

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

**FOR THE PERIOD OF
JANUARY 1 – DECEMBER 31, 2010**

**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
February 11, 2010**

In Attendance December 17, 2009 pre-AOP: CTUIR (Boe, Crump, McLean), ODFW (Bailey, Clarke, B. Eddy, D. Eddy, Elmore, Feldhaus, Gribble, Harrod, Hoffnagle, Knox, Onjukka, Patterson, Yanke), NPT (Cleary, Harbeck, Vogel, Wolfe, Zollman)

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Steelhead (*Oncorhynchus mykiss*)

I. Summer Steelhead - 2009 Brood Year (Grande Ronde & Imnaha basins)

This is the second year for releasing smolts from adult's 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 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 876,000 fish weighing 189,508 pounds. A total of 644,000 are Wallowa stock transferred at 4.5fpp. Wallowa fish will be acclimated at the Wallowa and Big Canyon facilities. Wallowa release will be in one acclimation period and the Big Canyon released with an early group and late group component. A total of 182,000 are Little Sheep stock transferred at 5fpp. The Little Sheep stock will be acclimated in the Little Sheep facility and also 50,000 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 330,000 smolts will be transferred from Irrigon hatchery to Wallowa acclimation site in 2010.

| Early Group: Approximately 332,000 smolts will be released after 5 to 7 weeks of acclimation | | | |
|--|------------------|---------------|--|
| Location | Transfer in date | Release dates | Comments |
| Lower Acclimation Pond | February 22-24 | April 20-T | The screens in the lower sections will be pulled on April 20 allowing fish to leave for 1 day. On April 21, the remaining fish will be forced out of the lower section |
| | | April 21-W | |
| Upper Acclimation Pond | February 24-26 | April 21-W | The screens in the upper sections will be pulled on Monday April 21. On April 22, the remaining fish will be forced out |
| | | April 22-T | |
| Note: Approximately 100,000 smolts released will be used for fall brood evaluations. | | | |

- b. Big Canyon Acclimation:** Approximately 312,000 smolts will be released from the Big Canyon acclimation site, 156,000 in the early group and 156,000 in the late group.

| Early Group: Approximately 156,000 smolts will be released after 5 to 7 weeks of acclimation. | | | |
|---|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| Lower Acclimation Pond | March 1-2 | April 14-W | The screens in the lower 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-Th | |
| Upper Acclimation Pond | March 2-3 | April 15-Th | The screens in the upper sections will be pulled on April 15 allowing fish to leave for 24 hours. On April 16, the remaining fish will be forced out of the lower section |
| | | April 16-F | |

| Late Group: Approximately 156,000 smolts will be released after 1 to 3 weeks of acclimation. | | | |
|--|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| Lower Acclimation Pond | April 19-20 | April 27 -T | The screens in the lower section will be pulled on April 27 allowing fish to leave for 13 days. On May 10, the remaining fish will be forced out. |
| | | May 10 - M | |
| Upper Acclimation Pond | April 20-21 | April 28-W | The screens in the upper section will be pulled on April 28 allowing fish to leave for 12 days. On May 10, the remaining fish may be forced out. |
| | | May 10 - 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 out planted, Fish Research may scan for PIT tags.

- c. Little Sheep Acclimation:** Approximately 232,000 smolts will be released in the Little Sheep and Big Sheep tributaries, 182,000 acclimated in Little Sheep and 50,000 direct stream released in Big Sheep

| Acclimation. Approximately 182,000 smolts will be released after 4 to 8 weeks of acclimation. | | | |
|---|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| Acclimation Pond | March 3-5 | March 30-T | Screens will be pulled on March 30 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 27 release date. |
| | | April 27 - 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:** Approximately 50,000 smolts will be released directly into Big Sheep April 6-9. NPT will check with Thompson's to make sure the gate is open to access Big Sheep.

C. Monitoring and Evaluation

1. Summary of marked steelhead released in 2010

Comparative survival studies (CSS) continue for the second consecutive year for steelhead with 14,000 PIT fish released in 2010 (Table 5). PIT released fish are a represented sample of the marked population.

a. Wallowa

- 100,000 Ad, RV, CWT
- 100,000 Ad, LV, CWT
- 130,000 Ad only
- 8,900 PIT
- 3,500 PIT CSS

b. Big Canyon marks include:

- 50,000 Ad, LV, CWT
- 262,000 Ad only
- 7,500 PIT
- 3,500 PIT CSS

c. Little Sheep

- 157,000 Ad only
- 25,000 Ad, LV, CWT
- 11,700 PIT
- 5,500 PIT CSS

d. Big Sheep (direct release) marks include:

- 50,000 Ad only
- 3,300 PIT
- 1,500 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). Lance Clark will inquire about need to continue the ventral fin clip to visually identify a fish with CWT.

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

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

E. Satellite Operation—Wallowa staffs 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 (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 -2010 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 2011. 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 1,275,000 green eggs to produce 1,134,750-eyed eggs (89.5% survival green to eyed eggs). Transfer 1,134,750-eyed eggs to Irrigon Hatchery to produce 800,000 smolts (62.7% survival eyed eggs to smolt).

C. 2010 Adult Collection

1. Predicted Run (Table 3)

- Marked –7,265
- Unmarked – 179
- Total – 7,244

a. Wallowa Hatchery –

- Marked – 4,475 (2035 – 6914 95% CI)

b. Big Canyon Satellite –

- Marked –2,790 (1227-4354 95% CI)
- Unmarked – 179 (107-250 95% CI)
- Total – 2,969

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.

a. 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 6,765 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 punched (2-LOP). Fish not out planted or given to Food Banks will be buried at Wallowa Hatchery.

1) *Unmarked*—Unmarked fish will be transported to the Fish Hatchery Lane Bridge and released. Samples include genetic (from opercle punch), sex, 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 9, 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 keep hatchery fish more available to the angler. On April 12 the ladder will remain open throughout the trapping operation.

b. Trap/sorting/recycle Frequency - Work trap weekly with a preference for Friday's.

c. Disposition of Trapped Fish

1) *Unmarked*--Pass all fish above the weir in Deer Creek. All released fish will be measured and marked with a 1-LOP.

2) *Marked* – No marked fish will be passed. No marked (AdLV or AdRV) adults will be released but sampled for CWT recovery. Surplus hatchery fish will be outplanted, recycled or provided to local food banks.

3) *Re-cycle fish*--Starting in late February and continuing through 9 April, approximately 100 fish will be re-cycled in the fishery. Fish will be uniquely marked with OP punch and 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). Re-captures 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 and euthanize all Ad only. Efforts will be made to prevent residual steelhead from escapement when working the adult trap.

d. Disposition of Fallback Fish - Staff will collect and sample all fish that fallback on the Deer Creek weir to determine; passed to un-passed ratio, h/w ratio, and number spawned out. 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 500 adults should be spawned to meet production goals.

- Males – 250 (200 Ad and 50 RV)
- Females – spawn 250 (200 Ad and 50 RV).

The five-year average fecundity is 5,100 eggs per female.

2. Wallowa Hatchery Spawning Guidelines

a. Expected 1st Spawn – Wednesday, March 17.

b. Spawning Dates – Wednesday.

- March 17 – 36 females (29 Ad and 7 RV)
- March 24 -- 47 females (37 Ad and 10 RV)
- March 31 -- 55 females (44 Ad and 11 RV)
- April 7 -- 50 females (40Ad and 10 RV)
- April 14 -- 40 females (32 Ad and 8 RV)
- April 21 – 22 females (18 Ad and 4 RV)

A total of 250 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 released in Kinney Lake.

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 second 25% of the production.

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

- 100,000 Ad, LV, CWT (Production)
 - 75,000 AdLV first acclimation
 - 25,000 AdLV second acclimation
- 220,000 Ad only
- 6,000 PIT plus
- 2,800 PIT CSS
- 100,000 Ad, RV, CWT (Early Brood)
 - 75,000 AdRV first acclimation
 - 25,000 AdRV second acclimation
- 60,000 AdRV
- 3,600 PIT
- 1,400 PIT CSS

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

- 50,000 Ad, LV, CWT
- 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. Re-cycle—ODFW Fish Research (Flesher) will provide a short summary of fish re-cycled in the fishery.

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

f. Moist Air incubator. Up to 30 hatchery females will be used to compare embryo survival to the eye pigment stage using Moist Air incubator verses Marisoure Health stack. Eggs can be used for production if needed, and handled similar to other excess production.

g. Coldwater Disease –U of I and ODFW will coordinate fish health samples to evaluate methods to assess the prevalence of coldwater bacterial disease (CWD) vertically transferred to steelhead fry.

III. Summer Steelhead - 2010 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 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 2011 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 318,816 green eggs will be taken to produce 282,152 eyed eggs (88.5%) and 215,000 smolts (76.2% eyed eggs to smolts).

C. Adult Collection

1. Predicted Run – (Table 3).

- Marked – 3,997 (2122 - 5873 95% CI);
- Unmarked – 236 (101 - 371 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 –67
- Females –67
- Broodstock numbers were determined based on a fecundity of 4,750.
 - a. Wild broodstock**–32 males and 32 females needed for brood. Approximately 172 wild fish will be released above Little Sheep weir.
 - b. Hatchery broodstock**–34 males and 34 females are needed for brood. Approximately 78 adults will be released above the Little Sheep weir.

| <u>Week Ending</u> | Wild – keep 64 | | Hatchery – keep 70 | |
|--------------------|-----------------------|--------------------|---------------------------|--------------------|
| | <u>Avg. % by Week</u> | <u>Number Kept</u> | <u>Avg. % by Week</u> | <u>Number Kept</u> |
| March 19- | 5.4 | 4 | 6.9 | 5 |
| March 26 | 9.7 | 6 | 8.6 | 6 |
| April 2 | 8.6 | 6 | 12.6 | 9 |
| April 9 | 16.0 | 10 | 18.8 | 13 |
| April 16 | 16.5 | 11 | 19.2 | 13 |
| April 23 | 15.2 | 10 | 13.9 | 10 |
| April 30 | 14.8 | 9 | 11.6 | 8 |
| May 7 | 9.2 | 4 | 5.7 | 4 |
| May 14 | 2.6 | 2-4 | 1.8 | 1-2 |
| May 21 | 1.3 | 0-1 | 0.7 | 0-1 |
| May 28+ | 0.7 | 0-1 | 0.2 | 0 |

*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 14 egg take

3. Disposition of Trapped Fish

a) Wild – keep 64 wild fish (total wild fish collected is estimated at 92 males and 144 females). Wild composition in hatchery brood is estimated at 48%. The other wild adults collected will be 1-LOP and placed above the weir. Number wild fish released above the weir is estimated at 172 fish with a wild composition of 68% for natural spawning.

b) Hatchery – keep 70 hatchery fish or one hatchery fish for every wild fish collected plus one additional fish each time the trap is operated. 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 two days 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*. All wild and hatchery fish passed above the weir will be tissue sampled for genetic analysis by ODFW (for NMFS).
- g) *Big Sheep out plants*. 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 5,700 hatchery origin adults are expected to return to Big Sheep from direct stream releases, plus returns of natural adults.
- h) *Surplus fish maybe 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 recaptured. Fallback (fish passed above the weir but fall back below the weir and recaptured) Little Sheep fish (1-LOP) will release above the weir again.
- j) *Carcass Disposal*-Spawned fish not suitable for distribution can 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 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 16.
- 2) **Expected Spawning Frequency** – Weekly on Tuesdays and/or Thursdays.

b. Spawning Strategies – A 2 x 2 or 3 x 3 spawning matrices will be utilized. A matrix will include at least one natural fish, when ever 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 (approximately 20% over the targeted production).

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 Ad, LV, CWT
- 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, Patterson), 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-2010

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 location—Catherine Creek (CC), Grande Ronde River (UGRR), and Lookingglass Creek (LGCR). CC and UGRR weirs installed, operated and maintained by CTUIR. LGCR weir installed and operated by ODFW

b. Period of Trap Operation – March 1 through August 1, environmental conditions permitting. Few steelhead are captured after mid-June. Lookingglass trap may be removed 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.

2. Disposition of steelhead at weirs-

a. Live, unclipped, first-time captures— Enumerate, fork length, maturity, migration status, scales, sex, marks/tags, condition, take ONE opercle punch (preserve in vial for genetics) 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).

b. Live, unclipped, previously punched captures- Enumerate, fork length, maturity, migration status, sex, marks/tags, and pass above the weir (or below if kelt).

c. Live, clipped captures or clipped mortalities- Enumerate, fork length, maturity, migration status, sex, marks/tags, condition. Euthanize AD- or ADLV-clipped steelhead and collect snouts from ADLV- clipped fish for CWT recovery.

d. 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.

3. Disposition of bull trout at weirs—Record date, number trapped, and estimated fork length (no anesthetics, minimize handling effects). Send summary to Smith, Bailey, and Jacobs (ODFW) and Krakker (USFWS).

4. Juvenile *O. mykiss* Sampling

a. Operate rotary trap(s) on Lookingglass Creek - Trap year-round, collect data, PIT tag, release sampled fish below the intake.

B. Key Contacts

1. CTUIR (McLean). Distribute bull trout and steelhead data collected to ODFW District offices.

V. Summer Steelhead - Imnaha Tributaries (Horse Creek; Camp Creek)

Goal-to quantify adult escapement (NPT)—No Production goals

A. Monitoring and Evaluations

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

a. **Location**-Horse Creek and Camp Creek.

2. **Trap Operations**

a. *Wild/Hatchery* – No fish retained. Trap, collect data, and release only.

b. *Wild Kelts* – No collection.

c. *Period of Trap Operation* – February through June, or until 10 days after last capture.

d. *Trapping Strategies*-check trap twice daily.

e. *Disposition of fish at weir-*

1) Steelhead – Steelhead in the upstream movement box will be dipped out with cotton dip net and place into a moist canvas sling/measuring box. 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. A paper hole punch will be used to collect fin tissue from the dorsal fins for DNA genetic characterization before release upstream of the trap. A double right opercular punch will be given using a paper hole punch and a Tyvek disk tag will be applied to the left operculum. Non-target species will be measured (sub-sample 25/day/species) and released. Steelhead and non-target species will be release into a pool/slack water above the weir.

Steelhead captured in the downstream movement box will be examined for opercular punches and Tyvek disk tags. Marked fish will be checked for spawning condition (pre or post-spawn) and released downstream. Downstream moving non-marked steelhead and non-target species will be handled with 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 LSRC (Krakker).

3) Genetic - Collect tissue samples from all wild and hatchery fish for future genetic analysis.

f. *Disposition of adult mortality* – Natural mortalities will be sampled for biological information and their otoliths collected.

C. Key Contacts

1. NPT (Vogel, Hesse, Young)

CHINOOK (*O. tshawytscha*)

Fish production will prioritize 12 raceways for Grande Ronde tributary production and 6 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; 2 raceways*
- *Lookingglass Creek; 2 raceway*
- *Imnaha; 6 raceways*

VI. Grande Ronde Basin -2008 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 Sub-basin 2010 release is 893,900 fish weighing 40,640 pounds (Appendix A). Breakdown by tributary is as follows:

- Catherine Creek (CC)- 147,000
 - Conv-112,000
 - CBS-35,000
- Lostine River (LR)- 247,300
 - CBS-62,000
 - Conv-185,500
- U. Grande Ronde (UGR)- 233,600
 - CBS-191,200
 - Conv-42,400
- Lookingglass (LGCR)-266,000
 - Conv-266,000

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 1, Catherine Creek on March 15, and on Upper Grande March 8, 9 and 22. 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

| Early Group: Approximately 123,300 smolts will be released after 1 to 3 weeks of acclimation. | | | |
|---|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| LGH ½ R12 to pond A | March 1 | March 17-W | The screens will be pulled on March 17 allowing fish to leave for 13 days. On March 30, the remaining fish will be forced out |
| LGH ½ R12 to pond B | | | |
| LGH ½ R11 to pond C | | March 30-T | |
| LGH ½ R11 to pond D | | | |

| Late Group: Approximately 124,000 smolts will be released after 1 to 3.5 weeks of acclimation. | | | |
|--|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| LGH½ R10 to pond A | March 31 | April 10-Sa | The screens will be pulled on April 10 allowing fish to leave for 10 days. On April 20, the remaining fish will be forced out |
| LGH ½R10 to pond B | | | |
| LGH ½R9 to pond C | | April 20-T | |
| LGH½ R9 to pond D | | | |
| R10 captive brood | | | |

b. Catherine Creek

| Approximately 147,000 smolts will be released after 3 to 4 weeks of acclimation. | | | |
|--|------------------|---------------|--|
| Location | Transfer in date | Release dates | Comments |
| LGH 2B and C19 to pond A | March 15 | March 29-M | The screens will be pulled on March 31 allowing fish to leave for ~14 days. On April 12, the remaining fish will be forced out |
| LGH 2A to pond B | | | |
| LGH ½ R1 to pond C | | | |
| LGH ½ R1 to pond D | | April-12 | |
| R2B and C19 captive brood | | | |

c. Upper Grande Ronde

| Early Group: Approximately 126,200 smolts will be released after 1 to 3 weeks of acclimation. | | | |
|---|------------------|---------------|--|
| Location | Transfer in date | Release dates | Comments |
| LGH ½ R7 to pond A | March 8, 9 | March 15-M | The screens will be pulled on March 15 allowing fish to leave for ~7 days. On March 22, the remaining fish will be forced out |
| LGH ½ R7 to Pond B | | March 22-M | |
| LGH ½ R8 to Pond C | | | |
| LGH ½ R8 to Pond D | | | |
| Late Group: Approximately 107,400 smolts will be released after 1 to 3 weeks of acclimation. | | | |
| LGH ½ R5 to pond A | March 23 | March 30-M | The screens will be pulled on March 30 allowing fish to leave for ~14 days. On April 13, the remaining fish will be forced out |
| LGH ½ R5 to Pond B | | April-13-M | |
| LGH ½ R6 to Pond C | | | |
| LGH ½ R6 to Pond D | | | |
| Raceway 5 is conventional production | | | |

d. Lookingglass Creek

| Approximately 266,000 smolts will be released into Lookingglass Creek | | | |
|---|---------|-----------------------------|--|
| Location | | Release dates | Comments |
| LGH R3, R4 | NA | March 31-W through April 14 | The screens will be pulled on March 31 allowing fish to leave for 14 days. On April 14, the remaining fish will be forced out |
| Adult ponds C&D | April 7 | April 14 | On April 7, fish will be moved from adult holding ponds to raceways 1-2 to allow volitional release and forced out on April 14 |

Notes: Contingency—Fish may be released earlier than schedule if conditions warrant. Downstream rotary traps 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 offered to fish health for examination

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

1. Genetic tissue collection for monitoring and potentially pedigree analysis.
2. Pre-liberation weight and length
3. Downstream migration.
4. PIT survival studies; CSS PIT for Catherine Creek
5. Tag retention and fin clip quality.
6. Captive vs. Conventional production
7. Hatchery vs. Natural
8. Growth and survival

D. Marked Groups.

- a. Catherine Creek
 - 112,000 ADCWTVIE
 - 35,000 AdCWT
 - 21,000 PIT CSS
- b. Lostine River
 - CV 185,500 ADCWT,
 - 4,800 PIT
 - CB 62,000 CWT

- 1,600 PIT
- c. Upper Grande Ronde
 - CV 42,400 CWT,
 - CB 191,200 ADCWT,
 - 2,000 PIT
- d. Lookingglass Creek-
 - CV 154,400 ADCWT
 - CB 111,600 Ad
 - 1,500 PIT

E. Fish Health-- Fish Health staff will coordinate efforts with hatchery staffs to conduct pre-release health examination (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 -2009 Brood Year Spring/Summer Chinook –Catherine, Lookingglass, Lostine & U. Grande Ronde

Smolts target size is 30fpp by October 31 and 25fpp at release for Catherine, Lostine and Upper Grande Ronde. Expected transfer size is 26fpp. Lookingglass Creek release size is 20fpp.

A. Allocation –Scheduled for transfer target size of 26fpp in mid-March 2011.

1. **Anticipated Grande Ronde basin production** is 831,745 smolts for release in 2011 produced from Lookingglass Hatchery.

a. **Estimated Captive brood** numbers are:

- Catherine Creek 0 (outplanted 1,915 eyed eggs (BKD mod-hi) in Lookingglass Creek)
- Lostine River 76,000 (outplanted ~5,000 eyed eggs, and 20,000+ ad clipped parr)
- U. Grande Ronde 52,450 (outplanted ~143,000 eyed eggs in U. Grande Ronde)
- Lookingglass Creek (CB CC) 90,000

b. **Estimated Conventional brood** numbers are:

- Catherine Creek 153,900
- Lostine River 176,000
- U. Grande Ronde 191,400
- Lookingglass Creek 94,000

B. Final Rearing—LGH fry will be transferred outside in April or early May. Up to 184,000 fry will be transferred to Irrigon in April and returned to Lookingglass in late September (Appendix F).

C. Marking Program--

1. **AD/CWT** is scheduled for September 2010.

Catherine Creek

- 93,400 Ad CWT
- 46,700 Ad only

Lostine River

- 176,000 Ad CWT
- 74,000 CWT only (M&E mark)
- 20,000+ eyed eggs and ad marked parr

Lookingglass Creek

- 184,000 Ad CWT

Upper Grande Ronde

- 52,450 Ad CWT
- 191,400 CWT

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 2010 (Table 6). Numbers by stock include:

- Catherine Creek—21,000 CSS
- U. Grande Ronde—2,000
- Lostine (captive)—1,900
- Lostine (conventional)—5,700
- Lookingglass Creek-2,000

D. Fish Health

An Aquamycin medicated feed treatment (2.25%) is planned for 2009 brood year progeny in July/August 2010. Lookingglass Creek progeny transferred to Irrigon Hatchery will receive one Aquamycin medicated feeding in August, and the Catherine Creek captive brood progeny that are scheduled for release in Lookingglass Creek will receive two treatments (May/June and August)

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

E. Key contacts

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

VIII. Grande Ronde Basin-Conventional-2010 Brood Year - Spring/Summer Chinook Catherine, Lookingglass, Lostine, and Upper Grande Ronde

The LSRCP production goal is 900,000 smolts to produced 5,720 adults. However, co-managers will target 880,000 smolts for release in 2011.

A. Smolt Production -

- 1. Production targets include:**
 - Catherine Creek: 130,000 smolts
 - Lookingglass Creek: 250,000 smolts
 - Lostine: 250,000 smolts
 - Upper Grande Ronde: 250,000 smolts

B. Anticipated Egg Needs – A total of 1,047,600 green eggs should be collected to produce 880,000 conventional smolts based on 84% green eggs to smolts survival. Captive brood component can be used to supplement production numbers.

C. 2010 Adult Collection

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

- a. Catherine Creek –**

- ODFW-699 adults (235 jacks)**

- Natural-308 adults (plus 43 jacks)
- Hatchery-391 adults (plus 192 jacks)

- CTUIR- 1,086 adults (unknown jacks)**

- Natural- 372 adults (unknown jacks)
- Captive- 1 adult
- Conventional- 713 adults (unknown jacks)

- b. Lostine River**

- ODFW/NPT-2,675 Adults (889 jacks)**

- Natural- 461 adults (plus 44 jacks)
- Hatchery-2,214 adults (plus 845 jacks)

c. Upper Grande Ronde –

ODFW-1,181 adults (280 jacks)

- Natural-156 adults (plus 0 jacks)
- Hatchery-1,025 adults (plus 280 jacks)

CTUIR-1,062 adults (unknown jacks)

- Natural- 49 adults
- Captive-6 adults
- Conventional- 1,007

d. Lookingglass Creek --

ODFW-310 adults (199 jacks)

- Natural-138 adults (31 jacks)
- Hatchery-172 adults (168 jacks)

CTUIR - 920 adults

- Natural-313 adults
- Hatchery -607 adults

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

a. Open Season: May 1- July 4, may extend to July 11 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: Wallowa 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, 426 fish.
- Maximum incidental wild mortality of 13 fish from Wallowa-Lostine population (1.9%) and 5 fish on Minam (1.0%)
- Additional harvest of ad-clipped (352) and wild (73) Chinook is expected in tribal fisheries.

Monitoring:

We plan to estimate harvest with a statistical creel.

3. 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. LG CR—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 71 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 2010 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 on Lostine River will begin in May and continue 10 days without capturing a fish after September 1.

3. Lookingglass (ODFW)— The intake trap at Lookingglass Hatchery will be operated from March (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 operates 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 stream bank below each weir. Surveys 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. However, adults in CC and UGR will be worked on 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 421 to 1,085. The average of projections is 753 adults. The range for the natural run is 306 to 372 with an average of 339. 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 67% (55 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 projections will used to reassess the run.

1) Catherine Creek

- Wild fish—keep 1 of 6 for brood (17%)
- Conventional Hatchery—keep 1 of 10 for brood (10%)
- Captive Hatchery—pass 100% of captive adults
- Pass 1 hatchery fish 1 natural fish above the weir, surplus hatchery adults can be transferred to Lookingglass Creek and released below the hatchery or Indian Creek.

b. U. Grande Ronde

1) UGR -- Grande Ronde conventional program calls for collection of 50% of natural fish and up to 100% conventional returns. Pass 100% of captives. Based on projected returns, the collection rate on the conventional hatchery fish will need to be closely monitored. The intent is to collect broodstock across the run. Collection rate to start the season:

- Wild fish—keep 1 of 2 for brood (50%)
- Hatchery—keep 1 of 5 for brood (20%)
- Captive—pass 100% of captive adults

c. Lostine

1) Lostine River -- At the projected run level of 461 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 |
|-----------|---------|----------|
| June 8 | 1 | 3 |
| June 15 | 3 | 4 |
| June 22 | 5 | 8 |
| June 29 | 7 | 18 |
| July 6 | 8 | 19 |
| July 13 | 6 | 14 |
| July 20 | 3 | 10 |
| July 27 | 1 | 3 |
| August 3 | 0 | 1 |
| August 10 | 0 | 0 |
| August 17 | 1 | 2 |
| August 24 | 4 | 7 |

| | | |
|-----------|----|----|
| August 31 | 3 | 8 |
| Sept 7 | 2 | 1 |
| totals | 57 | 85 |

- Wild fish—keep < 1 of 8 for brood
- Hatchery—pass 1 hatchery for every 1 natural adult

Note: New weir construction is on the BPA “Fast Track” budget allocation for 2010. The current work window is scheduled for mid-July through mid-August; therefore, adjustments to the guideline are expected in 2010.

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

- Fish can be recycled for a fishery and released at the Minam boat ramp.
- Fish can be out planted in Bear Creek (Number TBA)
- Out plants in Prairie Creek, Hurricane Creek, and the Wallowa River are under discussion
- Fish can be used for tribal and non-tribal distribution.
- Carcasses can be placed in Lostine River and other out planted sites
- Surplus live jacks can be released in the Lostine River after the last redd count survey

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 brood stock 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 continued 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) Surplus returns maybe released in Lookingglass Creek below the hatchery

Notes: General comments—No marked fish from other streams or basins will be passed upstream. Stray Lostine stock fish will be euthanized and UGR fish will be added to the broodstock. 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 outplant. Data include fish length, genetic (tissue), and sex prior to release above the weir. Excess 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 a 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 any opercle punch at the trap, but outplants will receive an 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 the Lookingglass will receive three opercle punches (3-ROP) and 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 marked and held with their respective brood.

f. Trapping 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 of 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 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.

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 -- LSRCP is planning to modify the adult ponds in spring 2010. After modification 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 9th.

3. Expected First Spawn – The week of August 16th.

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.

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 1LOP 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 100ppm 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 maybe combine 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).

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, 2011 and 30fpp October 2011.

4. **Lookingglass Creek** production may be transferred to Irrigon for rearing in April and returned in September 2011 and released from the adult holding ponds in April 2012. The intent is to dry the holding pond for 1-week before fish are transferred.

I. Monitoring Plans

1. Grande Ronde basin spawning surveys
2. Lookingglass Creek fall volitional release
3. Fish Health Monitoring Plans
 - **Disinfection** and Sanitation Guidelines (Appendix C).
 - **Broodstock** monitoring and treatment plan (Appendices K, L, M)
 - **Collect 30** kidneys from natural spawning females above the weir (Appendix J).

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-2010 Captive Brood Spring/Summer Chinook– Catherine, Grande Ronde & Lostine

Smolt production (F_1) and potential out lets 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 – None is expected for production

B. Spawning--See Safety Net/Captive Brood 2010 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 -2008 Brood Year-Spring/Summer Chinook

A. Anticipated smolt release – A total of 396,000 smolts at 22fpp (current size 28fpp).

- Acclimated: 396,000
- Direct stream: 0

B. Liberations (See Appendix A)

1. **Transfer and Acclimation** – Approximately 396,000 smolts will be transferred to Imnaha Satellite between March 10 and 11 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 released in 2010.
 - 195,000 AdCWT
 - 201,000 Ad only
 - 21,000 PIT
2. Fish Research staffs will coordinate efforts with hatchery staff for pre-release sampling efforts (Table 2).

E. Fish Health-- Fish Health staff will coordinate efforts with hatchery staff to conduct 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 release.

XI. Imnaha –2009 Brood Year-Spring/Summer Chinook

A. Smolt Production- An estimated 437,000 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 water Lookingglass Creek water. Fish will be transfer outside to raw creek water in April or May.
- b. **Final Rearing** - After marking, fish will be divided into 7 raceways with approximately 62,400 fish per raceway (Appendix F). In July/August, 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 September 2010. Approximately 187,500 to 250,000 fish will receive CWT (Table 4).
2. **PIT tag**- 21,000 fish will be PIT tagged in October 2010 for CSS (Table 6).
3. M&E staffs are discussing acclimated v non-acclimated release study (HRT recommendation). LSRCP staff commented that old data was sufficient to conclude that there is no benefit from acclimated releases of spring Chinook. NPT did not supportive the study.

C. Marking Program –

1. **AdCWT** – 187,500
2. **AD**- 250,000.
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 –2010 Brood Year-Spring/Summer Chinook

The production goal is 360,000 smolts for the Imnaha River reared in 6 raceways. NEOH the long- term goal will be to produce 490,000 smolts.

A. Smolt goal - 360,000 smolts at 25fpp for release 2012.

B. Adult Collection

1. Predicted Runs- Total estimated return to river is 2,939 adults and 3,008 jacks. The breakdown includes 2,261 hatchery origin and 678 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: 1,334 hatchery-origin and 400 natural-origin (Table 11).

C. Imnaha Fishery Proposal Summary –The projected return of 2,939 (678 wild and 2,261 hatchery) Chinook salmon to the Imnaha River in 2009 will exceed the necessary escapement levels for natural spawning, outplanting and broodstock. We plan to use 206 adults (82 wild and 124 hatchery) for artificial propagation, allowing surplus hatchery 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 1 through July 4, may extend to July 11 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: 15.9% of expected return, 359 fish.
- Maximum incidental wild mortality of 11 fish from Wallowa-Lostine population (1.6%) and 5 fish from Minam population (1.0%)
- Additional harvest of ad-clipped (285) and wild (85) Chinook is expected in tribal fisheries.

4. Monitoring:

- We plan to estimate harvest with a statistical creel.

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 schedule 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 euthanatized. 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, intra-peritoneally (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 out planted to Big Sheep tributaries
- Fish can be used for tribal and non-tribal distribution.
- Carcasses can be placed in Imnaha River and other out planted sites
- 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. Tumors - Chinook will be inspected for tumors along the gum line. If a tumor is suspected, fish will be held for consultation.

e. 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 outplanting, can be held at Imnaha. Adults collected after July 12th, and targeted for outplanting, can be direct stream released.

f. 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 return 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 678 natural origin Chinook escapements, the sliding scale guidelines suggests that: $\leq 50\%$ of the fish released above the weir can be of hatchery origin; $\geq 40\%$ broodstock of natural origin. Natural jacks will be released above the weir and hatchery jacks maybe released above the weir to meet a composition jack composite of 10% of the total males. Typically, natural jacks exceed 10% of the males.

2. Broodstock Needs

a. Egg take- Need 439,000 green eggs at 95% of females, 82% survival from green egg to smolt, and estimated five-year fecundity average of 4,482.

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

Males – 103 (spawn 98)

- 41 natural (spawn 39)
- 62 hatchery (spawn 59 adults or jack equivalent; 6 jacks equals one male)

Females – 103 (spawn 98)

- 41 natural (spawn 39)
- 62 hatchery (spawn 59)

3. Brood collections guidelines: The current projection for adult spring/summer Chinook returns to Imnaha River is 2,939 adults (2,261 ad-clipped and 678 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 40% hatchery and 50% wild origin ratio (pass 1 wild: 1 hatchery).

| Estimated Totals: | Estimate 59% | | | Released |
|----------------------------|---------------------|-------------------|-----------|-----------------------|
| Escapement to mouth | collected | Broodstock | OP | above the weir |
| 2939-Hatchery | 1,734 | 124 | 300 | 318 |
| 678-Wild | 400 | 82 | 0 | 318 |

Estimate 992 surplus hatchery adults (plus jacks) without harvest.

Collection guidelines for Imnaha spring Chinook in 2010.

| | June 1-22 | June 23–30 | July 1-8 | July 9-16 | July 17-23 |
|---------------------------|-----------|------------|----------|-----------|------------|
| HOB-124 | 4 | 16 | 26 | 26 | 18 |
| NOB-82 | 4 | 10 | 22 | 20 | 10 |
| 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 |
|------------------|------------|-----------|------------|-------------|--------------|-------------|
| | 14 | 10 | 2 | 2 | 4 | 2 |
| | 8 | 4 | 2 | 0 | 2 | 0 |
| Out plants | | 25 | | | | |
| C/S or food bank | | balance | | | | |

- *Pass 1 wild adult per 1 hatchery adults 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 brood stock in pairs or female and jack-male equivalent. Jacks 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 17th.
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.

G. Incubation

1. **Imnaha eggs** will be incubation 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.

H. Fish Health Monitoring plans

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

I. 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), LSRCP 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).

Snake River –2009 Brood Year-fall Chinook

The production goal is 400,000 sub-yearling smolts for the lower Grande Ronde.

A. Allocation – Fall Chinook production at Irrigon hatchery is prioritized (13 and 15) in the US v Oregon tables. Total production is targeted at 400,000 sub-yearlings and scheduled for release around May 24 at 50fpp. Marks include:

- 200,000 Ad+CWT
- 200,000 no marks

B. Adult collections and Spawning--See Lyons Ferry 2009 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. Only eggs from females below BKD titers levels 0.2 were transferred.

D. Key Contact

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

Table 1 (12/2/09)
 2010 Irrigon Transport Schedule
 (09 brood)

| <u>Date</u> | <u>Stock</u> | <u>From Ponds</u> | <u>To</u> | <u>Number</u> | <u>Est. Pounds</u> |
|-------------|--------------|-------------------|-------------------------|----------------|------------------------|
| Feb. 22-24 | 5609 | 9*,10*,11*,12* | Wallowa Lower Acc | 166,000 | 36,888 |
| Feb. 24-26 | 5609 | 13*,14*,15*, 16* | Wallowa Upper Acc | 166,000 | 36,888 |
| Mar. 1-2 | 5609 | 17*, 19 | Big Canyon lower Acc | 78,000 | 17,333 |
| Mar. 2-3 | 5609 | 18, 20 | Big Canyon Upper Acc | 78,000 | 17,333 |
| Mar. 3-5 | 2909 | 27*,29,30,31 | Little Sheep (Acc) | 182,000 | 36,400 |
| Apr. 6-9 | 2909 | 32 | Big Sheep (direct) | 50,000 | 10,000 |
| Apr. 19-20 | 5609 | 21, 23* | Big Cany. Lower Acc | 78,000 | 17,333 |
| Apr. 20-21 | 5609 | 22,24 | Big Cany. Upper Acc | <u>78,000</u> | <u>17,333</u> |
| | | | | 876,000 | 189,508 |

~Denotes partial pond

*Denotes CWT pond

Table 2. Juvenile spring Chinook salmon and summer steelhead sampling schedule at LSRCP facilities, 2009. 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.

| Species, Sample Date | Stock (BY08) | Location | Pond | Purpose |
|---|----------------------|--------------|--------------|--------------|
| <u>Spring Chinook</u> | | | | |
| Feb. 8-12 | Catherine (08) | Lookingglass | 1-2, C19 | CWT, RS, GS |
| Feb. 8-12 | Catherine (08) | Lookingglass | 3-4, AHP C&D | CWT, RS, GS |
| Feb. 8-12 | U. Grande Ronde (08) | Lookingglass | 5-8 | CWT, RS, GS |
| Feb. 8-12 | Lostine (08) | Lookingglass | 9-12 | CWT, RS, GS |
| Feb. 8-12 | Imnaha (08) | Lookingglass | 13-18 | CWT, RS, GS |
| June 4-5 | All (09) | Lookingglass | 1-18 | PS |
| <u>Summer Steelhead (brood 09)</u> | | | | |
| December 2009 | Wallowa | Irrigon | 9-14, 16, 17 | CWT |
| December 2009 | Imnaha | Irrigon | 27 | CWT |
| March 29 | Imnaha | Little Sheep | AP | RS, GS |
| April 2 | Imnaha | Irrigon | 32 | RS (FL only) |
| April 16 | Wallowa | Wallowa | LAP, UAP | RS |
| April 13 | Wallowa | Big Canyon | LAP, UAP | RS, GS |
| April 26 | Wallowa | Big Canyon | LAP, UAP | RS |
| April 27 | Imnaha | Little Sheep | AP | sex ratio |
| May 9 | Wallowa | Big Canyon | AP | sex ratio |
| <u>Summer Steelhead (brood 10)</u> | | | | |
| December 2010 | Wallowa | Irrigon | TBD | CWT |
| December 2010 | Imnaha | Irrigon | TBD | CWT |

Table 3. Summer Steelhead run projections to LSRCF Facilities in 2010.

| 2009 PROJECTED Returns to Wallowa Hatchery | | | | | |
|---|-----|-------------|-------------|-------------|-----------|
| MARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 1852 | 1115 | | |
| Marked | 1:2 | 420 | 1049 | | |
| Marked | 2:1 | 17 | 16 | | |
| Marked | 2:2 | 2 | 4 | | |
| Total | | 2291 | 2184 | 4475 | 2035-6914 |

| 2009 PROJECTED Returns to Big Canyon Facility | | | | | |
|--|-----------|-------------|-------------|-------------|-----------|
| MARKED AND UNMARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 935 | 828 | | |
| Marked | 1:2 | 251 | 761 | | |
| Marked | 2:1 | 7 | 8 | | |
| Subtotal | | 1193 | 1597 | 2790 | 1227-4354 |
| Unmarked | 2:1 | 24 | 30 | | |
| Unmarked | 2:2 | 15 | 31 | | |
| Unmarked | 3:1 | 27 | 21 | | |
| Unmarked | 3:2 & 4:1 | 9 | 20 | | |
| Subtotal | | 77 | 102 | 179 | 107-250 |
| Total | | 1270 | 1699 | 2969 | |

| 2009 PROJECTED Returns to L. Sheep Cr. Facility | | | | | |
|--|-----------|--------------|--------------|--------------|-------------|
| MARKED AND UNMARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 1,595 | 1,369 | | |
| Marked | 1:2 | 202 | 798 | | |
| Marked | 2:1 | 18 | 12 | | |
| Marked | 3:1 | 1 | 3 | | |
| Subtotal | | 1,815 | 2,182 | 3,997 | 2,122-5,873 |
| Unmarked | 2:1 | 48 | 69 | | |
| Unmarked | 2:2 | 13 | 41 | | |
| Unmarked | 3:1 | 26 | 21 | | |
| Unmarked | 3:2 & 4:1 | 5 | 14 | | |
| Subtotal | | 92 | 144 | 236 | 101-371 |
| Total | | 1,907 | 2,326 | 4,233 | |

Table 4. Estimated numbers of tagged fish released from 2010 brood summer steelhead and 2009 brood spring Chinook salmon.

| Species, Stock | Number Marked | Type of Mark | Marking Period | Marking Location |
|--|------------------|-----------------|-------------------|---------------------|
| Summer Steelhead | | | | |
| <u>2010 Brood Year (Ad 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>2009 Brood Year</u> | | | | |
| Imnaha River | 250,000 | Ad+CWT | September | Lookingglass |
| | 187,500 | Ad only | September | Lookingglass |
| Catherine | 102,600 | Ad+CWT | September | Lookingglass |
| Catherine | 51,300 | Ad | September | Lookingglass |
| Lostine | 176,000 | Ad+CWT | September | Lookingglass |
| Lostine CB | 74,000 | CWT only | September | Lookingglass |
| Upper GR | 191,400 | CWT only | September | Lookingglass |
| Upper GR. CB | 52,450 | Ad CWT | September | Lookingglass |
| Lookingglass | 183,300 | Ad+CWT | September | Irrigon |

Table 5. PIT-tagging schedule for 2010 brood summer steelhead at Irrigon Hatchery scheduled for December 2010. Raceways need to be off feed 2 days prior to PIT-tagging to reduce tag loss. Comparative Survival Study (CSS) will provide 13K tags to supplement the LSRCP tagging and achieve a 70% LSRCP and 30% CSS split. LSRCP tagged fish will be CSS Group T (transported;) and CSS tagged fish will be CSS Group R (in-river; ODFW file ext S). LSRCP and CSS tags will be in different tag files. 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, 14 | 2,400 | 1,200 | 3,600 |
| WAP, forced April | 12 | 1,100 | 500 | 1,600 |
| WAP, volitional May | 21 | 1,800 | 800 | 2,600 |
| WAP, early brood April | 9, 13 | 1,800 | 600 | 2,400 |
| WAP, early brood April | 11 | 900 | 400 | 1,300 |
| WAP, early brood May | 15 | 900 | 300 | 1,200 |
| BC, forced April | 19 | 3,400 | 1,600 | 5,000 |
| BC, forced May | 23 | 3,400 | 1,600 | 5,000 |
| Subtotal | | 15,700 | 7,000 | 22,700 |
| Imnaha stock | | | | |
| Little Sheep, volitional April | 27 | 5,800 | 2,700 | 8,500 |
| Little Sheep, volitional April | 29 | 5,700 | 2,700 | 8,400 |
| Big Sheep, direct stream April | 32 | 3,500 | 1,600 | 5,100 |
| Subtotal | | 15,000 | 7,000 | 22,000 |
| Grand total | | 30,700 | 14,000 | 44,700 |

^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 2010 (BY2009). 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 | 46,700 | 7,000 |
| Catherine Conventional | 2 | 46,700 | 7,000 |
| Catherine Captive | 3 | 46,700 | 7,000 |
| Lookingglass Creek | AHD A&B | 93,300 | 1,000 |
| Lookingglass Creek | AHD A&B | 90,000 | 1,000 |
| U. Grande Ronde CBS | 4 | 52,450 | 500 |
| U. Grande Ronde Conventional | 5 | 63,800 | 500 |
| U. Grande Ronde Conventional | 6 | 63,800 | 500 |
| U. Grande Ronde Conventional | 7 | 63,800 | 500 |
| Lostine Conventional | 8 | 58,665 | 1,200 |
| Lostine Conventional | 9 | 58,665 | 1,200 |
| Lostine Conventional | 10 | 58,665 | 1,200 |
| Lostine CBS | 11 | 62,500 | 1,200 |
| Lostine CBS | Cir 19 | 11,500 | 0 |
| Imnaha | 12 | 62,500 | 3,000 |
| Imnaha | 13 | 62,500 | 3,000 |
| Imnaha | 14 | 62,500 | 3,000 |
| Imnaha | 15 | 62,500 | 3,000 |
| Imnaha | 16 | 62,500 | 3,000 |
| Imnaha | 17 | 62,500 | 3,000 |
| Imnaha | 18 | 62,500 | 3,000 |
| Grand total | | 1,254,745 | 50,800 |

Table 7. Projected spring Chinook salmon returns to Catherine Creek in 2010.

| Mark | Age | Total | 95%CI | | |
|---|-----|------------|------------|-----------|------------|
| Return to River | | | | | |
| Hatchery | 3 | 192 | 110 | to | 274 |
| Hatchery | 4 | 379 | 238 | to | 520 |
| Hatchery | 5 | 12 | 0 | to | 25 |
| Total | | 583 | 348 | to | 819 |
| Natural | 3 | 43 | 35 | to | 51 |
| Natural | 4 | 265 | 204 | to | 326 |
| Natural | 5 | 41 | 0 | to | 89 |
| Total | | 349 | 239 | to | 466 |
| Grand Total | | 932 | 578 | to | 1285 |
| Total to weir (93% of run trapped at weir-five year average) | | | | | |
| Hatchery | | 542 | 324 | to | 762 |
| Natural | | 325 | 222 | to | 433 |

Table 8. Projected spring Chinook salmon returns to the Upper Grande Ronde River in 2010.

| Mark | Age | Total | 95%CI | | |
|---|-----|--------------|--------------|-----------|--------------|
| Return to River | | | | | |
| Hatchery | 3 | 280 | 161 | to | 399 |
| Hatchery | 4 | 917 | 901 | to | 933 |
| Hatchery | 5 | 108 | 95 | to | 121 |
| Total | | 1,305 | 1,127 | to | 1,453 |
| Natural | 3 | 0 | 0 | to | 4 |
| Natural | 4 | 89 | 76 | to | 102 |
| Natural | 5 | 67 | 28 | to | 106 |
| Total | | 156 | 104 | to | 212 |
| Grand Total | | 1,461 | 1,231 | to | 1,665 |
| Total to weir (72% of run trapped at weir - five year average) | | | | | |
| Hatchery | | 940 | 811 | to | 1,046 |
| Natural | | 112 | 75 | to | 153 |

Table 9. Projected spring Chinook salmon returns to the Lostine River in 2010.

| Mark | Age | Total | 95%CI | | |
|---|-------|--------------|--------------|-----------|--------------|
| Return to River | | | | | |
| Hatchery | 3 | 845 | 633 | to | 1057 |
| Hatchery | 4 & 5 | 2,214 | 2,096 | to | 2,332 |
| Total | | 3,059 | 2,729 | to | 3,389 |
| Natural | 3 | 44 | 27 | to | 61 |
| Natural | 4 & 5 | 461 | 434 | to | 488 |
| Total | | 505 | 461 | to | 549 |
| Grand Total | | 3,564 | 3,190 | to | 3,938 |
| Total to weir (80% of run trapped at weir - five year average) | | | | | |
| Hatchery | | 2,447 | 2,183 | to | 2,711 |
| Natural | | 404 | 368 | to | 440 |

Table 10. Projected spring Chinook salmon returns to Lookingglass Fish Hatchery in 2010

| Mark | Age | Total | 95%CI | | |
|---|-----|------------|------------|-----------|------------|
| Return to River | | | | | |
| Hatchery | 3 | 168 | 162 | to | 174 |
| Hatchery | 4 | 156 | 128 | to | 184 |
| Hatchery | 5 | 16 | 0 | to | 89 |
| Total | | 340 | 190 | to | 447 |
| Natural | 3 | 31 | 16 | to | 46 |
| Natural | 4 | 120 | 117 | to | 123 |
| Natural | 5 | 18 | 12 | to | 24 |
| Total | | 169 | 145 | to | 193 |
| Grand Total | | 509 | 335 | to | 640 |
| Total to weir (95% of run trapped at weir - five year average) | | | | | |
| Hatchery | | 323 | 181 | to | 425 |
| Natural | | 161 | 138 | to | 183 |

Table 11. Projected spring Chinook salmon returns to the Imnaha River in 2010.

| Mark | Age | Total | 95%CI | | |
|---|-----|--------------|--------------|-----------|--------------|
| Return to River | | | | | |
| Hatchery | 3 | 2,947 | 2,514 | to | 3,380 |
| Hatchery | 4 | 2,141 | 1,749 | to | 2,533 |
| Hatchery | 5 | 120 | 0 | to | 322 |
| Total | | 5,208 | 4,263 | to | 6,235 |
| Natural | 3 | 61 | 17 | to | 105 |
| Natural | 4 | 499 | 348 | to | 650 |
| Natural | 5 | 179 | 0 | to | 360 |
| Total | | 739 | 457 | to | 1,115 |
| Grand Total | | 5,947 | 4,720 | to | 7,350 |
| Total to weir (59% of run trapped at weir - five year average) | | | | | |
| Hatchery | | 3,073 | 2,515 | to | 3,679 |
| Natural | | 436 | 270 | to | 658 |

Appendices

APPENDIX A. PROPOSED JUVENILE SALMONID RELEASES IN THE GRANDE RONDE (GR) AND IMNAHA (IM) BASINS IN 2010

| Basin | Species | Stock | Hatchery | Number ⁽¹⁾ | Lbs | fpp | Location | In Facility | In River | Pond # ⁽²⁾ | Release Method ⁽³⁾ | Marks |
|-------|---------|--------|----------|-----------------------|---------|------|----------------------|-------------|-------------------|-----------------------|-------------------------------|--------------------------|
| GR | STS | 5609 | IR | 166,000 | 41,500 | 4.0 | Wallowa Lower Acc | Feb 22-24 | Apr 27,28 | 9*,10*,11*,*12 | Forced | 100K AdRVCWT; 100K |
| GR | STS | 5609 | IR | 166,000 | 41,500 | 4.0 | Wallowa Upper Acc | Feb 24-26 | Apr 28-29 | 13*,14*, 15*, 16 | Forced | AdLVCWT; 132K Ad only, |
| GR | STS | 5609 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Lower | Mar. 1-2 | Apr 14-15 | 17*, 19 | Forced | 25K AdLVCWT; 53K Ad |
| GR | STS | 5609 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Upper | Mar. 2-3 | Apr 15-16 | 18,20 | Forced | 78K Ad |
| IM | STS | 2909 | IR | 182,000 | 36,400 | 5.0 | Little Sheep Acc | Mar 2-4 | Mar 30–Apr 27 | 27*, 29,30,31 | Volitional | 25K AdLVCWT; 157K Ad |
| IM | STS | 2909 | IR | 50,000 | 10,000 | 5.0 | Big Sheep Cr | NA | Apr 6-9 | 32 | Direct Stream | 50K Ad only |
| GR | STS | 5609 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Lower Acc | Apr 19-20 | Apr.27-May 10 | 21, 23* | Volitional | 25K AdLVCWT; 53K Ad |
| GR | STS | 5609 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Upper Acc | Apr 20- 21 | Apr 28-May 10 | 22, 24 | Volitional | 78K Ad |
| | | | | 876,000 | 207,400 | 4.22 | | | | | | |
| GR | CHS | 80F07 | LG | 126,200 | 5,740 | 22 | Grande Ronde Acc | Mar. 8, 9 | Mar-15-Mar 22 | 7,8 | Volitional | 126K AdCWT |
| GR | CHS | 80F07 | LG | 65,000 | 2,950 | 22 | Grande Ronde Acc | Mar .23 | Mar 30 - April 13 | 5 | Volitional | 65KAdCWT |
| GR | CHS | 8007 | LG | 42,400 | 1,930 | 22 | Grande Ronde Acc | Mar .23 | Mar 30 -April 13 | 6 | Volitional | 42K CWT |
| GR | CHS | 20007 | LG | 123,300 | 5,600 | 22 | Lostine Acc | Mar. 1 | Mar 17-30 | 11, 12 | Volitional | AdCWT |
| GR | CHS | 20007 | LG | 62,000 | 2,810 | 22 | Lostine Acc | Mar. 31 | Apr 10-20 | 9 | Volitional | AdCWT |
| GR | CHS | 200F07 | LG | 62,000 | 2,820 | 22 | Lostine Acc | Apr 2 | Apr 10-20 | 10 | Volitional | CWT |
| GR | CHS | 20107 | LG | 112,000 | 5,270 | 22 | Catherine Cr Acc | Mar 15 | Mar.29- Apr 13 | 1, 2A | Volitional | 112K AdCWT VIE |
| GR | CHS | 201F07 | LG | 35,000 | 1,590 | 22 | Catherine Cr Acc | Mar 15 | Mar.29- Apr 13 | 2B, Cir C | Volitional | 35K AdCWT |
| GR | CHS | 8107 | LG | 266,000 | 12,090 | 22 | Lookingglass Creek | NA | Apr 1-14 | AHP C&D, 3, 4 | Volitional | AdCWT |
| IM | CHS | 2907 | LG | 396,000 | 18,000 | 22 | Imnaha Acc | March 10-12 | Mar. 30-Apr 14 | 13-18 | Volitional | 190K AdCWT; 206K 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 (10,12,14,16) or AdRVCWT (9,11,13,15)

⁽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 | 2009 & 2010 | 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 | 2009 | 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 | 2009 | 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 Rb brought in as eyed eggs on spring water. In addition 60 Rb will be tested for any production groups on Spring Creek or Wallowa River water. | Must be on water supply for 6 months |
| Wallowa & Little Sheep | 2010 | StS | 56 & 29 | Adult Spawners | Minimum of 60 per stock for culturable viruses (30 from returning fall 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 | 2010 | StS | 56 & 29 | Adult Mortality | -kidney smears on TYE-S agar -A minimum of 20 or all mortality less than 20 will be examined | Save fall brood mortalities as well for examination |
| Lookingglass Creek | 2010 | 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 Synopsiss 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 |
| Captive Brood 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. Innaha/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 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 | 2009 | 200W 201W 80W 29 200F 201F 80F 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 after marking in July/August 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 8109 and 201F09 fish for two consecutive days. Formalin is used under a local veterinarian prescription. Coldwater disease- Oxytetracycline or Florfenicol may be used. |
| Irrigon Hatchery | 2009 | 81 201F | 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 May/June. for 81 lot number, two feedings for 201F lot number. |
| Lookingglass Hatchery | 2008 | 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 | 2008 | | 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 2010 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 | 153,996 | 48,700 | 1 | From rcy 1 into 1 | 48,700 | 1 | 48,700 | AdCWT | CC |
| Catherine Creek | | | | 48,700 | 2 | From rcy 2 into 2 | 48,700 | 2 | 48,700 | AdCWT | CC |
| Catherine Creek | | | | 48,700 | 3 | From rcy 3 into 3 | 48,700 | 3 | 48,700 | Ad | CC |
| | | | | | | | 146,100 | | | | |
| Lookingglass/ Catherine Creek | CBS | Low/Mod | 102,400 | 90,000 | Irrigon | Irrigon to Adult C&D | 90,000 | Adult C&D | 90,000 | AdCWT | Look |
| Lookingglass | CV | Low | 98,298 | 94,000 | Irrigon | From Irrigon to Adult A & B | 94,000 | Adult A&B | 94,000 | AdCWT | Look |
| | | | | | | | 183,300 | | | | |
| U. Grande Ronde | CBS | Low | 58,285 | 52,400 | 4 | From rcy 4 into 4 | 52,450 | 4 | 52,450 | AdCWT | UGR |
| U. Grande Ronde | CV | Low | 201,555 | 63,800 | 5 | From rcy 5 into 5 | 63,800 | 5 | 63,800 | CWT | UGR |
| U. Grande Ronde | CV | Low | | 63,800 | 6 | From rcy 6 into 6 | 63,800 | 6 | 63,800 | CWT | UGR |
| U. Grande Ronde | CV | Low | | 63,800 | 7 | From rcy7 into 7 | 63,800 | 7 | 63,800 | CWT | UGR |
| | | | | | | | 243,850 | | | | |
| Lostine River | Conventional | Low | 185,407 | 58,665 | 8 | From rcy 8 to 8 | 58,665 | 8 | 58,665 | AdCWT | LR |
| Lostine River | | | | 58,665 | 9 | From rcy 9 to 9 | 58,665 | 9 | 58,665 | AdCWT | LR |
| Lostine River | | | | 58,665 | 10 | From rcy 10 to 10 | 58,665 | 10 | 58,665 | AdCWT | LR |
| Lostine River | CBS | Low | 82,200 | 74,000 | 11 | From rcy 11 into 11 | 74,000 | 11 | 74,000 | CWT | LR |
| | | | | | | | 249,995 | | | | |
| Imnaha River | Conventional | Low | 460,593 | 62,500 | 12 | From 12 into 12 | 62,500 | 12 | 62,500 | AdCWT | IM |
| Imnaha River | | | | 62,500 | 13 | From 13 into 13 | 62,500 | 13 | 62,500 | AdCWT | IM |
| Imnaha River | | | | 62,500 | 14 | From 14 into 14 | 62,500 | 14 | 62,500 | AdCWT | IM |
| Imnaha River | | | | 62,500 | 15 | From 15 into 15 | 62,500 | 15 | 62,500 | AdCWT | IM |
| Imnaha River | | | | 62,500 | 16 | From 16 into 16 | 62,500 | 16 | 62,500 | Ad only | IM |
| Imnaha River | | | | 62,500 | 17 | From 17 into 17 | 62,500 | 17 | 62,500 | Ad only | IM |
| Imnaha River | | | | 62,500 | 18 | From 18 into 18 | 62,500 | 18 | 62,500 | Ad only | IM |
| | | | | | | | 437,500 | | Total 1,260,745 | | |

Appendix G. 2010 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 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 2010 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 natural spawner numbers during low naturally-produced 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 naturally-produced 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 March 2009, and other management agreements, the following proposal details a proposed sport fishery plan including; 1) 2010 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 2010, we estimate 692 and 461 unmarked, naturally-produced Chinook salmon will return to the Wallowa-Lostine and Minam rivers, respectively (Table 1).

In recent years, standard age-class conversion methods of projecting adult returns have tended to overestimate runs. For 2010, ODFW Northeast Region fish research staff made efforts to develop new methods for projecting salmon returns that included multiple linear regression models incorporating the effects of changing ocean conditions. This new approach provided more conservative run projections, and performed better when validated with escapement data from past returns.

Allowable Sport Fishery Impact

The Grande Ronde Spring Chinook FMEP establishes criteria for implementation of sport fisheries based on expected natural 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 natural and hatchery adult numbers large enough to consider a fishery (Table 1).

Table 1. 2010 preseason spring Chinook projections by population.

| <i>Population</i> | <i>Projected Run Size</i> | | |
|---------------------------------|---------------------------|-----------------|--------------|
| | Natural | Hatchery | Total |
| Catherine Creek | 306 | 391 | 697 |
| Lookingglass Creek | 128 | 172 | 300 |
| Upper Grande Ronde River | 156 | 1,025 | 1,181 |
| Wallowa/Lostine River | 692 | 2,214 | 2,906 |
| Minam River | 461 | 0 | 461 |

At the projected run size, and as described by the FMEP, we expect a naturally-produced fish impact of approximately 13 (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 natural 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 426 hatchery fish without exceeding the designated natural 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 natural fish impact of 1.0% or 5 fish for the Minam population’s projected 461 natural fish return (Table 2). With an assumed handling mortality of 10% (per FMEP), anglers would have to handle more than 46 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 natural-origin Chinook during the season.

Proposed 2010 Fishery

- Open season:** *May 1 through July 4 (may be extended until July 11 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 (2009 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 in Imnaha River spring Chinook sport fisheries suggest success rate 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 426 adult Chinook and an incidental impact of less than 13 wild Chinook from the Wallowa-Lostine population. Our expectation is that fewer than 46 adult Minam River Chinook will be handled in the proposed fishery (resulting 5 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 natural 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:

- 355 or 39% wild adult fish spawning in the Lostine River,
- 545 or 61% hatchery adults spawning in the Lostine River,
- 32 natural and 76 hatchery adults utilized for hatchery broodstock (30% wild),
- An expected recreational harvest of 426 hatchery adults,
- An expected incidental handling mortality of 13 and 5 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 2, 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 2 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 naturally-produced 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 2010 adult spring Chinook run indicating, harvest, broodstock, fish available for outplant and other uses and resulting expected spawner compositions.

| Projections, Allocations and Predicted Results | | Wild | Hatchery | Total |
|--|---|-------------|-----------------|--------------|
| <u>Run Projections and Expected Harvest Impacts</u> | | | | |
| 1 | Projected adult run to Lostine (<i>Projections from PC&JF 12/21/09</i>) | 461 | 2,214 | 2,675 |
| 2 | Projected run to Wallowa - Lostine | 692 | 2,214 | 2,906 |
| 3 | Projected composition (Wallowa - Lostine) | 23.8% | 76.2% | 100.0% |
| 4 | Allowable Wild Impact from FMEP (Wallowa-Lostine) | 13 | | |
| 5 | Allowable Wild Impact Rate (Wallowa - Lostine) | 1.92% | | |
| 6 | Allowable Wild Fish Handle @ 10% Hooking Mortality | 133 | | |
| 7 | Resulting maximum hatchery fish sport harvest | | 426 | |
| 8 | Alternative maximum impact & harvest @ 50% of defined surplus | 28 | 882 | |
| 9 | Proposed sport harvest impact and harvest (lesser of row 7 and 8) | 1.92% | 426 | 426 |
| 10 | Anticipated Tribal Harvest (estimated here as 50% harvest share for our purposes) | 73 | 352 | 426 |
| 11 | Projected Minam River Return | 461 | 0 | 461 |
| 12 | Allowable Wild Impact from FMEP (Minam) | 4.6 | | |
| 13 | Allowable Wild Impact Rate (Minam) | 1.00% | | |
| 14 | Allowable Wild Fish Handle @ 10% Hooking Mortality | 46 | | |
| <u>Post Harvest Allocations and Predicted Results</u> | | | | |
| 15 | Post Sport Harvest Adult Escapement (Wallowa - Lostine) | 618 | 980 | 1,598 |
| 16 | Post Sport Harvest Adult Escapement (Lostine) | 388 | 980 | 1,367 |
| 17 | Escapement to Weir (0.85) | 329 | 833 | 1,162 |
| 18 | Escapement above Weir Before Weir in Place (0.2) | 66 | 167 | 233 |
| 19 | Fish Expected to Be Handled at Weir | 263 | 666 | 929 |
| 20 | Broodstock Composition Target | 30% | 70% | 100% |
| 21 | Broodstock (per AOP) | 44 | 97 | 142 |
| 22 | Post Broodstock Escapement Handled At Weir | 231 | 590 | 821 |
| 23 | Target Percentage Passed above weir | 50% | 50% | |
| 24 | Target Passed Above the Weir | 231 | 231 | 461 |
| 25 | Available for Outplanting and Other Use | na | 360 | 360 |
| <u>Spawner Composition - Lostine</u> | | | | |
| 26 | Spawning Upstream of Weir | 297 | 398 | 694 |
| 27 | Composition of Natural Spawners above Weir | 43% | 57% | 100% |
| 28 | Spawning Downstream of Weir (.15 of line 11) | 58 | 147 | 205 |
| 29 | Composition of Natural Spawners Downstream of Weir | 28% | 72% | 100% |
| 30 | Lostine River Natural Spawners | 355 | 545 | 899 |

| | | | | |
|--|---|-----|------|------|
| 31 | Composition of Lostine River Natural Spawners | 39% | 61% | 100% |
| Spawner Composition - Wallowa/Lostine | | | | |
| 32 | Natural Spawners w/ sport harvest w/o outplants & tribal harvest | 415 | 1713 | 2128 |
| 33 | Comp. of Natural Spawners w/sport harvest w/o outplants & tribal harvest | 20% | 80% | 100% |
| 34 | Natural Spawners w/o sport harvest, outplants and tribal harvest | 429 | 2138 | 2567 |
| 35 | Comp. of Natural Spawners w/o sport harvest, outplants and tribal harvest | 17% | 83% | 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.

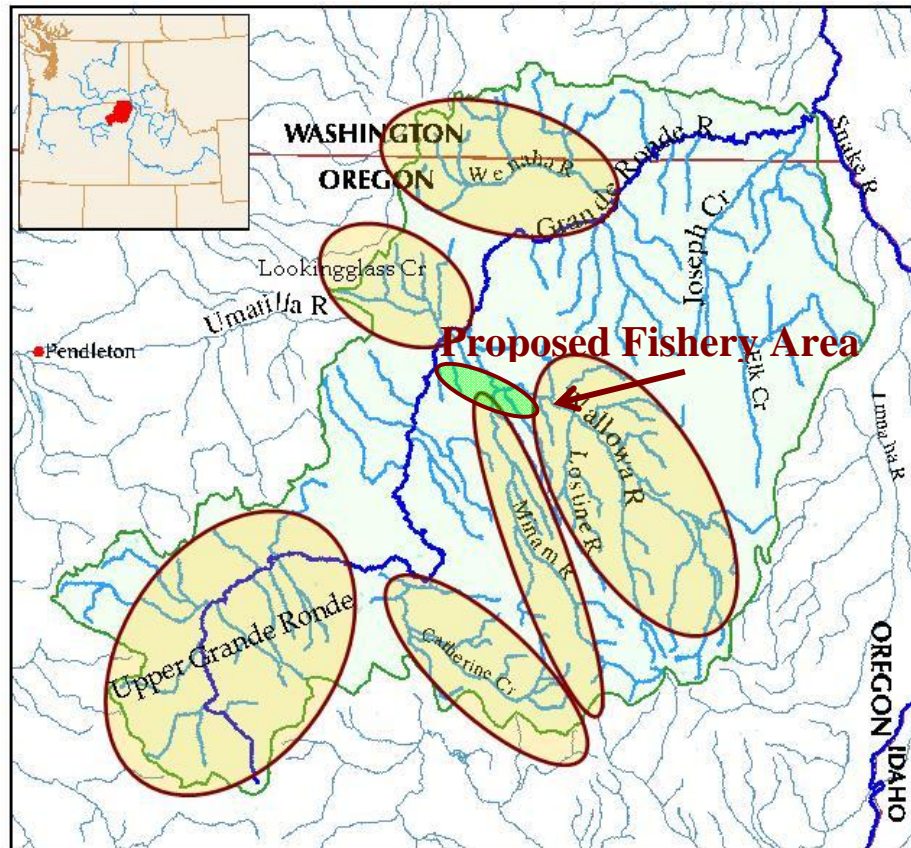


Figure 1. Map of The Grande Ronde sub-basin indicating proposed spring chinook fishery area (green) and spring Chinook population areas (yellow).

References

Oregon Department of Fish and Wildlife (ODFW). 2007. Fisheries Management and Evaluation Plan for Snake River Spring/Summer Chinook – Grande Ronde Subbasin (draft submitted to NOAA Fisheries, Oct. 2007).

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 2001-07

| 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 | |
| | 118 | 124 | 51.2 | | 3,831 | 927,148 | 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 2001-09

| 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 | |
| Total | 193 | 98 | 33.7 | | 3,952 | 1,146,910 | 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, 1997-2008

| 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 | |
| | 235 | 200 | 46.0 | | 4,448 | 1,934,887 | 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, 1990-2008.

| 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 | |
| 2009 | 73 | 75 | 33 | 34 | 31.2 | 1.02 | 4,710 | 513,432 | 437 | |

Appendix I. Coded Wire Tag (CWT) Sampling Guidelines for the 2010 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 2010, 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 agree to rotate distribution fish pick up weeks for both Lostine and Imnaha river fish: 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 2010.
- 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) Imnaha 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 Imnaha 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 Imnaha 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. On weeks that NPT is receiving fish. Captive broodstock origin fish destined for distribution will be euthanized at the weir and transported to Wallowa Hatchery in a cooler for freezing at Wallowa Hatchery and later sampling by ODFW. This will involve a small number of fish given forecasted returns of captive broodstock adults.
 - b. Post-sampled carcasses will be sent to a food bank OR provided for tribal distribution.

Appendix J. Snake River Germplasm Repository Cryopreserved Semen Request Form
Snake River Germplasm Repository Committee

Bill Young
P.O. Box 1942, 125 South Mission St
McCall, ID 83638
Phone: (208) 634-5290
Fax: (208) 634-4097

Snake River Germplasm Repository Cryopreserved Semen Request Form

Name: _____ Affiliation: _____
Phone number: (____) _____ Address: _____
Date of request: _____ Date need by: _____
Species/stock requested: _____ Hatchery or wild/natural: _____
Number of individuals: _____ Number of straws needed: _____ 0.5ml _____ 5.0ml
Reason for request (clearly demonstrate need or type of hatchery program): _____

Fertilization experience using cryopreserved semen: _____

Name, address, and phone number of person samples should be delivered to: _____

Please use additional pages as necessary.

The salmon managers of the Snake River Basin are concerned with how cryopreserved samples are being used and retain the right to refuse samples for inappropriate use of the threatened salmonid species gametes. The Nez Perce Tribe can arrange to deliver and assist in the fertilization of eggs. Please call Bill Young at the McCall Field Office (address above) to coordinate transfer. The Nez Perce Tribe also may request data on the performance of the semen (percent of eggs fertilized, post-thaw sperm motility, etc.).

Signature: _____ **Date:** _____

Appendix K. Adult Chinook Fish Health Monitoring Plan & Disease Treatments at Lookingglass Hatchery in 2010

| 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 | 2010 | 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 L. 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 2010

| 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 M. Innaha and Grande Ronde Broodstock Antibiotic Injection Protocols
Modified by Sam Onjukka for 2010
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 veterinarian Dr. Collin Gillin 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 MWI veterinary supply. Orders must be placed ASAP via email to Craig Banner (bannerc@onid.orst.edu) who will pass along to state veterinarian Dr. Colin Gillin.

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

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 2010, if needed.

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 N. Draft Lookingglass Creek Management Guidelines

Management Guidelines

ODFW proposes aggressive weir management guidelines to expedite adult escapement (Table 1). The intent is to use the hatchery resource is to magnify adult numbers to provide 1) broodstock (170 spawners) to become self-sufficient, 2) escapement of 450 adults above the hatchery, and 3) non-tribal harvest when escapement predictions exceed 620 adults.

The longer-term objective is to modify weir management guidelines to transition escapement above Lookingglass Hatchery and broodstock to naturalized adults.

Table 1. Proposed longer term adults weir management guidelines for the Lookingglass Creek.

| Estimated adult escapement to Lookingglass creek ^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 | % of adults released above the weir can be of hatchery origin | Minimum % of broodstock of natural origin | % known Strays allowed above the weir |
|---|--|--|---|---|---|---------------------------------------|
| ≤300 (below) | Any | 50 | na | na | na | ≤5 |
| 301-449 | Any | 50 | ≤50 | any | any | ≤5 |
| 450-619 | Any | 25 | ≤35 | any ^b | 50 | 0 |
| ≥620 ^c | Any | | | | | |

^a pre-season or adjusted season estimate for total escapement

^b Not to exceed 450 total hatchery and natural fish, but no limit on natural adults if they exceed 450

^c Selective sport harvest threshold

Note: CTUIR is not in agreement with long term plans

In the near term or until there is an established Lookingglass Creek population; collections will be based on the following agreement:

| Adults available (swim-ins and CC surplus) | Percent to | |
|---|------------|------|
| | Pass | Keep |
| 150 | 67 | 33 |
| 200 | 58 | 42 |
| 250 | 53 | 47 |
| 300 | 50 | 50 |

>300 adjustments based on brood needs.

Appendix O. 2010 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 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 ODFW developed a Fishery Management and Evaluation Plan (FMEP) for Imnaha River spring Chinook and submitted it to NOAA Fisheries in March 2009. Early projections suggest that the 2010 spring Chinook escapement to the Imnaha River will exceed 2,600 adult fish. The projected natural 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 natural 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 and as naturally produced 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 March 2009 and other management agreements, the following proposal details a 2010 Imnaha River spring Chinook sport fishery plan including: 1) 2010 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.

Run Projections

Oregon Department of Fish and Wildlife (ODFW) Northeast Region staff expects a relatively large return of ESA-listed spring/summer Chinook salmon to the Imnaha River in 2010. In recent years, standard age-class conversion methods of projecting adult returns have tended to overestimate runs. For 2010, ODFW Northeast Region fish research staff made efforts to develop new methods for projecting salmon returns that included multiple linear regression models incorporating the effects of changing ocean conditions. This new approach provided more conservative run projections, and performed better when validated with escapement data from past returns.

Initial projections suggest a run heavily weighted toward hatchery fish, including 2,261 marked hatchery adults. Unmarked, naturally-produced adults are expected to number 678 (Table 2). For comparison, traditional age-class conversion methods would have predicted 10,900 hatchery and 871 naturally-produced adults returning in 2010. Therefore, using the revised projection methods proposes a much more conservative fishery, and resulting impact limits, for 2010. The viability threshold, as described by the Interior Columbia Technical Recovery Team (ICTRT), is 1,000 unmarked naturally-produced adults.

Allowable Sport Fishery Impact

FMEP guidelines provide for an allowable sport fishery impact of 11 natural fish or 1.59% of the run. Given: (1) the relationship between natural and hatchery run components, (2) an assumption that natural and hatchery fish will be caught at comparable rates, and (3) the 10% handling mortality for natural fish handled in the fishery (FMEP), the sport fishery could harvest up to 359 hatchery fish without exceeding the designated natural impact level (Table 1).

Table 1. Imnaha River adult Spring Chinook run projections, proposed allocations (indicating maximum expected sport harvest rate on hatchery fish) and expected outcomes for 2010.

| Projections, Allocations and Predicted Results | | Wild | Hatchery | Total |
|--|---|-------|----------|--------|
| <u>Run Projections and Expected Harvest Impacts</u> | | | | |
| 1 | Projected adult run (<i>from ODFW northeast fish research 12/28/09</i>) | 678 | 2,261 | 2,939 |
| 2 | Projected composition | 23.1% | 76.9% | 100.0% |
| 3 | Allowable Wild Impact from FMEP | 10.77 | | 10.77 |
| 4 | Allowable Wild Fish Handle @ 10% hooking mortality | 108 | | 107.7 |
| 5 | Allowable Wild Impact Rate | 1.59% | | |
| 6 | Resulting maximum hatchery fish harvest | | 359 | |
| 7 | Maximum hatchery fish harvest as 50% of defined surplus | | 752 | |
| 8 | Proposed sport harvest impact (lesser of row 6 and 7) | 11 | 359 | 370 |
| 9 | Anticipated Tribal Harvest (estimated here as 50% harvest share for our purposes) | 85 | 285 | 370 |
| <u>Post-Harvest Allocations</u> | | | | |
| 10 | Post Harvest Adult Escapement | 582 | 1,617 | 2,199 |
| 11 | Escapement to Weir (.75 of line 10) | 436 | 1,213 | 1,649 |
| 12 | Escapement above Weir Before Weir in Place (.35 of line 11) | 153 | 425 | 578 |
| 13 | Fish Expected to Be Handled at Weir (.65 of line 11) | 283 | 788 | 1,071 |
| 14 | Broodstock Composition Target | 30% | 70% | 100% |
| 15 | Broodstock (per AOP) | 65 | 151 | 216 |
| 16 | Post Broodstock Escapement At Weir | 218 | 637 | 855 |
| 17 | Target Wild Percentage Passed above weir | 50% | | |
| 18 | Passed Above the Weir | 218 | 218 | 436 |
| 19 | Available for Outplant or Other Use | na | 419 | 419 |
| 20 | To Big Sheep Creek (≤ 300 fish) | na | 300 | 300 |
| 21 | Available for Alternative Use | na | 119 | 119 |
| <u>Spawner Composition w/ Tribal and Sport Harvest</u> | | | | |
| 22 | Spawning Upstream of Weir | 371 | 643 | 1,014 |
| 23 | Composition of Natural Spawners above Weir | 36.6% | 63.4% | 100.0% |
| 24 | Spawning Downstream of Weir (.273 of line 11) | 145 | 404 | 549 |
| 25 | Composition of Natural Spawners Downstream of Weir | 26.4% | 73.6% | 100.0% |
| 26 | Imnaha River Natural Spawners (w/o B. Sheep) | 516 | 1,047 | 1,563 |

| | | | | |
|----|---|-------|-------|--------|
| 27 | Composition of Imnaha River Natural Spawners (w/o B. Sheep) | 33.0% | 67.0% | 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 11 and 433 unmarked, naturally-produced Chinook salmon were handled in sport fisheries from 2001 to 2009, resulting in a mean handle rate of 7.6% (range: 1.7-19.5%, Table 2). With an assumed handling mortality of 10%, impacts for naturally-produced fish from 2001-2009 ranged from 0.2% to 1.9% with a mean of 0.8% (Table 2).

The relatively higher handle rate observed in 2001 (1.9%) 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. Since 2001, flow conditions during the Chinook fishery have been normal, and resulted in much lower harvest and handle rates for hatchery and naturally-produced fish, respectively (Table 2). Estimated harvest of marked hatchery Chinook ranged from 10 to 302 fish during 2001-2009 fisheries (impact range: 0.6-14.2%, Table 2).

Table 2. Imnaha River spring Chinook sport fisheries impact for years 2001 through 2009. Adult abundance did not support sport harvest in 2006 and 2007.

| Year | Sport Season | Escapement to River ¹ (H/W) ² | Harvest (95% CI) (H) | Released (95%CI) | | Impact ³ | |
|------|--------------|---|----------------------|------------------|---------------|---------------------|----------|
| | | | | (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 | 10 (0-52) | 0 | 11 (0-47) | 1 | 0.6/0.4 |

¹ J. Feldhaus, ODFW, personal communication 12/28/09

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 2010 Fishery

Consistent with hatchery program goals, FEMP criteria, and existing management agreements, ODFW proposes a 2010 Imnaha River spring Chinook sport fishery.

Open season: May 1 – July 4 (may be extended until July 11 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 (2010 Oregon Sport Fishing Regulations. www.dfw.state.or.us)

Expected Outcomes

As a result of flow and access issues affecting angler success during at least portions of the proposed fishery, we expect a hatchery fish harvest of less than 359 marked hatchery-origin Chinook salmon and an incidental impact of less than 11 unmarked naturally-produced Chinook salmon from the Imnaha population.

Following recently modified draft HGMP guidelines we plan to allow hatchery fish above the Gumboot weir at a one hatchery fish to one natural 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:

- 516 or 33% wild adult fish spawning in the Imnaha River,
- 1,047 or 67% hatchery adults spawning in the Imnaha River,
- 300 hatchery spawners outplanted to Big Sheep Creek,
- 65 natural and 151 hatchery adults utilized for hatchery broodstock (30% wild),
- a recreational harvest of less than 359 hatchery adults,
- an incidental handling mortality of less than 11 wild adults

We also expect some level of tribal harvest according to the Nez Perce Tribe TRMP

To give us an indication of potential (but unlikely provided normal flow conditions) maximum fishery impacts, we reviewed weekly catch data from the 2001-2005 fisheries. Maximum one-week harvest rate observed in those fisheries was 4.0% in 2001. At 4.0% we estimate at most, 90 adult hatchery Chinook would be harvested and 27 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 3 unmarked fish. With the projected return of naturally-produced adults, the fishery could persist for almost four weeks in 2010 at maximum observed exploitation without exceeding FMEP impact limits for naturally-produced Chinook.

In addition to incidental hooking and handling of naturally-produced Chinook we expect 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 2001-2009 fisheries when between 53 to 321 bull trout (mean = 170/year) were caught and released. During the past 7 fisheries from 2001-2009, 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 viable levels as projected for 2010. Given the large numbers of hatchery Chinook expected in 2010, 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, 2008 and 2009 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 naturally produced 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.

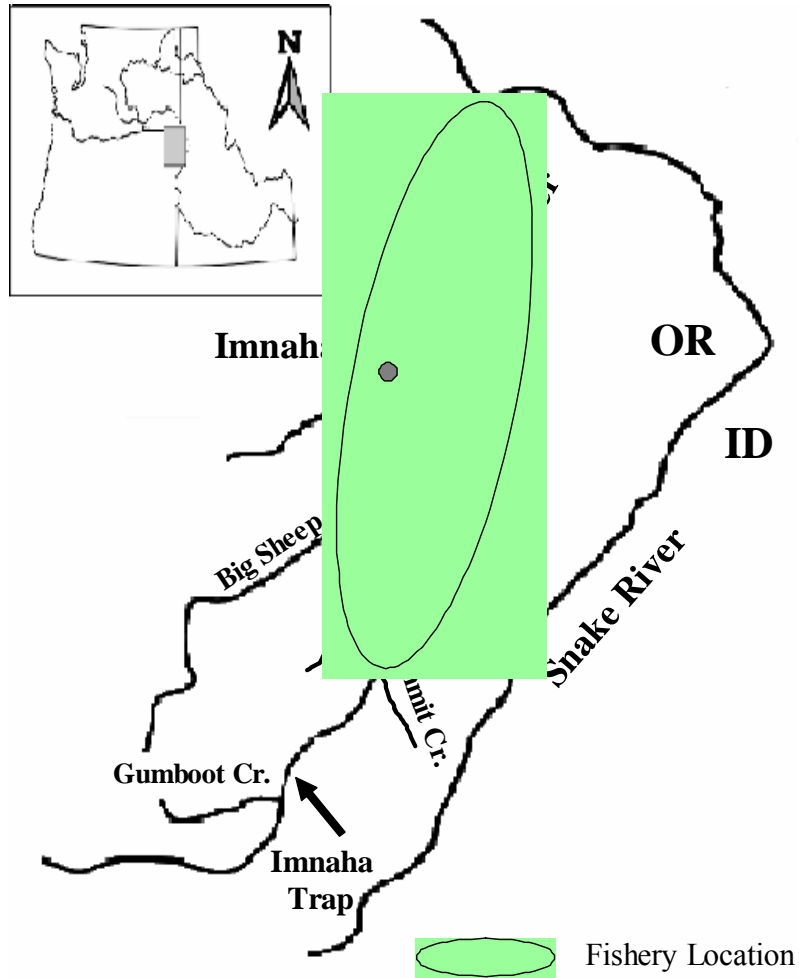


Figure 1. Map of the Imnaha River indicating boundaries of the proposed 2008 spring Chinook sport fishery.

References

- Beamesderfer, R.C.P., H.A. Schaller, M.P. Zimmerman, C.E. Petrosky, O.P. Langness, and L. LaVoy. 1997. Spawner-recruit data for spring and summer Chinook salmon populations in Idaho, Oregon, and Washington. Review Draft developed for PATH Project. July, 1997.
- Feldhaus, Joseph. Oregon Department of Fish and Wildlife, personnel communication.
- Oregon Department of Fish and Wildlife (ODFW). 2001. Fisheries management and evaluation plan, upper Willamette River spring Chinook in freshwater fisheries of the Willamette basin and lower Columbia River mainstem. Final Draft, February, 2001.
- Oregon Department of Fish and Wildlife (ODFW). 2007. Fisheries Management and Evaluation Plan for Snake River Spring/Summer Chinook – Imnaha Subbasin (draft submitted to NOAA Fisheries, March 2009).

Appendix P. Preliminary CTUIR data from Catherine Creek releases between 1998 and 2008 summarized by ODFW.

| <u>Brood Year</u> | <u>Release Year</u> | <u>Release Type</u> | <u>Number</u> | <u>Return Years</u> | | | <u>Total Return</u> | <u>SAR Percent</u> |
|-------------------|---------------------|---------------------|---------------|---------------------|-------------|-------------|---------------------|--------------------|
| 1998 | 2000 | Conventional | 0 | <u>2001</u> | <u>2002</u> | <u>2003</u> | - | - |
| | | Captive | 38,149 | 157 | 205 | 57 | 419 | 1.10 |
| | | Natural-Redds | 34 | 46 | 190 | 192 | 428 | |
| 1999 | 2001 | Conventional | 0 | <u>2002</u> | <u>2003</u> | <u>2004</u> | - | - |
| | | Captive | 136,833 | 19 | 200 | 19 | 230 | 0.174 |
| | | Redds-40 | Adults | 17 | 60 | 8 | 85 | |
| 2000 | 2002 | Conventional | 0 | <u>2003</u> | <u>2004</u> | <u>2005</u> | - | - |
| | | Captive | 180,343 | 78 | 570 | 24 | 672 | 0.373 |
| | | Redds-34 | Adults | 2 | 45 | 6 | 53 | |
| 2001 | 2003 | Conventional | 24,392 | <u>2004</u> | <u>2005</u> | <u>2006</u> | 52 | 0.213 |
| | | Captive | 105,292 | 39 | 89 | 2 | 130 | 0.123 |
| | | Redds-133 | Adults | 2 | 40 | 4 | 46 | |
| 2002 | 2004 | Conventional | 70,071 | <u>2005</u> | <u>2006</u> | <u>2007</u> | 166 | 0.237 |
| | | Captive | 91,791 | 9 | 71 | 18 | 98 | 0.107 |
| | | Redds-158 | Adults | 3 | 109 | 32 | 144 | |
| 2003 | 2005 | Conventional | 120,753 | <u>2006</u> | <u>2007</u> | <u>2008</u> | 83 | .069 |
| | | Captive | 68,827 | 2 | 73 | 8 | 83 | .121 |
| | | Redds-167 | Adults | 12 | 42 | 12 | 66 | |
| 2004 | 2006 | Conventional | 23,216 | <u>2007</u> | <u>2008</u> | <u>2009</u> | 42 | 0.181 |
| | | Captive | 45,604 | 28 | 108 | 4 | 140 | 0.307 |
| | | Redds-96 | Adults | 6 | 77 | 27 | 110 | |
| 2005 | 2007 | Conventional | 49,783 | <u>2008</u> | <u>2009</u> | <u>2010</u> | 237 | 0.476 |
| | | Captive | 21,647 | 4 | 25 | | 29 | 0.134 |
| | | Redds-74 | Adults | 5 | 98 | | 103 | |
| 2006 | 2008 | Conventional | 116,882 | <u>2009</u> | <u>2010</u> | <u>2011</u> | | |
| | | Captive | 0 | 0 | | | | |
| | | Redds-117 | Adults | 52 | | | | |
| 2007 | 2009 | Conventional | 138,854 | <u>2010</u> | <u>2011</u> | <u>2012</u> | | |
| | | Captive | 0 | | | | | |

| | | Redds-59 | Adults | <u>2011</u> |
|------|------|--------------|---------|-------------|
| 2008 | 2010 | Conventional | 111,000 | |
| | | Captive | 35,000 | |
| | | Redds-101 | Adults | |

Appendix Q. Preliminary CTUIR data from Upper Grande Ronde releases between 1998 and 2008 summarized by ODFW.

| <u>Brood Year</u> | <u>Release Year</u> | <u>Release Type</u> | <u>Number</u> | <u>Adults Return Years</u> | | | <u>Total Return</u> | <u>SAR Percent</u> |
|-------------------|---------------------|----------------------------|---------------|----------------------------|-------------|-------------|---------------------|--------------------|
| | | | | <u>2001</u> | <u>2002</u> | <u>2003</u> | | |
| 1998 | 2000 | Conventional | 0 | | | | | |
| | | Captive | 1,508 | 0 | 3 | 4 | 7 | 0.4642 |
| | | Natural-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 | 0.4688 |
| | | Natural-Redds ¹ | 0 | 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 | 0.2758 |
| | | Natural-Redds | 20 | 3 | 43 | 10 | 56 | |
| | | | | <u>2004</u> | <u>2005</u> | <u>2006</u> | | |
| 2001 | 2003 | Conventional | 26,923 | 12 | 95 | 0 | 107 | 0.3974 |
| | | Captive ⁴ | 210,113 | 73 | 276 | 7 | 356 | 0.1694 |
| | | Natural-Redds | 15 | 6 | 12 | 3 | 21 | |
| | | | | <u>2005</u> | <u>2006</u> | <u>2007</u> | | |
| 2002 | 2004 | Conventional | 69,856 | 9 | 144 | 11 | 164 | 0.2348 |
| | | Captive | 75,063 | 0 | 1 | 0 | 1 | 0.0013 |
| | | Natural-Redds ¹ | 23 | 0 | 51 | 13 | 64 | |
| | | | | <u>2006</u> | <u>2007</u> | <u>2008</u> | | |
| 2003 | 2005 | Conventional ⁵ | 104,350 | 2 | 35 | 4 | 41 | 0.0393 |
| | | Captive | 1,019 | 0 | 0 | 0 | 0 | 0.0000 |
| | | Natural-Redds | 40 | 4 | 23 | 6 | 33 | |
| | | | | <u>2007</u> | <u>2008</u> | <u>2009</u> | | |
| 2004 | 2006 | Conventional | 18,901 | 17 | 20 | 26 | 63 | 0.3333 |
| | | Captive | 76 | 0 | 0 | 0 | 0 | 0.0000 |
| | | Redds-186 | | 0 | 57 | 28 | 85 | |
| | | | | <u>2008</u> | <u>2009</u> | <u>2010</u> | | |
| 2005 | 2007 | Conventional | 118,803 | 174 | 180 | | 354 | |
| | | Captive | 20,620 | 21 | 29 | | 50 | |
| | | Redds ¹ - 91 | Adults | 15 | 61 | | 76 | |
| | | | | <u>2009</u> | <u>2010</u> | <u>2011</u> | | |
| 2006 | 2008 | Conventional | 259,932 | 342 | | | | |
| | | Captive | 0 | 0 | | | | |
| | | Redds ¹ - 28 | Adults | 13 | | | | |
| | | | | <u>2010</u> | <u>2011</u> | <u>2012</u> | | |
| 2007 | 2009 | Conventional | 94,148 | | | | | |
| | | Captive | 52,500 | | | | | |
| | | Redds ¹ - 1 | Adults | | | | | |
| | | | | <u>2011</u> | <u>2012</u> | <u>2013</u> | | |
| 2008 | 2010 | Conventional | 42,000 | | | | | |
| | | Captive | 191,000 | | | | | |
| | | Redds ¹ - 32 | Adults | | | | | |
| | | | | <u>2012</u> | <u>2013</u> | <u>2014</u> | | |
| 2009 | 2011 | Conventional | 190,500 | | | | | |
| | | Captive | 52,500 | | | | | |

| | | Redds ¹ - | Adults | <u>2013</u> | <u>2014</u> | <u>2015</u> |
|------|------|----------------------|--------|-------------|-------------|-------------|
| 2010 | 2012 | Conventional | | | | |
| | | Captive | 0 | | | |
| | | Redds ¹ - | 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 R. Data is under review: Preliminary juvenile abundance and adult return data, and smolt-to-adult return rates for Lostine River Chinook salmon as estimated by NPT. Hatchery smolt-to-adult return rates were based on estimates of total tributary escapement and does not account for in-river post release mortality. Natural smolt abundance estimates were provided by ODFW (unpublished data) and were calculated using escapement above the weir/screw trap.

Appendix S. Preliminary data from Imnaha River releases between 1982 and 2009.

| Brood Year | Release Year | Release Type | Number | Returns | | | Total Return | SAR Percent |
|-----------------------|-------------------------|---------------------------|---------------------|----------------|--------------|--------------|-------------------------|------------------------|
| | | | | Age 3 | Age 4 | Age 5 | | |
| 1982 | 1984 | Conventional | 24,920 | 156 | 48 | 4 | 208 | 0.713 |
| | | Natural-Redds | 129 | 358 | 704 | 147 | 1,209 | |
| 1983 | 1985 | Conventional | 59,578 ¹ | 24 | 18 | 38 | 80 | 0.134 |
| | | Natural-Redds | 95 | 77 | 406 | 580 | 1,063 | |
| 1984 | 1986 | Conventional | 35,035 | 55 | 40 | 16 | 111 | 0.3168 |
| | | Natural-Redds | 119 | 14 | 129 | 154 | 297 | |
| 1985 | 1987 | Conventional | 123,530 | 101 | 96 | 9 | 206 | 0.1668 |
| | | Natural-Redds | 462 | 40 | 189 | 81 | 310 | |
| 1986 | 1988 | Conventional | 199,066 | 183 | 269 | 46 | 498 | 0.2502 |
| | | Natural-Redds | 284 | 59 | 184 | 97 | 340 | |
| 1987 | 1989 | Conventional | 142,320 | 69 | 228 | 65 | 362 | 0.2544 |
| | | Natural-Redds | 183 | 15 | 133 | 91 | 239 | |
| 1988 | 1990 | Conventional ² | 249,793 | 436 | 928 | 767 | 2,131 | 0.853 |
| | | Natural-Redds | 237 | 19 | 150 | 363 | 532 | |
| 1989 | 1991 | Conventional | 398,909 | 100 | 491 | 102 | 693 | 0.174 |
| | | Natural-Redds | 116 | 18 | 138 | 72 | 228 | |
| 1990 | 1992 | Conventional | 262,586 | 24 | 64 | 12 | 100 | 0.0381 |
| | | Natural-Redds | 115 | 6 | 66 | 7 | 79 | |
| 1991 | 1993 | Conventional | 157,659 | 12 | 76 | 12 | 100 | 0.063 |
| | | Natural-Redds | 178 | 2 | 95 | 35 | 132 | |
| 1992 | 1994 | Conventional | 271,353 | 102 | 94 | 9 | 205 | 0.076 |
| | | Natural-Redds | 240 | 140 | 289 | 51 | 480 | |
| 1993 | 1995 | Conventional ³ | 590,069 | 91 | 446 | 212 | 749 | 0.127 |
| | | Natural-Redds | 468 | 14 | 134 | 144 | 292 | |
| 1994 | 1996 | Conventional | 91,240 | 9 | 61 | 5 | 75 | 0.082 |
| | | Natural-Redds | 154 | 7 | 81 | 59 | 147 | |
| 1995 | 1997 | Conventional | 50,911 | 119 | 682 | 24 | 825 | 1.620 |
| | | Natural-Redds | 60 | 24 | 198 | 48 | 270 | |
| 1996 | 1998 | Conventional | 93,108 | 876 | 573 | 153 | 1,602 | 1.721 |
| | | Natural-Redds | 136 | 67 | 305 | 288 | 660 | |

| Brood Year | Release Year | Release Type | Number | Returns | | | Total Return | SAR Percent |
|-------------------|---------------------|---------------------|---------------|----------------------|----------------------|--------------------|---------------------|--------------------|
| | | | | Age 3 | Age 4 | Age 5 | | |
| 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 | |
| | | Natural-Redds | 349 | 116 | 221 | | 337 | |
| 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.