

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

**FOR THE PERIOD OF
JANUARY 1 – DECEMBER 31, 2009**

**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 3, 2009**

In Attendance December 9, 2008 pre-AOP: CTUIR (Boe, Crump, McLean), ODFW (Bailey, D. Eddy, Elmore, Feldhaus, Flesher, Gribble, Harrod, Hoffnagle, Jonasson, Knox, Onjukka, Patterson, Warren, Woods), NPT (Cleary, Harbeck, Sealey, Vogel, Zollman)

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Steelhead (*Oncorhynchus mykiss*)

I. Summer Steelhead - 2008 Brood Year (Grande Ronde & Imnaha basins)

This is the first 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 874,000 fish weighing 187,620 pounds. A total of 682,000 are Wallowa stock transferred at 4.5fpp. Wallowa fish will be acclimated at the Wallowa and Big Canyon facilities and released both with an early group and late group component. A total of 192,000 are Little Sheep stock transferred at 5fpp. The Little Sheep stock will be acclimated in the Little Sheep facility and also 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 370,000 smolts will be released from the Wallowa acclimation site, 258,000 in the early group and 112,000 in the late group.

| Early Group: Approximately 258,000 smolts will be released after 5 to 7 weeks of acclimation | | | |
|--|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| Lower Acclimation Pond | February 17-19 | April 12-Su | The screens in the lower sections will be pulled on April 12 allowing fish to leave for 24 hours. On April 13, the remaining fish will be forced out of the lower section |
| | | April 13-M | |
| Upper Acclimation Pond | February 19-20 | April 13-M | The screens in the upper sections will be pulled on Monday allowing fish to leave for 24 hours. On April 14, the remaining fish will be forced out of the lower section |
| | | April 14-T | |
| Note: Approximately 75,000 smolts released will be used for fall brood evaluations. | | | |

| Late Group: Approximately 112,000 smolts will be released after 1 to 3 weeks of acclimation. | | | |
|--|------------------|---------------|--|
| Location | Transfer in date | Release dates | Comments |
| Lower Acclimation Pond | April 15-16 | April 25-Sa | The screens in the lower section will be pulled on April 25 allowing fish to leave for 5 days. On May 7, the remaining fish will be forced out of the upper and lower sections |
| | | May 7-Th | |
| Note: Approximately 25,000 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 | Feb. 23-24 | April 15-W | The screens in the lower 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-Th | |
| Upper Acclimation Pond | Feb. 25-26 | April 16-Th | The screens in the upper sections will be pulled on April 16 allowing fish to leave for 24 hours. On April 17, the remaining fish will be forced out of the lower section |
| | | April 17-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 20-21 | April 28 - T | The screens in the lower section will be pulled on April 28 allowing fish to leave for 13 days. On May 11, the remaining fish will be forced out. |
| | | May 11 - M | |
| Upper Acclimation Pond | April 21-22 | April 29-W | The screens in the upper section will be pulled on April 29 allowing fish to leave for 12 days. On May 11, the remaining fish will be forced out. |
| | | May 11 - M | |
| Note: Prior to May 11 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 192,000 smolts will be released in the Little Sheep and Big Sheep tributaries, 146,000 acclimated in Little Sheep and 46,000 direct stream released in Big Sheep

| Acclimation. Approximately 146,000 smolts will be released after 5 to 8 weeks of acclimation. | | | |
|---|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| Acclimation Pond | March 2-4 | March 31-T | Screens will be pulled on March 31 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 28 release date. |
| | | April 28 - 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 46,000 smolts will be released directly into Big Sheep April 6-10. 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 2009

Comparative survival studies (CSS) was initiated for steelhead with 14,000 PIT fish released in 2009 (Table 5). PIT released fish are randomly selected from the marked population.

- a. Wallowa**
 - 100,000 Ad, RV, CWT
 - 100,000 Ad, LV, CWT
 - 170,000 Ad only
 - 8,900 PIT
 - 3,800 PIT CSS
- b. Big Canyon marks include:**
 - 50,000 Ad, LV, CWT
 - 262,000 Ad only
 - 6,800 PIT
 - 3,200 PIT CSS
- c. Little Sheep**
 - 121,000 Ad only
 - 25,000 Ad, LV, CWT
 - 11,500 PIT
 - 5,400 PIT CSS
- d. Big Sheep (direct release) marks include:**
 - 46,000 Ad only
 - 3,500 PIT
 - 1,600 PIT CSS

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

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

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

E. Satellite Operation—Wallowa 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 Keniry (ODFW) and Michaels (NPT) of steelhead releases

2. ODFW (Woods) will notify juvenile trapping personnel – NPT- (Michaels (432-2507), Young (208-634-5240) of any change in the Big Sheep direct stream smolt releases.

II. Summer Steelhead -2009 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 2010. 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 1,147,500 green eggs to produce 1,027,013-eyed eggs (89.5% survival green to eyed eggs). Transfer 1,027,013-eyed eggs to Irrigon Hatchery to produce 800,000 smolts (77.9% survival eyed eggs to smolt).

C. 2009 Adult Collection

1. Predicted Run (Table 3)

- Marked –3,673
- Unmarked – 91
- Total – 3,764

a. Wallowa Hatchery –

- Marked –2,430 (815 – 4,045 95% CI)
 - 1,631 1:1-salt; 776 1:2-salt; 20 2:1-salt; 3 2:2-salt.

b. Big Canyon Satellite –

- Marked –1,243 (212-2,275 95% CI)
 - 814 1:1-salt; 422 1:2-salt; 7 2:1 salt.
- Unmarked – 91 (48-143 95% CI)
 - 29 2:1-salt; 22 2:2-salt, 25 3:1 salt; 15 others
- Total – 1,334

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 3,147 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 Smith (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 10, 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 13 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. All adults marked AdLV or AdRV will not be released and sampled for CWT recovery. Surplus hatchery fish will be outplanted, recycled or transferred to ponds at Wallowa Hatchery for disposition.

3) *Re-cycle fish*--Starting in late February and continuing through 11 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 Smith (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 otoliths or head from moribund or dead unmarked steelhead and pass live fish downstream.

E. Hatchery Broodstock/Collection Guidelines

1. Wallowa Hatchery- All 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 450 adults should be spawned to meet production goals.

- Males – 225 (180 Ad and 45 RV)
 - Females – spawn 225 (180 Ad and 45 RV).
- Pre-spawning mortality of spring-collected adults is estimated at 1 % for females and 2.0% for males. The five-year average fecundity is 5,100 eggs per female.

2. Wallowa Hatchery Spawning Guidelines

a. Expected 1st Spawn – Wednesday, March 11.

b. Spawning Dates – Wednesday.

- March 11 – 19 females (15 Ad and 4 RV)
- March 18 – 33 females (27 Ad and 6 RV)
- March 25 -- 42 females (33 Ad and 9 RV)
- April 1 -- 42 females (33 Ad and 9 RV)
- April 8 -- 41 females (33Ad and 8 RV)
- April 15 -- 31 females (25 Ad and 6 RV)
- April 22 – 17 females (14 Ad and 3 RV)

If 9 females not ripe on March 11, no fish will be spawned for production. The first spawning day will be postponed until March 18 and production will be comprised from only six egg takes. The total of 225 females will be spawned. In 2010 will considered reducing spawning events to 5 egg takes.

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 seven egg takes. The first egg take will be delayed until March 11.

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, 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
- 5,300 PIT plus
- 2,100 PIT CSS
- 100,000 Ad, RV, CWT (Early Brood)
 - 75,000 AdRV first acclimation
 - 25,000 AdRV second acclimation
- 60,000 AdRV
- 5,300 PIT
- 2,100 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.

III. Summer Steelhead - 2009 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 2010 with >16% 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 – 2,048 (980 - 3,116 95% CI);
 - 1,567 1:1-salt; 460 1:2-salts; 19 2:1-salts; 2 3:1-salts
- Unmarked – 131 (30 to 232 95% CI)
 - 70 2:1-salt and 26 2:2-salts; 26 3:1-salts; 9 others

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.

b. Disposition of Trapped Fish

1) *Wild* – 1 of 5 males and 1 of 6 females will be taken for brood (total wild fish collected is estimated at 51 males and 80 females). Wild composition in hatchery brood is estimated at 16%. The other wild adults collected will be 1-LOP and placed above the weir. Number wild fish released above the weir is estimated at 109 fish with a wild composition of 43.2% for natural spawning.

2) *Hatchery* – For males, 1 of 11 will be collected for brood, 1 of 11 marked with 1-LOP and placed above the weir, and 9 of 11 marked with 2-LOP and out planted to Big Sheep or given to the local food bank.. For females, 1 of 20 will be collected for broodstock, 1 of 20 marked with 1-LOP and released above the weir, and 18 of 20 marked with 2-LOP out planted to Big Sheep or given to the local food bank. 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. Number hatchery fish released above the weir is estimated at 141 fish with a hatchery composition of 56.8% to natural spawners.

3) *Bull Trout* – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Send summary to Smith (ODFW) and Krakker (USFWS).

4) *Residual Steelhead* – Count and sample all residuals weekly until first smolt release, take snouts from all AdLV's and euthanize all Ad only.

5) *Genetics tissue samples*. All wild and hatchery fish passed above the weir will be tissue sampled for genetic analysis by ODFW (for NMFS).

6) *Big Sheep out plants*. Approximately 1,800 adults are surplus Little Sheep. Fish can be transferred to Big Sheep or given to local food banks. Outplants will be identified with 2-LOP. Outplants can be discontinued after May 10 if < 2 fish per week are collected. Fish captured after May 10 may be released above the weir.

7) *Surplus fish maybe used for local food bank*.

8) *Fallback or Recaptured Fish* -All recaptured Big Sheep (2-LOP) and Little Sheep (1-LOP) fish will be counted and released in their target stream at recapture and subsequent recaptures.

9) *Carcass Disposal*-Spawned fish and mortalities will be placed in a landfill.

10) *Strays* – All unidentified marked fish will be sacrificed.

11) *Scales*—Samples will be collected from all wild adults.

E. Collection Guidelines—Adults returning to Little Sheep trap will have a variety marks. Summary of marks include:

| Mark | Disposition |
|--------------------------|--------------------------------------|
| Ad | Out plant or pass above the weir |
| AdLV+CWT | Out plant, pass above weir, or spawn |
| No Mark+CWT (blank wire) | Out plant or pass above weir |
| No Mark wild | Spawn or pass above weir |
| No Mark hatchery | Out plant or pass above weir |
| AdRV (out of basin) | Kill not spawn (recover CWT) |

* Check all no marks for 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.

1. Broodstock Needs-

- Males –69 collected (67 spawned)
- Females –68 collected (67 spawned)

Broodstock numbers were determined based on a 5-year average of pre-spawning mortality (1.0% females; and 2.0% males) and mean fecundity of 4,750.

a. Wild broodstock–10 males and 13 females needed for brood. Approximately 108 wild fish will be released above Little Sheep weir.

b. Hatchery broodstock–59 males and 56 females are needed for brood. Approximately 142 adults will be released above the Little Sheep weir.

F. Spawning Guidelines

1. Little Sheep Satellite

a. First Spawn - March 17.

b. Expected Spawning Frequency – Weekly on Tuesdays and/or Thursdays.

2. 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.

G. 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.

H. Rearing Program

Embryos will be hatched and fish reared at Irrigon Hatchery.

1. 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.

2. Grade – No Little Sheep stock will be graded.

3. Excess production - Fish in excess of program needs will be reared to smolts and incorporated with the Little Sheep Creek release.

I. Fish Health - Monitoring Plans

- 1. Broodstock** monitoring plan (Appendix B)
- 2. Disinfection** and Sanitation Guidelines (Appendix C).

J. Monitoring & Evaluation

1. Proposed marking includes:

a. Little Sheep:

- 25,000 Ad, LV, CWT
- 140,000 Ad only
- 11,500 PIT

- 5,400 PIT CSS
- b. Big Sheep** (direct release):
 - 50,000 Ad only
 - 3,500 PIT
 - 1,600 PIT CSS
- 2. **PIT tagging** in each release group (Table 5).
- 3. **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.

K. Key contacts

1. **ODFW** (Flesher, Clark) will provide ODFW (Smith, Patterson), NPT (B. Johnson, Hesse, Young, Vogel) and CTUIR (Zimmerman, Boe, McLean) with weekly summary on collected and passed StS adults at Little Sheep.

IV. Summer Steelhead Monitoring: Catherine Creek/Grande Ronde River/Lookingglass Creek-2009

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 angled upstream and downstream portable picket and resident weirs

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 (Smith) and LSRCP (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 include:

- *Lostine; 4 raceways; 3 raceways conventional and 1 raceway captive broodstock*
- *Upper Grande Ronde; 4 raceways.*
- *Catherine Creek; 2 raceways*
- *Lookingglass Creek; 2 raceways*
- *Imnaha; 6 raceways*

VI. Grande Ronde Basin -2007 Brood Year Spring/Summer Chinook– Catherine Creek, Lookingglass Creek, U. Grande Ronde & Lostine River

Smolts target size was 25fpp (actual~ 27.5fpp) 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 2009 release is 684,000 fish weighing 34,200 pounds (Appendix A). Breakdown by tributary is as follows:

- Catherine Creek (CC)- 139,000
 - Conv-139,000

- Lostine River (LR)- 248,000
 - CBS-62,000
 - Conv-186,000
- U. Grande Ronde (UGR)- 147,000
 - CBS-52,500
 - Conv-94,500
- Lookingglass (LGCR)-150,000
 - CC CBS-100,000
 - Conv-50,000

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 2, Catherine Creek on March 9, and on Upper Grande March 10. Acclimation facility operator will notify Scott Patterson 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 124,500 smolts will be released after 1 to 3 weeks of acclimation. | | | |
|---|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| LGH ½ R10 to pond A | March 2- 3 | March 18-W | The screens will be pulled on March 18 allowing fish to leave for 13 days. On March 31, the remaining fish will be forced out |
| LGH ½ R10 to pond B | | | |
| LGH ½ R11 to pond C | | March 31-T | |
| LGH ½ R11 to pond D | | | |

| Late Group: Approximately 123,900 smolts will be released after 1 to 3.5 weeks of acclimation. | | | |
|--|------------------|---------------|---|
| Location | Transfer in date | Release dates | Comments |
| LGH½ R12 to pond A | April 1 -2 | April 11-Sa | The screens will be pulled on April 11 allowing fish to leave for 10 days. On April 21, the remaining fish will be forced out |
| LGH ½R12 to pond B | | | |
| LGH ½R13 to pond C | | April 21-T | |
| LGH½ R13 to pond D | | | |
| R13 captive brood | | | |

b. Catherine Creek

| Approximately 139,000 smolts will be released after 3 to 4 weeks of acclimation. | | | |
|--|------------------|---------------|--|
| Location | Transfer in date | Release dates | Comments |
| LGH 2/3 R1 to pond A | March 9 | March 23-M | The screens will be pulled on March 23 allowing fish to leave for ~20 days. On April 13, the remaining fish will be forced out |
| LGH 1/3 R1 + 1/3 R2 to pond B | | | |
| LGH 2/3 R2 to pond C | | April 13-M | |
| LGH ½ R3 to pond D | March 9 | March 23-M | The screen will be pulled on March 16 with a forced release on March 23. |
| LGH ½ R3 to pond D | March 24 | April-13 | The screens will be pulled on April 1 allowing fish to leave for ~13 days. On April 13, the remaining fish will be forced out |

c. Upper Grande Ronde

| Approximately 147,000 smolts will be released after 3 to 4 weeks of acclimation. | | | |
|--|------------------|---------------|----------|
| Location | Transfer in date | Release dates | Comments |

| | | | |
|-------------------------------|-------------|------------|--|
| LGH 2/3R7 to pond A | March 10-11 | March 23-M | The screens will be pulled on March 23 allowing fish to leave for ~20 days. On April 13, the remaining fish will be forced out |
| LGH 1/3 R7 + 1/3 R9 to pond B | | | |
| LGH 2/3 R9 to Pond C | | April 13-M | |
| LGH ½ R8 to pond D | March 11 | March 23-M | The screen will be pulled on March 16 with a forced release on March 23. |
| LGH ½ R8 to Pond D | March 24 | April-13-M | The screens will be pulled on April 1 allowing fish to leave for ~13 days. On April 13, the remaining fish will be forced out |

d. Lookingglass Creek

| Approximately 150,000 smolts will be released into Lookingglass Creek | | | |
|---|----|--|--|
| Location | | Release dates | Comments |
| LGH R4, R5, R6 | NA | April 1-W 10 day volitional April 14-T forced | The screens will be pulled on April 1 allowing fish to leave for 14 days. On April 14, the remaining fish will be forced out |

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 (541) 962-3783; Jeff Yankee (541) 426-6057; Pat Keniry (541) 962-3026.

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
9. Lethal sample of 240 Lostine smolts (plus the FH 60 pre-liberation samples) to assess maturation. Second year of three year request.

D. Marked Groups

- a. Catherine Creek (all conventional production)
 - 92,000 ADCWT
 - 47,000 Ad only
 - 21,000 PIT CSS
- b. Lostine River
 - CV 186,000 ADCWT,
 - 6,000 PIT
 - CB 62,000 CWT only
 - 2,000 PIT
- c. Upper Grande Ronde
 - CV 94,500 CWT,
 - CB 52,500 ADCWT,
 - 2,000 PIT
- d. Lookingglass Creek-
 - CV 50,000 ADCWT
 - CB 100,000ADCWT
 - 1,000 PIT

E. Fish Health-- Fish Health staff will coordinate efforts with Fish Research and 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 (Zollman).
2. **Fish Research:** CTUIR (Boe) ODFW (Hoffnagle, Feldhaus), and NPT (Hesse, Harbeck, Vogel, Cleary, Young).

VII. Grande Ronde Basin -2008 Brood Year Spring/Summer Chinook –Catherine, Lookingglass, Lostine & U. Grande Ronde

Smolts target size is 25fpp by October 31 and 20fpp at release. Expected transfer size is 22fpp.

A. Allocation –Scheduled for transfer target size of 22fpp in mid-March 2010.

1. **Anticipated Grande Ronde basin production** is 890,000 smolts for release in 2010 produced from Lookingglass Hatchery.

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

- Catherine Creek 35,100 (outplanted 46,727 eyed eggs (BKD mod) in Indian Creek)
- Lostine River 62,500 (outplanted ~13,200 parr in Lostine River)
- U. Grande Ronde 196,000
- Lookingglass Creek 0

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

- Catherine Creek 111,800
- Lostine River 187,500 (outplanted ~47,800 parr in Lostine River)
- U. Grande Ronde 40,000
- Lookingglass Creek 251,800

Note: ODFW doesn't agree that out planting surplus parr in the Lostine River is the "best management practice" due to the expected production from the 2008 adult escapement. This is the last brood year for captive brood production for Lostine River stock.

B. Final Rearing—LGH fry will be transferred outside in April or early May. Approximately 101,000 fry will be transferred to Irrigon in April and returned to Lookingglass in late September. A maximum of 20,000 unplanned Catherine Creek parr may be final reared (November to March) in an adult holding circular tank (Appendix F).

C. Marking Program--

1. **AD/CWT** is scheduled for June through July 2009. Catherine Creek, Lostine River conventional, and the captive brood Lookingglass Creek (CC-stock) production will be marked. The Lostine River captive brood will be CWT for M&E purposes.

Catherine Creek

- 111,800 Ad CWT
- 35,100 Ad CWT VIE

Lostine River

- 187,500 Ad CWT
- 62,500 CWT only (M&E mark)
- 61,000 Ad clipped and released as parr

Lookingglass Creek

- 150,000 Ad CWT
- 101,800 Ad

Upper Grande Ronde

- 196,000 Ad CWT
- 40,000 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 2009 (Table 5). Numbers by stock include:

- Catherine Creek—21,000 CSS
- U. Grande Ronde—2,000
- Lostine (captive)—1,200
- Lostine (conventional)—3,600
- 1,000 PIT for Lostine parr outplants
- Lookingglass Creek-2,000

3. Visual Implant Elastomer (VIE) is scheduled in October 2009 for BY08.

D. Fish Health

An Aquamycin medicated feed treatment is planned for 2008 brood year progeny in July/August 2009. Lookingglass Creek progeny transferred to Irrigon Hatchery will also receive one Aquamycin medicated feeding in May/June.

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 and Jonasson)

VIII. Grande Ronde Basin-Conventional-2009 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 for Lostine River
 - 210,000 from conventional brood
 - 40,000 from captive brood
- 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. 2009 Adult Collection

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

a. Catherine Creek –

ODFW-912 adults (69 jacks)

- Natural-80 adults (plus 15 jacks)
- Hatchery-832 adults (plus 54 jacks)

CTUIR- 250 adults (275 jacks)

- Natural- 47 adults (20 jacks)
- Captive- 28 adults (22 jacks)
- Conventional- 175 adults (233 jacks)

b. Lostine River

ODFW-4,388 Adults (236 jacks)

- Natural-2,056 adults (plus 36 jacks)
 - Hatchery-2,332 adults (plus 200 jacks)
 - NPT-3,046 Adults (198 jacks)**-applies McLean factor
 - Natural-1,511 adults (plus 34 jacks)
 - Captive-28 adults (plus 11 jacks)
 - Conventional-1,507 adults (plus 153 jacks)
- c. Upper Grande Ronde –**
- ODFW-2,498 adults (117 jacks)**
 - Natural-166 adults (plus 3 jacks)
 - Hatchery-2,332 adults (plus 114 jacks)
 - CTUIR-1,033 adults (216 jacks)**
 - Natural- 42 adults (plus 2 jacks)
 - Captive-23 adults (plus 0 jacks)
 - Conventional- 968 adults (plus 214 jacks)
- d. Lookingglass Creek --**
- ODFW-84 adults**
 - Natural-84 adults
 - Hatchery-0 adults
 - CTUIR 54 adults (28 jacks)**
 - Natural-27 adults
 - Hatchery -27 adults

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

a. Open Season: May 1- July 5, may extend to July 12 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.)

- Expected harvest rate: 11.3% of expected return, 500 fish.
- Maximum hatchery fish harvest rate of 1,103 ad-clipped fish (50%)
- Maximum incidental wild mortality of 210 fish Wallowa-Lostine (6.8%) and 4.6 fish on Minam (0.2%)
- Additional harvest of ad-clipped (668) and wild (581) 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 to produce 130,000 smolts. The estimate is based on a female survival of 95%, fecundity of 3,818, and green eggs to smolt survival of 87.1%.

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 60 pairs should be collected (57 spawned) to produce 210,000 smolts. The balance of production (40K) will be captive brood. These estimates are based on female survival of 95%, fecundity of 4,426, and 83.3% green egg to smolt survival.

d. UGR— A target of 85 a pairs should be collected to produce 250,000 smolts. This is based on a female survival of 92%, fecundity of 3,846, and 83.4% survival from green egg to smolt.

D. Trap Operation

- 1. CC and UGR Trap Operation (CTUIR)**– Trapping will begin in March 2009 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 through October 1. The Lostine weir is scheduled for repairs from either 1) March 1 to April 15, or 2) July 15 to August 15. Note: summer repairs will result in several days of no trapping and fish unaccounted.
- 3. Lookingglass (ODFW)**— The intake trap at Lookingglass Hatchery will be operated from March (environmental conditions allow) through mid-September.
- 4. General Guidelines** –
 - a. Trapping facilities will be checked daily.
 - b. Water temperature data will be collected. When water temperature exceeds 65°F (18.3°C) fish will not be handled. Picket will be pulled and fish will be allowed to pass. 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.
 - 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. **CC--** At the projected run level between 250 and 912, the adult sliding scale for collection is <20% of wild and hatchery-origin fish. Hatchery-origin adults released above the weir should be ≤70% of the total. Ten percent of the males above the weir may be age-3 hatchery males. In-season PIT projections will be used to reassess the run with potential surplus hatchery fish transferred to Lookingglass Hatchery.

1) Catherine Creek

- Wild fish—keep 1 of 5 for brood (20%)
- Hatchery—keep 1 of 5 for brood (20%)
- Captive—pass 100% of captive adults
- Note: potential for surplus hatchery adults to transfer to Lookingglass for broodstock

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.

Collection rate to start the season:

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

- c. **Lostine--** At the projected run level of > 1,000 natural adults, only wild fish will be used for broodstock collection. Hatchery-origin adults will not be released above the weir.

- Wild fish—keep < 1 of 10 for brood
- Hatchery—pass 1 hatchery fish for every 10 wild passed above the weir.

Surplus is expected. Fish can be recycled for a fishery and released at the Minam boat ramp. Fish recaptured (maximum of twice) may be used for C/S or local food bank. Fish may be transferred to Wallowa hatchery for food processing and distribution. Given the number of adults projected to return to the Lostine/Wallowa system, ODFW doesn't believe out planting surplus hatchery adults is the "best management practice"; however, ODFW will not object to outplants (including jacks) in Bear Creek (up to 100), Prairie (up to 100), and Wallowa River (up to 250) in 2009.

- d. **Lookingglass Creek**—Work trap as needed. Draft management guidelines to determine pass:keep are located in Appendix M. Transferred fish from CC will be added to the total.

- 1) Up to 500 adults (ad clipped and unmarked) will be held at Lookingglass Hatchery and released around August 1. All collected fish will receive prescribed injection through July 6th. All fish held for broodstock will be injected which may require differential marks (OP).
- 2) Surplus hatchery jacks can be euthanized.
- 3) Passed fish will have 2 PIT inserted
- 3) All Chinook passed upstream of the intake trap will have tissue collected for future genetic analysis (pedigree)

Notes:

General comments—Less than 5% marked fish from other streams or basins will be passed upstream. If an unmarked PIT fish is detected, it will be passed upstream or used for brood stock after verification of origin. Surplus captive brood jacks from CC or UGR may be sacrificed for CWT recovery.

6. Disposition of Trapped Fish --Adults considered fish age-4 (62cm to 82cm) and age-5 (≥ 82 cm).

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

b. - 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. Returning Adults from Captive Brood (F₁) – Pass or out plant. 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=Unique opercle punch monthly) 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 fish trapped on Lookingglass Creek, and identified as CC or UGR, will be marked and held with their respective brood.

f. Carcasses weirs – 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. Other pre-spawning mortalities discovered during stream bank surveys will also be sent to 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 can be transferred to Wallowa Hatchery for Tribal C/S, food bank, or sport fishery. Jacks and surplus adults should not be transferred to Wallowa Hatchery after August 8

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 (Attempts will be made to add ambient lighting to circular tanks)

- a. **Catherine Creek** – All fish will be held in one adult holding raceway.
- b. **Lookingglass Creek**-Up to 500 fish will be held in one adult holding raceway.
- c. **Lostine River**-All fish will be held in circular tank in endemic building (number TBA).
- d. **Upper Grande Ronde**—All fish will be held in one or two circular tanks in the endemic building (numbers TBA).
- e. **Imnaha** – Brood and out plants can be held in one adult holding raceway.

E. Spawning Guidelines (for each stock)

1. Anesthetic MS222 .

2. Sorting – The first sort will occur the week of August 10th.

3. Expected First Spawn – The week of August 17th.

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 spawning will be done 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. Most 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 I.)
- **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. Categories include:

- ≤ 0.199 = Low
- $0.2 - 0.399$ = Moderate/Low
- $0.4 - 0.799$ = Moderate/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 parents with lowest BKD titer levels or segregated by category.

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

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.

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 25fpp in October 2010.
4. **Lookingglass Creek** production above 150,000 may be transferred to Irrigon for rearing between April/May and September 2010. The intent will be to use raceways secure from bird predation. Prior to steelhead marking at Irrigon, pre-smolts will be transferred back to Lookingglass in October 2009 and released form the adult holding ponds in April 2010.

I. Monitoring Plans

1. Lookingglass Creek—Females released above the hatchery will be PIT tagged at 2 tags per females. Redd survey crews will scan redds for PIT tags.
2. Fish Health Monitoring Plans
 - **Disinfection** and Sanitation Guidelines (Appendix C).
 - **Broodstock** monitoring and treatment plan (Appendices J, K, L)
 - **Collect 30** kidneys from natural spawning females above the weir (Appendix J).

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. **Captive Brood-TOT leader** (Hoffnagle) is responsible for providing TOT meeting notes and an agenda for the upcoming meeting.
3. **Adult records (AAT’s)** will be completed weekly by ODFW (requires timely completion of weekly trapping data).
4. **Communications.** Weekly or bi-weekly draft summaries of adult collections will be distributed to co-manages.

IX. Grande Ronde Basin-2009 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.

A. Allocation – Production estimates: (Fecundity=1,500, green egg to smolts survival 56.7%)

- LR— 93♀; however, the combination of cyro and live male fertilization may result in 40,000 fish.
- CC/Look— 104♀ = 46,000 fry
- UGR— 103♀ = 83,000 fry

Note: Production estimates from captive brood program are extremely variable.

B. Spawning--See Captive Brood 2009 AOP.

C. Incubation

1. **Captive Brood** incubation to eyed stage at Oxbow Hatchery. After eye-up, inventory, and disease profiles, Oxbow staff will combine eggs by females, treatments, and BKD level in groups of about 5,000 eggs. Eyed eggs will be shipped to Lookingglass Hatchery.

D. Key Contact

1. Captive Brood TOT project leader (Hoffnagle, Hair)
2. Oxbow Hatchery manager (Banks)

X. Imnaha -2007 Brood Year-Spring/Summer Chinook

A. Anticipated smolt release – A total of 294,500 smolts at 22fpp (current size 26fpp).

- Acclimated: 294,500
- Direct stream: 0

B. Liberations (See Appendix A)

1. Transfer and Acclimation – Approximately 294,500 smolts will be transferred to Imnaha Satellite between March 11 and 14 and held for acclimation. Satellite personnel will begin volitional release March 30. Any remaining fish will be forced out on April 15. 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 2009.
 - 180,000 AdCWT
 - 114,500 Ad only
 - 21,000 PIT
- 2.** Fish Research staffs will coordinate efforts with hatchery staff for pre-release sampling efforts (Table 2).
- 3.** There is no current plan to sample 240 smolts (plus the FH 60 pre-liberation samples) to assess maturation in 2009 due to low fish numbers, although M&E staffs are still discussing.

E. Fish Health-- Fish Health staff will coordinate efforts with Fish Research and hatchery staffs 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 (208-816-1405), Michaels (432-2503), ODFW (D. Eddy, Feldhaus, Hoffnagle), LSRC office and FPC (Jack) of date and numbers of fish release.

XI. Imnaha –2008 Brood Year-Spring/Summer Chinook

A. Smolt Production- An estimated 399,000 smolts will be produced at a target size of 20fpp 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 6 raceways with approximately 66,700 fish per raceway (Appendix F). In July/August, a prophylactic feed treatment will be administered to control BKD.

B. Monitoring and Evaluation

- 1. Fish marking**- All fish will be ad clipped in June and July 2009. Approximately 199,000 fish will receive CWT (Table 4).
- 2. PIT tag**- 21,000 fish will be PIT tagged in October 2009 for CSS (Table 6).

C. Marking Program –

- 1. AdCWT** – 199,000
- 2. AD**- 200,000.

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 –2009 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 20fpp for release 2011.

B. Adult Collection

1. **Predicted Runs-** Total estimated return to river is 7,826 adults and 388 jacks. This includes 6,510 hatchery produced and 1,316 naturally produced adults. Approximately 59% of fish entering the Imnaha River are expected to be collected at the weir and the collection of adults is estimated at: 3,841 hatchery-origin and 776 natural-origin (Table 11).

C. Imnaha Fishery Proposal Summary –The projected return of 7,826 (1,316 wild and 6,510 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 208 adults (83 wild and 125 hatchery) for artificial propagation, allow the remaining wild adults and jacks to spawn in the Imnaha River, and release up to 500 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 5, may extend to July 12 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

- Expect 15.4% harvest rate for hatchery-origin adults or 1,000 ad-clipped (hatchery) Chinook
- Expect incidental wild mortality of 20 adults (1.5 %)
- Maximum hatchery fish harvest rate of 1,930 ad-clipped fish (50%)
- Maximum incidental wild mortality of 39 wild fish (3.0%)
- Additional harvest of ad-clipped (1,860) and wild (110) Chinook is expected in tribal fisheries.

4. Monitoring:

- We plan to estimate harvest with a statistical creel.

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

c. 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 needs, can be distributed at Imnaha facility for Tribal C/S or local food bank. If necessary, fish can be held at Wallowa Hatchery. If fish are exposed to MSD-222 a 21-day period is required before they are used for consumption.

d. Tumors - Fish 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 500 hatchery origin adults can be outplanted to aid in dealing with hatchery surplus this year. Adults collected prior to July 15th and targeted for outplanting, will be held at Lookingglass Hatchery. Adults collected after July 15th, and targeted for outplanting, can be direct stream released. LGH staff will explore opportunities to hold out plant and C/S fish at Imnaha facility.

f. Disposition of Carcasses. Trapping mortalities will be processed as kept fish and the carcasses provided to Fish health for examination, if possible. Other pre-spawning mortalities discovered during weir-effect surveys will also be sent to Fish Health. Biological data will be sent to ODFW Fish Research (Feldhaus). Following examination disposed in the landfill. Data will be collected from moribund fish collected off the weir, tails removed, and disposed below the weir.

D. Hatchery Broodstock Collection Guidelines

1. Weir management—at 1,316 wild Chinook escapements, the sliding scale guidelines suggests that: ≤40% of the fish released above the weir can be of hatchery origin; ≥40% broodstock of natural origin. Hatchery jacks will be released above the weir at a rate <10% of the total males.

2. Broodstock Needs

a. Egg take- Need 439,000 green eggs at 82% survival from green egg to smolt and estimated five-year fecundity average of 4,503.

b. Adult Collection- Based on adult survival of 90%:

Males – 108 (spawn 99)

- 43 natural (spawn 39)
- 65 hatchery (spawn 60-6 jacks equals one male)

Females – 108 (spawn 99)

- 43 natural (spawn 39)
- 65 hatchery (spawn 60)

3. Brood collections guidelines: The current projection for adult spring/summer Chinook returns to Imnaha River is 8,214 fish including 7,826 adults (6,510 ad-clipped and 1,316 unmarked) and 388 jacks (349 ad clipped and 39 natural). 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 60% wild origin ratio (pass 3 wild:2 hatchery).

| Estimated Totals: | Estimate 59% | | Escapement | |
|---|---------------------|-------------------|-------------------|----------------------------|
| Escapement to mouth | collected | Broodstock | OP | above the weir |
| 6,510-Hatchery | 3,841 | 130 | 500 | 460 (322 with max harvest) |
| 1,316-Wild | 776 | 86 | 0 | 690 (483 with max harvest) |
| Estimate 2,751 surplus without harvest. | | | | |

Collection guidelines for Imnaha spring Chinook in 2009.

| | June 1-22 | June 23–30 | July 1-8 | July 9-16 | July 17-23 |
|---------------------------|-----------|------------|-----------|-----------|------------|
| HOB-130 | 4 | 14 | 30 | 26 | 20 |
| NOB-86 | 4 | 10 | 24 | 22 | 10 |
| Outplants | | up to 100 | up to 150 | up to 200 | up to 50 |
| Recycle, C/S or food bank | | Up to 500 | up to 500 | up to 500 | up to 500 |

| <u>July24-31</u> | <u>Aug 1 - 8</u> | <u>Aug 9 - 16</u> | <u>Aug 17 - 23</u> | <u>Aug 24 - Sep</u> | <u>Sept 1 - 15</u> |
|---------------------|------------------|-------------------|--------------------|---------------------|--------------------|
| 14 | 12 | 2 | 2 | 4 | 2 |
| 8 | 4 | 2 | 0 | 2 | 0 |
| C/S or food bank | up to 100 | | | | |

*Pass 3 wild adults per 2 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. Six hatchery jacks is the equivalent of one male. If adult and jack return numbers exceed brood stock and outplant needs, the balance can be transferred to Wallowa Hatchery for Tribal C/S, food bank, or sport fishery. Jacks and surplus adults should not be transferred to Wallowa Hatchery after August 8.

4. Natural escapement projections--A total of 3,609 hatchery-origin adults and 1,230 wild origin (25.4% wild) are prognosticated to spawn in the Imnaha sub-basin, 4,339 in the Imnaha River and 500 in Big Sheep and its tributaries, i.e., Lick Creek. Natural-origin fish returning to Big Sheep and Lick Creek is unknown. Estimates do not include harvest or jacks. With maximum harvest, a total of 2,797 adults would spawn in the Imnaha River with 38.7% natural origin.

E. Spawning Guidelines

1. **Anesthetic Used** – MS222.

2. **Expected First Spawn** - Tuesday, August 18th.

3. **Spawning Frequency** – Once per week.

4. **Spawning Strategies** - All salmon spawned will be incubated at Lookingglass Hatchery.

F. 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 well water and UV treated Lookingglass Creek.

G. Fish Health Monitoring plans

1. **Disinfection** and Sanitation Guidelines (Appendix C).

2. **Broodstock** monitoring and treatment plan (Appendices J, K, L)

H. 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, 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, Zollman).

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, Zollman).

Snake River –2008 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 in late-May at 50fpp. Marks include:

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

B. Adult collections and Spawning--See Lyons Ferry 2008 AOP.

C. Incubation/rearing

February 3, 2009-Final

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 will be transferred.

D. Key Contact

1. Lyons Ferry Hatchery (Schuck, Mendal)

Table 1 (10/6/08)
 2009 Irrigon Transport Schedule
 (08 brood)

| <u>Date</u> | <u>Stock</u> | <u>From Ponds</u> | <u>To</u> | <u>Number</u> | <u>Est. Pounds</u> |
|-------------|--------------|-------------------|------------------------|----------------|------------------------|
| Feb. 19-20 | 5608 | 9*,10*,11*,12*~ | Wallowa Lower Acc | 129,000 | 28,666 |
| Feb. 20-21 | 5608 | 12*~,13*,14*,16 | Wallowa Upper Acc | 129,000 | 28,666 |
| Feb. 23-24 | 5608 | 17,19* | Big Cany. Lower Acc | 78,000 | 17,333 |
| Feb 25-26 | 5608 | 18,20 | Big Cany. Upper Acc | 78,000 | 17,333 |
| Mar. 2-4 | 2908 | 27*,29,30, 31 | Little Sheep Acc | 146,000 | 30,400 |
| Apr. 6-10 | 2908 | 32 | Big Sheep (Direct) | 46,000 | 9,200 |
| Apr. 15-16 | 5608 | 15*,21*,22 | Wallowa Lower Acc | 112,000 | 24,888 |
| Apr. 20-21 | 5608 | 23*,24 | Big Cany. Lower Acc | 78,000 | 17,333 |
| Apr. 21-22 | 5608 | 25,26 | Big Cany. Upper Acc | <u>78,000</u> | <u>17,333</u> |
| | | | | 874,000 | 191,152 |

~Denotes partial pond
 *Denotes CWT pond

Table 2. Juvenile spring Chinook salmon and summer steelhead sampling schedule at LSRCF 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 (BY07) | Location | Pond | Purpose |
|---|--------------|----------------------|--------------|---------------|--------------|
| <u>Spring Chinook</u> | | | | | |
| | Feb. 9-13 | Catherine (07) | Lookingglass | 1-5 | CWT, RS, GS |
| | Feb. 9-13 | U. Grande Ronde (07) | Lookingglass | 7-9 | CWT, RS, GS |
| | Feb. 9-13 | Lostine (07) | Lookingglass | 10-13 | CWT, RS, GS |
| | Feb. 9-13 | Imnaha (07) | Lookingglass | 14-18 | CWT, RS, GS |
| | June 4-5 | All (08) | Lookingglass | 1-18 | PS |
| <u>Summer Steelhead (brood 08)</u> | | | | | |
| | January 2009 | Wallowa | Irrigon | 9-15,19,21,23 | CWT |
| | January 2009 | Imnaha | Irrigon | 27 | CWT |
| | March 30 | Imnaha | Little Sheep | AP | RS, GS |
| | April 3 | Imnaha | Irrigon | 32 | RS (FL only) |
| | April 10 | Wallowa | Wallowa | LAP, UAP | RS |
| | April 14 | Wallowa | Big Canyon | LAP, UAP | RS, GS |
| | April 24 | Wallowa | Wallowa | LAP | RS |
| | April 27 | Wallowa | Big Canyon | LAP, UAP | RS |
| | April 28 | Imnaha | Little Sheep | AP | sex ratio |
| | May 11 | Wallowa | Big Canyon | AP | sex ratio |

Table 3. Summer Steelhead run projections to LSRCF Facilities in 2009.

| 2009 PROJECTED Returns to Wallowa Hatchery | | | | | |
|---|-----|-------------|-------------|-------------|----------|
| MARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 1005 | 626 | | |
| Marked | 1:2 | 217 | 559 | | |
| Marked | 2:1 | 10 | 10 | | |
| Marked | 2:2 | 1 | 2 | | |
| Total | | 1233 | 1197 | 2430 | 815-4045 |

| 2009 PROJECTED Returns to Big Canyon Facility | | | | | |
|--|-----------|------------|------------|-------------|----------|
| MARKED AND UNMARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 425 | 389 | | |
| Marked | 1:2 | 105 | 317 | | |
| Marked | 2:1 | 3 | 4 | | |
| Subtotal | | 533 | 710 | 1243 | 212-2275 |
| Unmarked | 2:1 | 13 | 16 | | |
| Unmarked | 2:2 | 7 | 15 | | |
| Unmarked | 3:1 | 14 | 11 | | |
| Unmarked | 3:2 & 4:1 | 5 | 10 | | |
| Subtotal | | 39 | 52 | 91 | 36-145 |
| Total | | 572 | 762 | 1334 | |

| 2009 PROJECTED Returns to L. Sheep Cr. Facility | | | | | |
|--|-----------|------------|-------------|-------------|----------|
| MARKED AND UNMARKED FISH | | | | | |
| | Age | Males | Females | Total | 95% C.I. |
| Marked | 1:1 | 816 | 751 | | |
| Marked | 1:2 | 92 | 368 | | |
| Marked | 2:1 | 11 | 8 | | |
| Marked | 3:1 | 0 | 2 | | |
| Subtotal | | 919 | 1129 | 2048 | 980-3116 |
| Unmarked | 2:1 | 28 | 42 | | |
| Unmarked | 2:2 | 6 | 20 | | |
| Unmarked | 3:1 | 14 | 12 | | |
| Unmarked | 3:2 & 4:1 | 3 | 6 | | |
| Subtotal | | 51 | 80 | 131 | 30-232 |
| Total | | 970 | 1209 | 2179 | |

Table 4. Estimated numbers of tagged fish released from 2009 brood summer steelhead and 2008 brood spring Chinook salmon.

| Species, Stock | Number Marked | Type of Mark | Marking Period | Marking Location |
|--|------------------|-----------------|-------------------|------------------------|
| Summer Steelhead | | | | |
| <u>2009 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>2008 Brood Year (Ad clips in June/July)</u> | | | | |
| Imnaha River | 199,000 | Ad+CWT | June/July | Lookingglass |
| | 200,000 | Ad only | June/July | Lookingglass |
| Catherine | 111,800 | Ad+CWT | June/July | Lookingglass |
| Catherine | 35,100 | Ad+CWT | June/July | Lookingglass |
| | | VIE (blue left) | Oct/Nov | Lookingglass |
| Lostine | 187,500 | Ad+CWT | June/July | Lookingglass |
| Lostine CB | 62,500 | CWT only | June/July | Lookingglass |
| Lostine CB/CV | 61,000 | Ad only | June/July | Lookingglass (surplus) |
| Upper GR. | 40,000 | CWT only | June/July | Lookingglass |
| Upper GR. | 196,000 | Ad CWT | June/July | Lookingglass |
| Lookingglass | 150,000 | Ad+CWT | June/July | Lookingglass |
| Lookingglass | 101,800 | Ad only | May/June | Irrigon |

Table 5. PIT-tagging schedule for 2008 brood summer steelhead at Irrigon Hatchery scheduled for 12-16, 20-23 January 2009. 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 | 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 2009 (BY2008). 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 | 75,000 | 10,500 |
| Catherine Conventional | 2A | 36,800 | 5,250 |
| Catherine Captive | 2B | 35,100 | 5,250 |
| Lookingglass Creek | Adult P2 | 101,800 | 1,000 |
| Lookingglass Creek | 3 | 75,000 | 1,000 |
| Lookingglass Creek | 4 | 75,000 | 1,000 |
| U. Grande Ronde Conventional | 5 | 40,000 | 500 |
| U. Grande Ronde CBS | 6 | 65,300 | 500 |
| U. Grande Ronde CBS | 7 | 65,300 | 500 |
| U. Grande Ronde CBS | 8 | 65,400 | 500 |
| Lostine Conventional | 9 | 62,500 | 1,200 |
| Lostine Conventional | 10 | 62,500 | 1,200 |
| Lostine Conventional | 11 | 62,500 | 1,200 |
| Lostine CBS | 12 | 62,500 | 1,200 |
| Imnaha | 13 | 66,500 | 3,500 |
| Imnaha | 14 | 66,500 | 3,500 |
| Imnaha | 15 | 66,500 | 3,500 |
| Imnaha | 16 | 66,500 | 3,500 |
| Imnaha | 17 | 66,500 | 3,500 |
| Imnaha | 18 | 66,500 | 3,500 |
| Grand total | | 1,283,700 | 51,800 |

Table 7. Projected spring Chinook salmon returns to Catherine Creek in 2008.

| Mark | Age | Males | Females | Total | 95%CI | | |
|---|-----|-------|---------|------------|-------|----|------|
| Return to River | | | | | | | |
| Hatchery | 3 | 54 | 0 | 54 | 0 | to | 108 |
| Hatchery | 4 | 359 | 457 | 816 | 206 | to | 1425 |
| Hatchery | 5 | 11 | 5 | 16 | 3 | to | 29 |
| Total | | 424 | 462 | 886 | 209 | to | 1562 |
| Natural | 3 | 15 | 0 | 15 | 1 | to | 30 |
| Natural | 4 | 28 | 25 | 53 | 12 | to | 93 |
| Natural | 5 | 14 | 13 | 27 | 7 | to | 47 |
| Total | | 57 | 38 | 95 | 19 | to | 170 |
| Grand Total | | 481 | 500 | 981 | 228 | to | 1732 |
| Total to weir (93% of run trapped at weir - five year average) | | | | | | | |
| Hatchery | | 394 | 430 | 824 | 94 | to | 676 |
| Natural | | 53 | 35 | 88 | 10 | to | 73 |

Table 8. Projected spring Chinook salmon returns to the Upper Grande Ronde in 2009.

| Mark | Age | Males | Females | Total | 95%CI | | |
|---|-----|-------|---------|-------------|-------|----|------|
| Return to River | | | | | | | |
| Hatchery | 3 | 114 | 0 | 114 | 0 | to | 281 |
| Hatchery | 4 | 956 | 1368 | 2324 | 961 | to | 3687 |
| Hatchery | 5 | 6 | 2 | 8 | 0 | to | 19 |
| Total | | 1076 | 1370 | 2446 | 961 | to | 3987 |
| Natural | 3 | 3 | 0 | 3 | 0 | to | 6 |
| Natural | 4 | 66 | 58 | 124 | 0 | to | 275 |
| Natural | 5 | 23 | 19 | 42 | 0 | to | 102 |
| Total | | 92 | 77 | 169 | 0 | to | 383 |
| Grand Total | | 1168 | 1447 | 2615 | 961 | to | 4370 |
| Total to weir (72% of run trapped at weir - five year average) | | | | | | | |
| Hatchery | | 775 | 986 | 1761 | 395 | to | 1537 |
| Natural | | 66 | 55 | 122 | 0 | to | 202 |

Table 9. Projected spring Chinook salmon returns to the Lostine River in 2009.

| Mark | Age | Males | Females | Total | 95%CI | | |
|---|-----|-------|---------|-------------|-------|----|------|
| Return to River | | | | | | | |
| Hatchery | 3 | 199 | 1 | 200 | 10 | to | 390 |
| Hatchery | 4 | 998 | 1225 | 2223 | 1076 | to | 3371 |
| Hatchery | 5 | 62 | 47 | 109 | 17 | to | 201 |
| Total | | 1259 | 1273 | 2532 | 1103 | to | 3962 |
| Natural | 3 | 35 | 1 | 36 | 14 | to | 56 |
| Natural | 4 | 948 | 975 | 1923 | 1224 | to | 2622 |
| Natural | 5 | 83 | 50 | 133 | 42 | to | 223 |
| Total | | 1066 | 1026 | 2092 | 1280 | to | 2900 |
| Grand Total | | 2325 | 2299 | 4624 | 2383 | 0 | 6862 |
| Total to weir (78% of run trapped at weir - five year average) | | | | | | | |
| Hatchery | | 982 | 993 | 1975 | 507 | to | 1684 |
| Natural | | 831 | 800 | 1632 | 643 | to | 1431 |

Table 10. Projected spring Chinook salmon returns to Lookingglass Fish Hatchery in 2009

| Mark | Age | Total |
|-------------|--------------|--------------|
| Marked | 3 | 22 |
| Marked | Adult | 27 |
| UnMarked | 3 | 6 |
| UnMarked | Adult | 27 |
| | Total | 82 |

Table 11. Projected spring Chinook salmon returns to the Imnaha River in 2009.

| Mark | Age | Males | Females | Total | 95%CI | | |
|---|-----|-------|---------|--------------|-------|----|--------|
| Return to River | | | | | | | |
| Hatchery | 3 | 349 | 0 | 349 | 93 | to | 605 |
| Hatchery | 4 | 2974 | 2876 | 5850 | 4218 | to | 7482 |
| Hatchery | 5 | 261 | 399 | 660 | 205 | to | 1116 |
| Total | | 3584 | 3275 | 6859 | 4516 | to | 9203 |
| Natural | 3 | 39 | 0 | 39 | 8 | to | 70 |
| Natural | 4 | 770 | 404 | 1174 | 880 | to | 1468 |
| Natural | 5 | 60 | 82 | 142 | 84 | to | 201 |
| Total | | 869 | 486 | 1355 | 972 | to | 1739 |
| Grand Total | | 4,453 | 3,761 | 8,214 | 5,488 | to | 10,942 |
| Total to weir (59% of run trapped at weir - five year average) | | | | | | | |
| Hatchery | | 2,118 | 1936 | 4,053 | 2,233 | to | 4,315 |
| Natural | | 513 | 287 | 799 | 620 | to | 1,048 |

Appendices

APPENDIX A. PROPOSED JUVENILE SALMONID RELEASES IN THE GRANDE RONDE (GR) AND IMNAHA (IM) BASINS IN 2009

| Basin | Species | Stock | Hatchery | Number ⁽¹⁾ | Lbs | fpp | Location | In Facility | In River | Pond # ⁽²⁾ | Release Method ⁽³⁾ | Marks |
|-------|---------|--------|----------|-----------------------|---------|------|----------------------|-------------|----------------|-----------------------|-------------------------------|------------------------|
| GR | STS | 5608 | IR | 129,000 | 32,250 | 4.0 | Wallowa Lower Acc | Feb 17-19 | Apr 12-13 | 9*,10*,11*,~*12 | Forced | 75K AdRVCWT; 75K |
| GR | STS | 5608 | IR | 129,000 | 32,250 | 4.0 | Wallowa Upper Acc | Feb 19-20 | Apr 13-14 | 12*,13*, 14, 16 | Forced | AdLVCWT; 102K Ad only, |
| GR | STS | 5608 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Lower | Feb.24-25 | Apr 15-16 | 17,19* | Forced | 25K AdLVCWT; 53K Ad |
| GR | STS | 5608 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Upper | Mar. 25-26 | Apr 16-17 | 18,20 | Forced | 78K Ad |
| IM | STS | 2908 | IR | 146,000 | 7,920 | 5.0 | Little Sheep Acc | Mar 2-4 | Mar 31-Apr 28 | 27*, 29,30,31 | Volitional | 25K AdLVCWT; 121K Ad |
| IM | STS | 2908 | IR | 46,000 | 9,200 | 5.0 | Big Sheep Cr | NA | Apr 6-10 | 32 | Direct Stream | 46K Ad only |
| GR | STS | 5608 | IR | 112,000 | 28,000 | 4.0 | Wallowa Lower Acc | Apr. 15-16 | Apr 25-May 7 | 15*,21*,22 | Volitional | 25K AdLVCWT; |
| GR | STS | 5608 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Lower Acc | Apr 20-21 | Apr.28-May 11 | 23*, 24 | Volitional | 25KAdRVCWT; 62K Ad |
| GR | STS | 5608 | IR | 78,000 | 19,500 | 4.0 | Big Canyon Upper Acc | Apr 21-22 | Apr 29-May 11 | 25,26 | Volitional | 25K AdLVCWT; 53K Ad |
| | | | | 874,000 | 187,620 | 4.66 | | | | | | 78K Ad |
| GR | CHS | 8007 | LG | 121,000 | 5,500 | 22 | Grande Ronde Acc | Mar. 9-11 | Mar-23-Apr 13 | 7,8,9 | Volitional | 27K AdCWT, 94 CWT |
| GR | CHS | 8007 | LG | 26,000 | 1,180 | 22 | Grande Ronde Acc | Mar 24 | April 1-13 | 8 | Volitional | 26K AdCWT |
| GR | CHS | 20007 | LG | 61,800 | 2,810 | 22 | Lostine Acc | Mar 2-3 | Mar 18-31 | 12 | Volitional | AdCWT |
| GR | CHS | 200F07 | LG | 62,100 | 2,820 | 22 | Lostine Acc | Mar 2-3 | Mar 18-31 | 13 | Volitional | CWT |
| GR | CHS | 20007 | LG | 124,500 | 5,660 | 22 | Lostine Acc | Apr. 1-2 | Apr 11-21 | 10, 11 | Volitional | AdCWT |
| GR | CHS | 20107 | LG | 116,000 | 5,270 | 22 | Catherine Cr Acc | Mar 9-11 | Mar.23- Apr 13 | 1, 2,3 | Volitional | 69K AdCWT; 47 Ad only |
| GR | CHS | 20107 | LG | 23,000 | 1,040 | 22 | Catherine Cr Acc | Mar 24 | April 1-13 | 3 | Volitional | 23K AdCWT |
| GR | CHS | 8107 | LG | 150,000 | 6,810 | 22 | Lookingglass Creek | NA | Apr 1-14 | 4,5,6 | Volitional | AdCWT |
| IM | CHS | 2907 | LG | 294,500 | 13,380 | 22 | Imnaha Acc | March 11-14 | Mar. 30-Apr 15 | 13-18 | Volitional | 176AdCWT; 118 Ad only |
| | | | | 978,900 | 44,470 | 22.0 | | | | | | |
| GR | CHS | 8108 | LG | ~30,000 | ~1,360 | 22 | Lookingglass Creek | Sept. 15 | Oct. 25 | 4 | Volitional | 30K AdCWT |

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

⁽²⁾ * Indicates CWT groups, Brood evaluation groups include: AdLVCWT (10,12,14,21) 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 | 2008 & 2009 | 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 with Florfenicol under a Veterinary Feed Directive (VFD), drug in feed, or extra label prescription on fish pills if CWD losses become a problem |
| Irrigon Hatchery | 2008 | 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 | 2008 | 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 | 2009 | 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. | A weekly sample (N=24) of ovarian or milt fluid may be sampled. |
| Wallowa & Little Sheep | 2009 | 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 | 2009 | 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. Imnaha/Little Sheep steelhead program draft guidelines

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

Escapement goals:

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

The base production program consists:

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

Sliding scale production levels:

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

Weir Management guidelines

Big Sheep- Big Sheep escapement would be estimated from PIT 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 (after Fish Pathogen screening), given to local food banks, or placed in the landfill. Placement of steelhead carcasses can occur in Big Sheep (RM 25-34), Lick Creek (RM 0.0 - 5.0), Imnaha (RM 42 -67) from August through October under ODFW current 2006-07 MOA. Carcasses must test negative for: viruses, Mc (Whirling disease), and BKD (<0.2 OD titer).

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

| Location | Brood year | Stock | Examination Category | Protocol | Comment/Disease Treatment |
|--------------------------------------|------------|--|---|---|--|
| Lookingglass Hatchery | 2008 | 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, and coded wire tagging for two consecutive days. Formalin is used under a local veterinarian prescription. Coldwater disease- Oxytetracycline or Florfenicol may be used. |
| Irrigon Hatchery | 2008 | 81 | Monthly Pre-transfer | -10 mort/moribund and wet mounts for parasites as per Lookingglass Hatchery -Monthly plus 30 grab-sampled for BKD ELISA and culturable viruses | -One Aquamycin medicated feeding at Irrigon Hatchery in May/June. |
| Lookingglass Hatchery | 2007 | 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 | 2007 | | 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 2009 at Lookingglass Hatchery

| Group | Strategy Treatment | BKD | Project Green Eggs (Dec 08) | Initial Ponding (fry) | Initial Pond # | | Smolts marked (est. ~96%) | Final Pond # | Smolt Numbers | Mark | Release Site | |
|--|--------------------|-----|-----------------------------|-----------------------|----------------|---------------------|---------------------------|---------------------|----------------|---------------|---------------|-----|
| Catherine Creek | Conventional | Low | 124,317 | 116,400 | 3 | From rcy 3 into 1 | 75,000 | 1 | 75,000 | AdCWT | CC | |
| | | | | | | From rcy 3 into 2A | 36,000 | 2A | 36,000 | AdCWT | CC | |
| | | | | | | From rcy 4 into 2B | 35,100 | 2B | 35,100 | AdCWTVIE | CC | |
| | | | | | | | | | 146,100 | | | |
| Lookingglass | CV | Low | 286,383 | 262,300 | 5 | From rcy 5 into 3 | 75,000 | 3 | 75,000 | AdCWT | Look | |
| | | | | | | From rcy 5 into 4 | 75,000 | 4 | 75,000 | AdCWT | Look | |
| Transfer fry in April with return in Oct. 2009 | | | | | Irrigon | From Irrigon to A2 | 101,800 | A2 | 101,800 | Ad | Look | |
| | | | | | | | | | 251,800 | | | |
| U. Grande Ronde | Conventional | Low | 47,402 | 42,200 | 6 | From rcy 6 into 5 | 40,000 | 5 | 40,000 | CWT | UGR | |
| U. Grande Ronde | CBS | Low | | 102,100 | 7 | From rcy 7 into 6&7 | 65,300 | 6 | 65,300 | AdCWT | UGR | |
| U. Grande Ronde | CBS | Low | | 102,100 | 8 | From rcy 8 into 7&8 | 65,300 | 7 | 65,300 | AdCWT | UGR | |
| U. Grande Ronde | CBS | Low | | | | | 65,400 | 8 | 65,400 | AdCWT | UGR | |
| | | | | | | | | | 236,000 | | | |
| Lostine River | Conventional | Low | 268,284 | 122,500 | 9 | From rcy 9 to 9 | 62,500 | 9 | 62,500 | AdCWT | LR | |
| Lostine River | | Low | | | | | From 9 to 11 | 31,250 | 11 | 31,250 | AdCWT | LR |
| Lostine River | | Low | | | 122,500 | 10 | From rcy 10 to 10 | 62,250 | 10 | 62,500 | AdCWT | LR |
| Lostine River | | Low | | | | | From rcy 10 to 11 | 31,250 | 11 | 31,250 | AdCWT | LR |
| Lostine River | | CBS | | Low | | 78,800 | 12 | From rcy 12 into 12 | 62,500 | 12 | 62,500 | CWT |
| | | | | | | | | | 250,000 | Ad | 61,000 | |
| Imnaha River | Conventional | Low | 480,620 | 415,400 | 16-18 | From 16 into 13 | 66,500 | 13 | 66,500 | AdCWT | IM | |
| | | | | | | From 16&17 into 14 | 66,500 | 14 | 66,500 | AdCWT | IM | |
| | | | | | | From 17 into 15 | 66,500 | 15 | 66,500 | AdCWT | IM | |
| | | | | | | From 17&18 into 16 | 66,500 | 16 | 66,500 | Ad only | IM | |
| | | | | | | From 18 into 17 | 66,500 | 17 | 66,500 | Ad only | IM | |
| | | | | | | From 18 into 18 | 66,500 | 18 | 66,500 | Ad only | IM | |
| | | | | | | | | | 399,000 | | | |
| | | | | | | | 1,282,650 | | | | | |

Appendix G. 2008 Grande Ronde Spring Chinook Fishery Implementation 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 lost due to 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, 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 2009 fishery proposal focuses on returns to the Lostine River component of the Grande Ronde program.

Management of the Lostine 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 Grande Ronde Spring Chinook Fishery Management and Evaluation Plan (FMEP) submitted to NOAA in 2007, and other management agreements, the following details 2009 adult spring Chinook run projections for the Grande Ronde River and a proposed sport fishery plan including; 1) 2009 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 based on previous year's returns and cohort age at return relationships is presented in Table 1. Since run projections are not readily available for Wallowa basin areas outside the Lostine River we utilized the recent relationship between redds counted in the Lostine River, upper Wallowa River, Minam River, Bear Creek and Hurricane Creek to estimate an adult return 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%. The resulting run size estimates for the Wallowa-Lostine and Minam rivers is 3,084 and 2,056 natural fish, respectively (table 1).

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. 2009 preseason adult spring chinook return projections by population.

| <i>Population</i> | <i>Projected Run Size</i> | | |
|--------------------------|---------------------------|----------|-------|
| | Natural | Hatchery | Total |
| Catherine Creek | 80 | 832 | 912 |
| Lookingglass Creek | 27 | 27 | 54 |
| Upper Grande Ronde River | 166 | 2,332 | 2,498 |
| Wallowa/Lostine River | 3,084 | 2,332 | 5,416 |
| Minam River | 2,056 | 0 | 2,056 |

Allowable natural fish impact described by the FMEP at expected run level is approximately 210 (6.8%) fish from the Wallowa - Lostine population. In addition an allowable natural fish impact of 87 (4.2%) fish from the Minam River is available (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 (FMEP), the sport fishery could harvest up to 1,589 hatchery fish without exceeding the designated natural impact level (table 2). This impact allowance provides potential to substantially reduce surplus hatchery fish numbers. Reduction in hatchery fish numbers through harvest complements HGMP guidelines that eliminate use of hatchery fish for broodstock and severely limit 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 area open to angling increases sport harvest opportunity and potential to reduce hatchery fish surplus numbers. But it also creates a mixed stock fishery and potential for impact to the Minam River population. The projected Minam escapement is 2.7 times the ICTRT viable threshold. FMEP criteria provide an allowable natural fish impact of 4.2% or 87 fish for the Minam population’s projected 2,056 natural fish return (table 2). At 10% mortality of caught and released Chinook, anglers would have to handle more than 870 Minam Chinook to exceed allowable impacts

Description of Past Fisheries

Available fishery catch estimates from the 1960s and 1970s 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 no 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 open season.

Proposed 2008 Fishery

Open season: May 1 through July 5

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 (fig. 1)

Gear: *Statewide salmon gear restrictions apply (2009 Oregon Sport Fishing Regulations. www.dfw.state.or.us)*

Expected Outcomes

FMEP guidelines provide for a large 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 suggests success rate during runoff periods is low but increases as flows decrease. We expect a similar flow/success relationship for the proposed Wallowa fishery. However, feedback from fishery monitoring will provide the 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 500 adult Chinook and an incidental impact of less than 66 wild Chinook from the Wallowa-Lostine population. Our expectation is that fewer than 220 adult Minam River Chinook will be handled in the proposed fishery (22 fish impact) (table 2).

Following recently modified draft HGMP guidelines we plan to allow hatchery fish above the Lostine weir at a one to nine ratio with natural fish (90% 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:

- 1904 or 72% wild adult fish spawning in the Lostine River,
- 726 or 28% hatchery adults spawning in the Lostine River,
- 108 natural and zero hatchery adults utilized for hatchery broodstock (100% wild),
- An expected recreational harvest of 500 hatchery adults,
- An expected incidental handling mortality of 66 wild adults for the Wallowa – Lostine and 22 for the Minam.

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.

The intent of Lostine River hatchery program management at this run level 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 Table 2 as “available for outplanting or other use” includes fish likely to be allocated by co-managers for tribal harvest.

Proposed fishery location in the upper portion of the Wallowa River watershed avoids impact to Chinook populations outside the Wallowa system (fig. 1). In addition to incidental hooking and handling of natural spring Chinook we expect ESA listed Snake River summer steelhead kelts and ESA listed adult bull trout may also be intercepted in the fishery. However, we expect both angler effort and success to 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 2008 adult spring Chinook run indicating, harvest, broodstock, fish available for outplant and other uses and resulting expected spawner compositions.

| Lostine - Wallowa Spring Chinook Run Projections and Distribution, 2008 | | | | |
|---|--|-------------|-----------------|--------------|
| | Projections, Allocations and Predicted Results | Wild | Hatchery | Total |
| <u>Run Projections and Expected Harvest Impacts</u> | | | | |
| 1 | Projected adult run to Lostine | 2,056 | 2,332 | 4,388 |
| 2 | Projected run to Wallowa - Lostine | 3,084 | 2,332 | 5,416 |
| 3 | Projected composition (Wallowa - Lostine) | 56.9% | 43.1% | 100.0% |
| 4 | Allowable Wild Impact from FMEP (Wallowa-Lostine) | 210 | | |
| 5 | Allowable Wild Impact Rate (Wallowa - Lostine) | 6.8% | | |
| 6 | Allowable Wild Fish Handle @ 10% Hooking Mortality | 2,102 | | |
| 7 | Resulting maximum hatchery fish sport harvest | | 1,589 | |
| 8 | Expected sport harvest and impact | 66 | 500 | |
| 9 | Expected sport harvest and impact rates | 2.1% | 21.4% | |
| 10 | Projected Minam River Return | 2,056 | 0 | 2,056 |
| 11 | Allowable Wild Impact from FMEP (Minam) | 87 | | |
| 12 | Allowable Wild Impact Rate (Minam) | 4.2% | | |
| 13 | Allowable Wild Fish Handle @ 10% Hooking Mortality (Minam) | 868 | | |
| 14 | Expected sport harvest and impact | 22 | | |
| <u>Post Sport Harvest Allocations and Predicted Results</u> | | | | |
| 15 | Post Sport Harvest Adult Escapement (Wallowa - Lostine) | 3,018 | 1,832 | 4,850 |
| 16 | Post Sport Harvest Adult Escapement (Lostine) | 2,012 | 1,832 | 3,844 |
| 17 | Escapement to Weir (0.85) | 1,710 | 1,557 | 3,267 |
| 18 | Escapement above Weir Before Weir in Place (0.2) | 342 | 311 | 653 |
| 19 | Fish Expected to Be Handled at Weir | 1,368 | 1,246 | 2,614 |
| 20 | Broodstock Composition Target | 100% | 0% | 100% |
| 21 | Broodstock (per AOP) | 108 | 0 | 108 |
| 22 | Post Broodstock Escapement Handled At Weir | 1,260 | 1,246 | 2,506 |
| 23 | Target Percentage Passed above weir | 90% | 10% | |
| 24 | Passed Above the Weir | 1,260 | 140 | 1,400 |
| 25 | Available for Outplanting and Other Use | na | 1,106 | 1,106 |
| <u>Spawner Composition - Lostine w/ harvest</u> | | | | |
| 26 | Spawning Upstream of Weir | 1,602 | 451 | 2,053 |
| 27 | Composition of Natural Spawners above Weir | 78% | 22% | 100% |
| 28 | Spawning Downstream of Weir (.15 of line 11) | 302 | 275 | 577 |
| 29 | Composition of Natural Spawners Downstream of Weir | 52% | 48% | 100% |
| 30 | Lostine River Natural Spawners | 1,904 | 726 | 2,630 |
| 31 | Composition of Lostine River Natural Spawners | 72% | 28% | 100% |
| Required inputs identified in blue cells | | | | |
| Assumes a portion of fish available for outplant will be included in tribal harvest | | | | |

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.

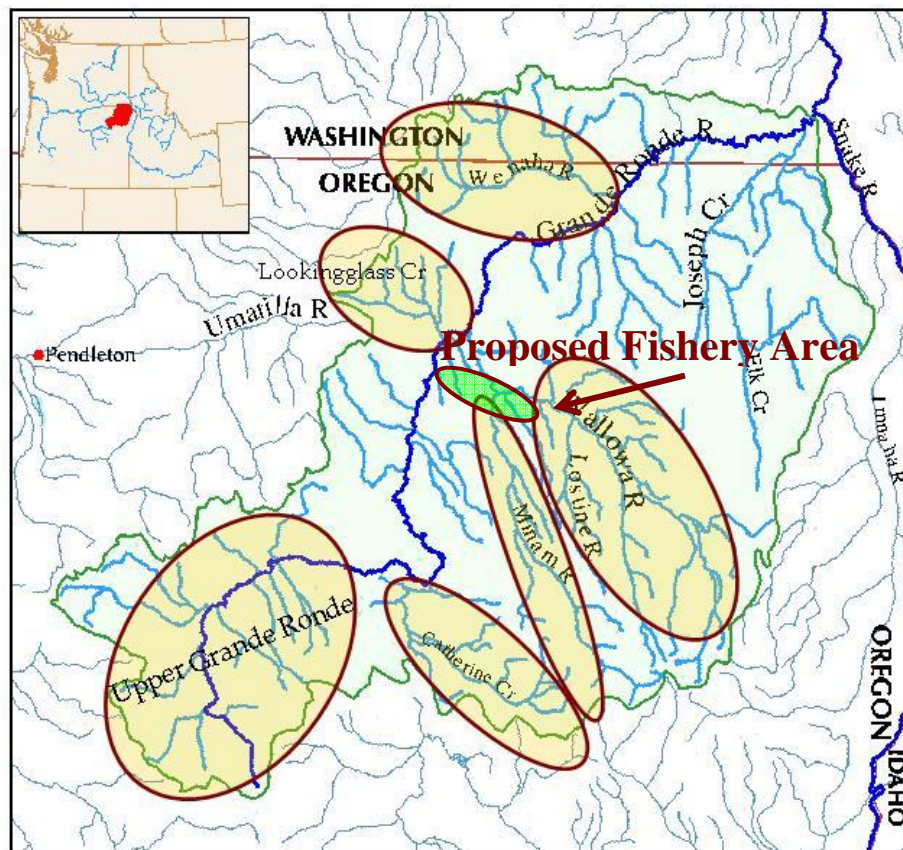


Figure 1. Map of The Grande Ronde sub-basin indicating proposed spring chinook fishery area (green) and spring Chinook population areas (yellow).

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 | 139,000 |
| 2008 | 21 | 11 | 31.3% | 1.6:1 | 3,885 | 124,317 | 117,605 | 111,800 |
| | 88 | 111 | 55.8 | | 3,818 | 761,885 | 680,937 | 656,698 |

*Inventory correction; Since 2004, eggs have been electronically counted
 Numbers in blue current inventory
 2001-06 brood, estimate survival from green egg to smolt at 87.1%

Upper Grande Ronde River spring/summer Chinook salmon spawning data 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 | 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 | 94,500 |
| 2008 | 8 | 4 | 33.3% | 1:1 | 3,950 | 47,402 | 42,458 | 40,00 |
| Total | 141 | 89 | 37.2% | | 3,846 | 885,774 | 725,677 | 693,494 |

*Inventory correction; In 2004, eggs have been electronically counted
 Numbers in blue current inventory
 2001-06 brood, estimate survival from green egg to smolt at 83.4%.

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 | **187,000 |
| 2008 | 37 | 19 | 33.9% | 0.95:1 | 4,783 | 267,834 | 247,274 | |
| | 203 | 175 | 46.3% | | 4,426 | 1,679,748 | 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

In 2004, eggs have been electronically counted

Numbers in blue current inventory

2001-06 brood, estimate survival from green egg to smolt at 83.8%

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 | 15.7% | 0.88 | 4,391 | 408 | 300 | |
| 2008 | 123 | 82 | 82 | 22 | 33.6% | 0.50 | 4,627 | 472 | | |

Appendix I. 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 J. Adult Chinook Fish Health Monitoring Plan & Disease Treatments at Lookingglass Hatchery in 2009

| 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 | 2009 | 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 | 2009 | 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 New charts will be provided, if needed. |

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

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

Injection Route Plan for 2009

| 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 for broodstock, if released need 21 detox period or no injection |

Appendix L. Imnaha and Grande Ronde Broodstock Antibiotic Injection Protocols
Modified by Sam Onjukka for 2009
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 should be available from Bimeda. (1-877-627-6762 or Bimeda.com) by February 2009.

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 2009, 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 M. 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) 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 | ≥90 | 0 |
| ≥620 ^c | Any | | | | | |

^a pre-season or adjusted season estimate for total escapement
^b Not to exceed 450 total fish, no limit on naturalized adults
^c Selective sport harvest threshold

In the near term or until there is an established Lookingglass Creek stock, 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 N. 2009 Imnaha River Spring Chinook Sport Fishery Implementation Proposal **2009 Imnaha River Spring Chinook Sport Fishery Proposal**

Introduction

The Imnaha River spring Chinook hatchery is part of the Lower Snake River Compensation Plan (LSRCP) program developed to mitigate for fish production lost as a result of construction of 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, to enhance natural spawner numbers.

During the 2001-2005 time period Imnaha River spring Chinook sport fisheries were held under authorization of NOAA Fisheries through a Nez Perce Tribe, Tribal Resource Management Plan (TRMP) and harvest sharing agreement outlined in a US vs. OR 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 2007. Early projections suggest that the 2009 spring Chinook escapement to the Imnaha River will exceed 7,800 adult fish. Projected natural and hatchery adult 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 2007 and other management agreements, the following details 2009 Imnaha River spring Chinook sport fishery plan including: 1) 2009 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

Oregon Department of Fish and Wildlife (ODFW) Northeast Region staff expects a large return of ESA-listed spring/summer Chinook salmon to the Imnaha River in 2009, possibly exceeding the large runs in 2001 and 2002. Initial projections suggest a run heavily weighted toward hatchery fish, including 6,510 marked hatchery adults (table 1). Unmarked, naturally produced adults are expected to number 1,316, exceeding the "viable" threshold of 1,000 recommended by the Interior Columbia Technical Recovery Team (ICTRT).

Allowable Sport Fishery Impact

FMEP guidelines provide for an allowable sport fishery impact of 39 natural fish or 2.97% 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 1,930 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 2009.

| Imnaha Chinook Run Projections and Distribution, 2009 | | | | |
|---|--|-------|----------|--------|
| Projections, Allocations and Predicted Results | | Wild | Hatchery | Total |
| <u>Run Projections and Expected Harvest Impacts</u> | | | | |
| 1 | Projected adult run | 1,316 | 6,510 | 7,826 |
| 3 | Projected composition | 16.8% | 83.2% | 100.0% |
| 4 | Allowable Wild Impact from FMEP | 39 | | |
| 5 | Allowable Wild Impact Rate | 3.0% | | |
| 6 | Allowable Wild Fish Handle @ 10% Hooking Mortality | 390 | | |
| 7 | Resulting maximum hatchery fish sport harvest | | 1,930 | |
| 8 | Expected sport harvest and impact | 20 | 1,000 | |
| 9 | Expected sport harvest and impact rates | 1.5% | 15.4% | |
| <u>Post Sport Harvest Allocations and Predicted Results</u> | | | | |
| 10 | Post Sport Harvest Adult Escapement | 1,296 | 5,510 | 6,806 |
| 11 | Escapement to Weir (0.727) | 942 | 4,006 | 4,948 |
| 12 | Escapement above Weir Before Weir in Place (0.35) | 330 | 1,402 | 1,732 |
| 13 | Fish Expected to Be Handled at Weir | 612 | 2,604 | 3,216 |
| 14 | Broodstock Composition Target | 40% | 60% | 100% |
| 15 | Broodstock (per AOP) | 83 | 125 | 208 |
| 16 | Post Broodstock Escapement Handled At Weir | 529 | 2,479 | 3,008 |
| 17 | Target Percentage Passed above weir | 60% | 40% | |
| 18 | Passed Above the Weir | 529 | 353 | 881 |
| 19 | Outplant to Big Sheep | | 500 | |
| 20 | Available for Outplanting and Other Use | na | 1,626 | 1,626 |
| <u>Spawner Composition w/ Harvest</u> | | | | |
| 21 | Spawning Upstream of Weir | 859 | 1,755 | 2,613 |
| 22 | Composition of Natural Spawners above Weir | 33% | 67% | 100% |
| 23 | Spawning Downstream of Weir (.273 of line 10) | 354 | 1,504 | 1,858 |
| 24 | Composition of Natural Spawners Downstream of Weir | 19% | 81% | 100% |
| 25 | Imnaha River Natural Spawners | 1,213 | 3,259 | 4,471 |
| 26 | Composition of Imnaha River Natural Spawners | 27% | 73% | 100% |

Required inputs identified in blue cells

Assumes a portion of fish available for outplant will be included in tribal harvest

Description of Past Fisheries

Prior to 2001, sport fishing for salmon had been closed in the Imnaha basin since 1979. Before 1979 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). We estimated 433 (16.0%), 15 (1.3%), 83 (4.8%), 29 (5.9%), 22 (7.1%), and 17 (6.7%) unmarked spring chinook were handled in sport fisheries from 2001 through 2005 and 2008, respectively (table 2). Mean handle rate for those years was 7.0%. Using the current FMEP estimated handling mortality of 10%, natural fish impact for 2001-2005 fisheries ranged from 0.13% to 1.6% with a mean of 0.7%. We believe the handle rate in 2001 was largely the result of drought conditions that kept the river fishable throughout the open season and the relatively large return of unmarked Chinook (table 2). We responded with an early fishery closure. In most years the Imnaha River sustains high flows during the month of June. Years 2002 through 2004 represent more normal flow conditions during May and June and produced lower harvest and handling rates (table 2). In general, stream flows above 1000 cfs produce difficult angling conditions with low catch rates. The 2001 through 2005 and 2008 fisheries resulted in an estimated harvest of 304 (7.8%), 153 (3.6%), 127 (3.2%), 194 (8.3%), 22 (2.1%), and 64 (4.7%) from the marked hatchery adult return to the Imnaha, respectively (table 2).

Table 2. Imnaha River Spring Chinook Sport fisheries impact for years 2001 through 2008.

| Year | Sport Season | Escapement to River (H/W) | Harvest (95% CI) | | Released (95%CI) | | Impact | |
|------|--------------|---------------------------|------------------|------------|------------------|-----|----------|---------|
| | | | (H) | (W) | (H) | (W) | N (W) | % (H/W) |
| 2001 | 6/2-6/21 | 3,488/2,618 | 302 (226-378) | 21 (8-34) | 433 (306-560) | 43 | 8.7/1.6 | |
| 2002 | 6/1-6/30 | 3,876/1,104 | 152 (73-231) | 9 (1-17) | 15 (6-24) | 2 | 3.9/0.2 | |
| 2003 | 6/7-7/1 | 3,813/1,699 | 125 (43-207) | 22 (4-56) | 83 (20-156) | 8 | 3.3/0.5 | |
| 2004 | 6/19-7/5 | 1,866/465 | 192 (81-303) | 21 (5-39) | 29 (9-56) | 3 | 10.4/0.6 | |
| 2005 | 6/25-7/4 | 1,273/311 | 22 (2-23) | 54 (5-123) | 22 (2-50) | 2 | 2.1/0.6 | |
| 2008 | 7/4-7/15 | 1,348/255 | 64 (0-191) | 0 | 17 (0-73) | 2 | 4.7/0.8 | |

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

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

Missing years indicate no fishery

Proposed 2009 Fishery

Consistent with hatchery program goals, FEMP criteria guidance and existing management agreements, ODFW proposes a fairly liberal 2009 Imnaha River spring Chinook sport fishery.

Open season: May 1 – July 5 (may extend to July 12 if harvest is low)

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 (Fig. 1)

Gear: Statewide salmon gear restrictions apply (2009 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 1000 adult Chinook and an incidental impact of less than 20 wild Chinook from the Imnaha population.

Following recently modified draft HGMP guidelines we plan to allow hatchery fish above the Gumboot weir at a three hatchery fish to two natural fish ratio (40% natural) and to release up to 500 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:

- 1213 or 27% wild adult fish spawning in the Imnaha River,
- 3259 or 73% hatchery adults spawning in the Imnaha River,
- 500 hatchery spawners out-planted to Big Sheep Creek,
- 83 natural and 125 hatchery adults utilized for hatchery broodstock (40% wild),
- a recreational harvest of less than 1,000 hatchery adults,
- an incidental handling mortality of less than 20 wild adults
- 1626 adults handled at the weir but surplus to needs identified above (Table 1).

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

To give us an indication of potential, but very unlikely, maximum fishery impacts we reviewed weekly catch data from the 2001-2005 fisheries. Maximum weekly harvest rate observed in those fisheries was 4% in 2001. Using 4% as a maximum impact rate for a one week fishery results in an estimated harvest of 260 adult hatchery Chinook and fishery related handling of 53 naturally produced Chinook. Application of estimated 10% handling mortality to project potential mortality related to catch and release of naturally produced unmarked Chinook, we estimate maximum weekly fishery impact of five unmarked fish. Given the relatively large return of naturally produced adults projected for 2009, the fishery could persist for over seven weeks at maximum exploitation without exceeding FMEP impact limits.

In addition to incidental hooking and handling of wild spring Chinook it is expected summer steelhead kelts and fluvial adult bull trout may also be intercepted in the fishery. Incidental impact to these species is expected to be similar to the 2001 through 2005 fisheries when we estimated 0 to 11 steelhead (mean = 2.2/year) and 100 to 321 bull trout (mean = 209/year) 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 2009. Given the large numbers of hatchery Chinook expected in 2009, 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.

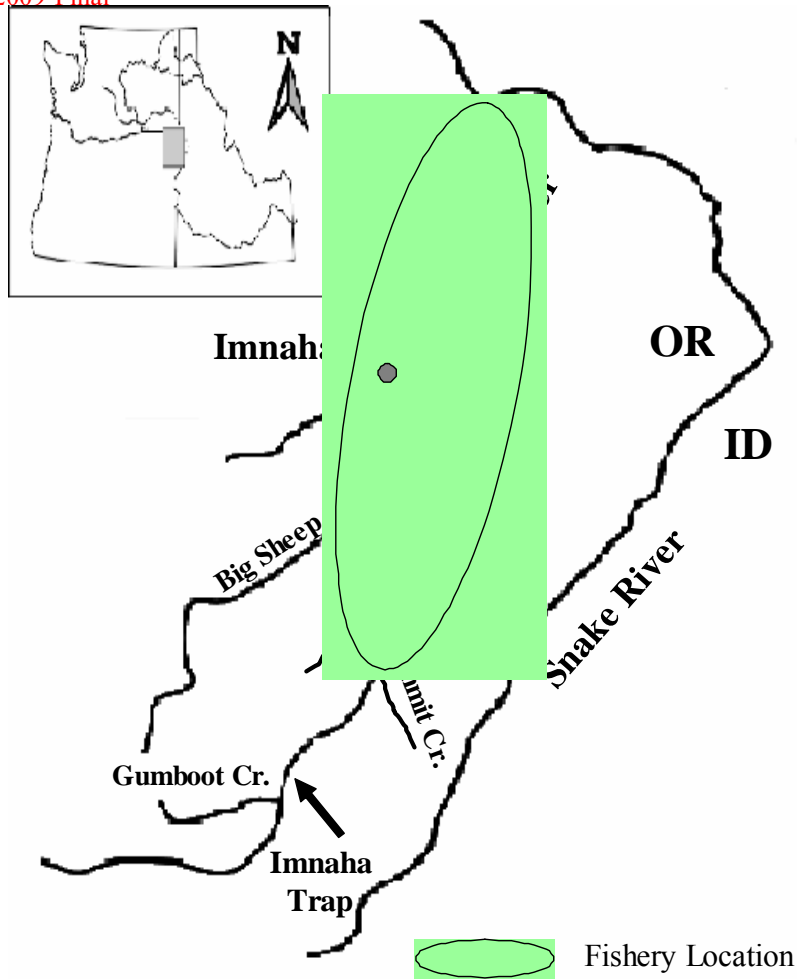


Figure 1. Map of the Imnaha River indicating boundaries of the proposed 2008 spring Chinook sport fishery.

Monitoring and Enforcement Plan

We will conduct a statistical creel survey similar to that done in 2002 - 2005 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.

References

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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, Oct. 2007).

Appendix O. 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> |
|-------------------|---------------------|---------------------|---------------|---------------------|-------------|-------------|---------------------|--------------------|
| | | | | <u>2001</u> | <u>2002</u> | <u>2003</u> | | |
| 1998 | 2000 | Conventional | 0 | - | - | - | - | - |
| | | Captive | 38,149 | 157 | 205 | 57 | 419 | 1.10 |
| | | Natural-Redds | 34 | 46 | 190 | 192 | 428 | |
| | | | | <u>2002</u> | <u>2003</u> | <u>2004</u> | | |
| 1999 | 2001 | Conventional | 0 | - | - | - | - | - |
| | | Captive | 136,833 | 17 | 194 | 19 | 230 | 0.168 |
| | | Natural-Redds | 40 | 19 | 71 | 9 | 99 | |
| | | | | <u>2003</u> | <u>2004</u> | <u>2005</u> | | |
| 2000 | 2002 | Conventional | 0 | - | - | - | - | - |
| | | Captive | 180,343 | 73 | 570 | 24 | 667 | 0.3699 |
| | | Natural-Redds | 34 | 6 | 77 | 7 | 90 | |
| | | | | <u>2004</u> | <u>2005</u> | <u>2006</u> | | |
| 2001 | 2003 | Conventional | 24,392 | 22 | 27 | 3 | 52 | 0.2132 |
| | | Captive | 105,292 | 9 | 71 | 19 | 99 | 0.1078 |
| | | Natural-Redds | 133 | 5 | 50 | 4 | 61 | |
| | | | | <u>2005</u> | <u>2006</u> | <u>2007</u> | | |
| 2002 | 2004 | Conventional | 70,071 | 21 | 140 | 4 | 165 | 0.2355 |
| | | Captive | 91,791 | 19 | 138 | 15 | 172 | 0.1874 |
| | | Natural-Redds | 158 | 4 | 114 | 2 | 120 | |
| | | | | <u>2006</u> | <u>2007</u> | <u>2008</u> | | |
| 2003 | 2005 | Conventional | 120,753 | 7 | 60 | 6 | 73 | .0605 |
| | | Captive | 68,827 | 2 | 73 | 8 | 83 | .1206 |
| | | Natural-Redds | 167 | 12 | 48 | 12 | 65 | |

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| | | | | | | | | |
|------|------|---------------|---------|-------------|-------------|-------------|-----|-------|
| 2004 | 2006 | Conventional | 23,216 | <u>2007</u> | <u>2008</u> | <u>2009</u> | 39 | 0.177 |
| | | Captive | 45,604 | 4 | 35 | | | |
| | | Natural-Redds | 96 | 24 | 108 | 135 | | |
| 2005 | 2007 | Conventional | 49,783 | <u>2008</u> | <u>2009</u> | <u>2010</u> | 107 | 0.296 |
| | | Captive | 21,647 | 107 | | | | |
| | | Natural-Redds | 74 | 4 | | 4 | | |
| 2006 | 2008 | Conventional | 116,882 | <u>2009</u> | <u>2010</u> | <u>2011</u> | | |
| | | Captive | 0 | | | | | |
| | | Natural-Redds | 117 | | | | | |
| 2007 | 2009 | Conventional | 139,000 | <u>2010</u> | <u>2011</u> | <u>2012</u> | | |
| | | Captive | 0 | | | | | |
| | | Natural-Redds | 59 | | | | | |
| 2008 | 2010 | Conventional | 111,000 | <u>2011</u> | | | | |
| | | Captive | 35,000 | | | | | |
| | | Natural-Redds | 101 | | | | | |

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

| Brood Year | Release Year | Release Type | Number | Adults Return Years | | | Total Return | SAR Percent |
|-------------------|---------------------|----------------------------|---------------|----------------------------|--------------------|--------------------|---------------------|--------------------|
| | | | | <u>2001</u> | <u>2002</u> | <u>2003</u> | | |
| 1998 | 2000 | Conventional | 0 | | | | | |
| | | Captive | 1,508 | 0 | 3 | 1 | 4 | 0.2653 |
| | | Natural-Redds | 42 | 0 | 83 | 229 | 312 | |
| | | | | <u>2002</u> | <u>2003</u> | <u>2004</u> | | |
| 1999 | 2001 | Conventional | 0 | | | | | |
| | | Captive | 2,560 | 0 | 8 | 6 | 14 | 0.5469 |
| | | Natural-Redds ¹ | 0 | 1 | 6 | 0 | 7 | |
| | | | | <u>2003</u> | <u>2004</u> | <u>2005</u> | | |
| 2000 | 2002 | Conventional | 0 | | | | | |
| | | Captive ^{2,3} | 228,385 | 60 | 545 | 26 | 631 | 0.2763 |
| | | Natural-Redds | 20 | 3 | 43 | 9 | 55 | |
| | | | | <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 | 9 | 162 | 0.2319 |
| | | Captive | 75,063 | 0 | 1 | 0 | 1 | 0.0013 |
| | | Natural-Redds | 23 | 0 | 51 | 12 | 63 | |
| | | | | <u>2006</u> | <u>2007</u> | <u>2008</u> | | |
| 2003 | 2005 | Conventional ⁵ | 104,350 | 2 | 26 | 4 | 32 | 0.0307 |
| | | Captive | 1,019 | 0 | 0 | 0 | 0 | 0.0000 |
| | | Natural-Redds | 40 | 4 | 21 | 10 | 26 | |
| | | | | <u>2007</u> | <u>2008</u> | <u>2009</u> | | |
| 2004 | 2006 | Conventional | 18,901 | 5 | 20 | | 25 | 0.132 |
| | | Captive | 76 | 0 | 0 | | 0 | 0.000 |
| | | Natural-Redds | 186 | 0 | 68 | | 68 | |
| | | | | <u>2008</u> | <u>2009</u> | <u>2010</u> | | |
| 2005 | 2007 | Conventional | 118,803 | | 175 | | 175 | |
| | | Captive | 20,620 | | 22 | | 22 | |
| | | Natural-Redds | 91 | | 18 | | 18 | |
| | | | | <u>2009</u> | <u>2010</u> | <u>2011</u> | | |
| 2006 | 2008 | Conventional | 259,932 | | | | | |
| | | Captive | 0 | | | | | |
| | | Natural-Redds | 28 | | | | | |
| | | | | <u>2010</u> | <u>2011</u> | <u>2012</u> | | |
| 2007 | 2009 | Conventional | 94,500 | | | | | |
| | | Captive | 52,500 | | | | | |
| | | Natural-Redds | 1 | | | | | |
| | | | | <u>2011</u> | <u>2012</u> | <u>2013</u> | | |
| 2008 | 2010 | Conventional | 40,000 | | | | | |
| | | Captive | 193,000 | | | | | |
| | | Natural-Redds | 32 | | | | | |

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

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⁴ 32,800 released as parr in Sheep Creek

⁵ 11,800 smolts were lost in downstream trap accident

Appendix Q. 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.

| Brood Year | Release / Migration Year | Origin | Smolts | Brood Year Adult Returns (estimated) | | | | Smolt-to-Adult Return (%) |
|------------|--------------------------|----------------------|---------|--------------------------------------|-------|-------|-------|---------------------------|
| | | | | Age 3 | Age 4 | Age 5 | Total | |
| 1997 | 1999 | Conventional | 11,738 | 78 | 124 | 27 | 229 | 1.95% |
| | | Natural | 25,554 | 40 | 378 | 66 | 484 | 1.89% |
| 1998 | 2000 | Captive | 34,977 | 39 | 431 | 108 | 578 | 1.65% |
| | | Natural | 7,900 | 10 | 324 | 144 | 478 | 6.05% |
| 1999 | 2001 | Captive | 133,982 | 34 | 247 | 27 | 308 | 0.23% |
| | | Natural | 8,183 | 15 | 234 | 29 | 278 | 3.40% |
| 2000 | 2002 | Conventional | 31,464 | 66 | 202 | 6 | 274 | 0.87% |
| | | Captive | 77,551 | 105 | 624 | 32 | 761 | 0.98% |
| | | Natural | 10,112 | 18 | 362 | 22 | 402 | 3.98% |
| 2001 | 2003 | Conventional | 100,916 | 168 | 299 | 12 | 479 | 0.47% |
| | | Captive ¹ | 141,860 | 107 | 320 | 8 | 435 | 0.31% |
| | | Natural | 20,415 | 24 | 165 | 18 | 207 | 1.01% |
| 2002 | 2004 | Conventional | 116,471 | 28 | 196 | 21 | 245 | 0.21% |
| | | Captive | 133,780 | 53 | 186 | 11 | 250 | 0.19% |
| | | Natural | NA | 11 | 200 | 36 | 247 | NA |
| 2003 | 2005 | Conventional | 102,655 | 12 | 151 | 16 | 179 | 0.17% |
| | | Captive | 62,124 | 10 | 82 | 6 | 98 | 0.16% |
| | | Natural | 33,646 | 26 | 167 | 43 | 236 | 0.70% |
| 2004 | 2006 | Conventional | 199,586 | 134 | 742 | | 876 | 0.44% |
| | | Captive | 40,982 | 8 | 17 | | 25 | 0.06% |
| | | Natural | 30,202 | 37 | 567 | | 604 | 2.00% |
| 2005 | 2007 | Conventional | 205,406 | 336 | | | 336 | 0.16% |
| | | Captive | 24,604 | 6 | | | 6 | 0.02% |
| | | Natural | NA | 150 | | | 150 | NA |
| 2006 | 2008 | Conventional | 186,000 | | | | NA | NA |
| | | Captive | 62,000 | | | | NA | NA |
| | | Natural | NA | | | | NA | NA |
| 2007 | 2009 | Conventional | 186,000 | | | | | |
| | | Captive | 62,000 | | | | | |
| | | Natural | NA | | | | | |

¹Does not include 4,600 parr released into Bear Creek.

Appendix R. Preliminary data from Imnaha River releases between 1982 and 2008.

| <u>Brood</u> Year | Release Year | Release Type | <u>Number</u> | 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 | 115,830 | 24 | 18 | 38 | 80 | 0.0691 |
| | | 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 | 92 | 240 | |
| 1988 | 1990 | Conventional ¹ | 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 ² | 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 | 189 | 561 | |

¹ Includes only Ad marked hatchery releases and returns.

² Does not include 195,814 smolts released with LV mark.

Appendix N. continued.

| <u>Brood</u> 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 | 143 | 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 | 34 | 285 | 74 | 393 | |
| 2001 | 2003 | Conventional | 268,426 | 758 | 979 | 40 | 1,777 | 0.662 |
| | | Natural-Redds | 635 | 29 | 227 | 29 | 285 | |
| 2002 | 2004 | Conventional | 398,469 | 240 | 1018 | 86 | 1,344 | 0.337 |
| | | Natural-Redds | 1,111 | 13 | 203 | 70 | 286 | |
| 2003 | 2005 | Conventional | 435,186 | 155 | 820 | 254 | 1,229 | 0.282 |
| | | Natural-Redds | 726 | 9 | 132 | 57 | 198 | |
| 2004 | 2006 | Conventional | 441,680 | <u>2007</u> 651 | <u>2008</u> 2,238 | <u>2009</u> | 2,889 | |
| | | Natural-Redds | 495 | 35 | 226 | | 261 | |
| 2005 | 2007 | Conventional | 432,572 | <u>2008</u> 2,199 | <u>2009</u> | <u>2010</u> | 2,199 | |
| | | Natural-Redds | 349 | 160 | | | 160 | |
| 2006 | 2008 | Conventional | 349,000 | <u>2009</u> | <u>2010</u> | <u>2011</u> | | |
| | | Natural-Redds | 235 | | | | | |
| 2007 | 2009 | Conventional | 294,500 | <u>2010</u> | <u>2011</u> | <u>2012</u> | | |
| | | Natural-Redds | 252 | | | | | |
| 2008 | 2010 | Conventional | 399,000 | <u>2011</u> | <u>2012</u> | <u>2013</u> | | |
| | | Natural-Redds | 536 | | | | | |