed adult bull trout may also be handled in the fishery. Statistical Creel implemented for the 2001 Lookingglass Creek spring Chinook fishery led to estimates of bull trout and summer steelhead caught. It was estimated that 134 bull trout and 8 summer steelhead were handled by spring Chinook anglers during this fishery. The potential impact of the proposed fishery on steelhead is well within the impacts described in the Grande Ronde/Imnaha Steelhead FMEP (ODFW 2009).

Monitoring and Enforcement Plan

We will conduct a statistical creel survey designed to quantify: 1) angler effort, 2) harvest of marked Chinook and 3) catch and release of unmarked Chinook, bull trout and steelhead. Creel surveys will be conducted during three to four randomly-selected days per week. Sample days will be stratified to emphasize sample collection on weekends and survey start times (early or late) will be varied randomly to insure coverage of dawn and dusk periods. Harvest and catch data will be analyzed on a weekly basis to inform decisions regarding fishery. Weekly updates and a post-season fishery report will be produced and provided to NOAA staff and co-managers.

We will coordinate with local Oregon State Police (OSP) game enforcement staff during our annual Coordinated Enforcement Program meeting. Enforcement of angling regulations during the proposed sport fishery will be designated a “high” priority activity for that time period and OSP will develop patrol strategies to address expected enforcement needs.

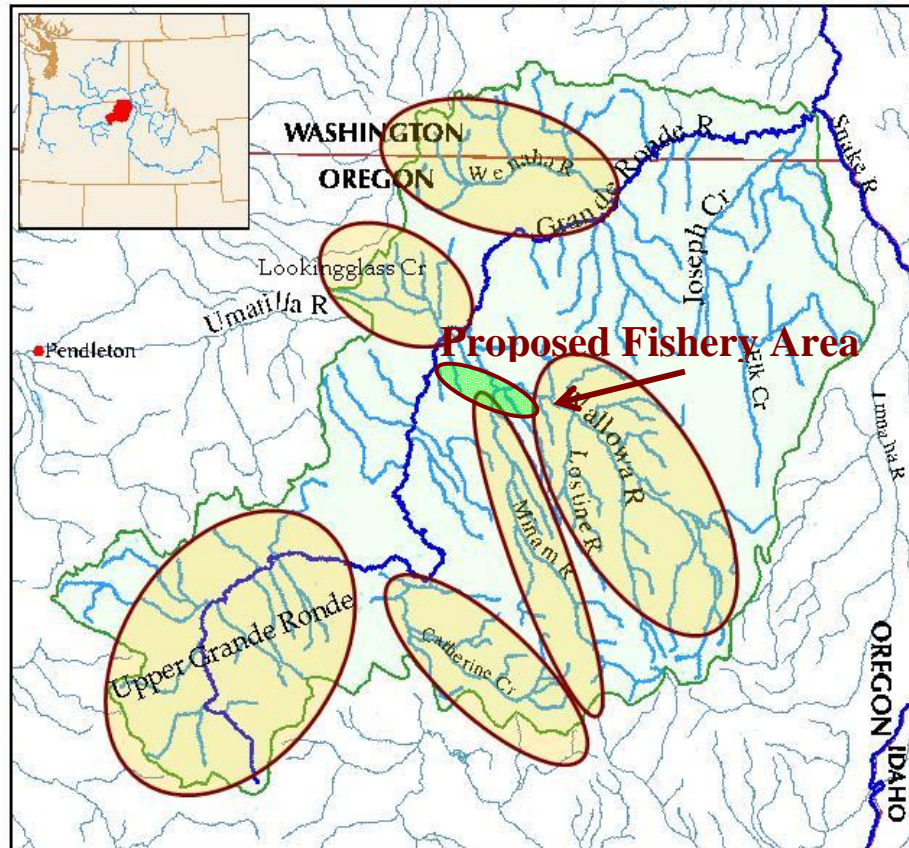


Figure 1. Map of The Grande Ronde sub-basin indicating proposed spring chinook fishery area (green) and spring Chinook population areas (yellow).

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