

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

**FOR THE PERIOD OF
FEBRUARY 1, 2008 – JANUARY 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 15, 2008**

In Attendance December 18, 2007 pre-AOP: CTUIR (Boe, Crump, Hewitt, McLean), ODFW (Bailey, Clark, Gribble, Flesher, Hoffnagle, Monzyk, Onjukka, Patterson, Smith), NPT (Cleary, Sealey, Vogel, Young, Zollman)

In Attendance January 24, AOP 2008: CTUIR (Boe, McLean), ODFW (Aschenbrenner, Bailey, Clark, Deal, Gribble, Flesher, Hoffnagle, Monzyk, Onjukka, Patterson, Smith), NMFS (no show), NPT (Cleary, Harbeck, Johnson, Sealey, Vogel, Young, Zollman), LSRCP-FWS (Marshall)

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Steelhead (*Oncorhynchus mykiss*)

I. Summer Steelhead - 2007 Brood Year (Grande Ronde & Imnaha basins)

This is the fourth year for releasing smolts 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 1,094,000 fish weighing 236,754 pounds. A total of 800,000 are Wallowa stock at 4fpp. 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 294,000 are Little Sheep stock 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 480,000 smolts will be released from the Wallowa acclimation site, 360,000 in the early group and 120,000 in the late group.

Early Group: Approximately 360,000 smolts will be released after 5 to 7 weeks of acclimation			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	February 19-22	April 6-Su	The screens in the lower sections will be pulled on April 6 allowing fish to leave for 24 hours. On April 7, the remaining fish will be forced out of the lower section
		April 7-M	
Upper Acclimation Pond	February 22-28	April 7-M	The screens in the upper sections will be pulled on Monday allowing fish to leave for 24 hours. On April 8, the remaining fish will be forced out of the lower section
		April 8-T	
Note: Approximately 75,000 smolts released will be used for fall collected brood evaluations.			

Late Group: Approximately 120,000 smolts will be released after 1 to 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	April 14-17	April 26-Sa	The screens in the lower section will be pulled on April 26 allowing fish to leave for 12 days. On May 8, the remaining fish will be forced out of the upper and lower sections
		May 8-Th	
Note: Approximately 25,000 smolts released will be used for fall collected brood evaluations			

- b. Big Canyon Acclimation:** Approximately 320,000 smolts will be released from the Big Canyon acclimation site, 160,000 in the early group and 160,000 in the late group.

Early Group: Approximately 160,000 smolts will be released after 5 to 7 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	Feb. 29 to March 3	April 9-W	The screens in the lower sections will be pulled on April 9 allowing fish to leave for 24 hours. On April 10, the remaining fish will be forced out of the lower section
		April 10-Th	
Upper Acclimation Pond	March 3-5	April 10-Th	The screens in the upper sections will be pulled on April 10 allowing fish to leave for 24 hours. On April 11, the remaining fish will be forced out of the lower section
		April 11-F	

Late Group: Approximately 160,000 smolts will be released after 2 to 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Lower Acclimation Pond	April 16-17	April 29 -T	The screens in the lower section will be pulled on April 29 allowing fish to leave for 13 days. On May 12, the remaining fish will be forced out.
		May 12 - M	
Upper Acclimation Pond	April 17-18	April 30-W	The screens in the upper section will be pulled on April 30 allowing fish to leave for 12 days. On May 12, the remaining fish will be forced out.
		May 12 - M	
Note: Prior to May 12 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 will scan for PIT tags.			

- c. **Little Sheep Acclimation:** Approximately 294,000 smolts will be released in the Little Sheep and Big Sheep tributaries, 194,000 acclimated in Little Sheep and 100,000 direct stream released in Big Sheep

Acclimation. Approximately 198,000 smolts will be released after 5 to 8 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
Acclimation Pond	March 7-12	April 1-T	Screens will be pulled on April 1 allowing fish to leave for 28 days. On April 29, the remaining fish will be forced out.
		April 29 - T	
Note: Prior to April 29 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 100,000 smolts will be released directly into Big Sheep April 7-10. 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 2008

Comparative survival studies (CSS) were discussed for steelhead released in 2008; however, no CSS PIT fish will be released in 2008. PIT released fish are randomly selected from the marked population.

- a. **Wallowa**
 - 100,000 Ad, RV, CWT
 - 100,000 Ad, LV, CWT
 - 280,000 Ad only
 - 10,600 PIT
- b. **Big Canyon marks include:**
 - 50,000 Ad, LV, CWT
 - 270,000 Ad only
 - 6,000 PIT
- c. **Little Sheep**
 - 173,000 Ad only
 - 25,000 Ad, LV, CWT
 - 9,300 PIT
- d. **Big Sheep (direct release) marks include:**
 - 100,000 no mark
 - 5,700 PIT

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.

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

F. Key Contacts

1. **ODFW** (Aschenbrenner) will notify the following Keniry (ODFW) of steelhead releases
2. **ODFW** (Patterson) will notify juvenile trapping personnel – NPT- (Michaels (426-3198; ext. 4), Young (208-634-5240) of any change in the scheduled Little Sheep or Big Sheep direct stream smolt releases.

II. Summer Steelhead -2008 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 2009. Target production includes:

- 640,000 production
- 160,000 fall returning brood (Early Brood)

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

B. Egg Take Goal – Collect 1,133,242 green eggs to produce 1,016,520-eyed eggs (89.7% survival green to eyed eggs). Transfer 1,016,520-eyed eggs to Irrigon Hatchery to produce 800,000 smolts (78.7% survival eyed eggs to smolt).

C. 2008 Adult Collection

1. Predicted Run (Table 3)

- Marked –3,597
- Unmarked – 96
- Total – 3,693

a. Wallowa Hatchery –

- Marked –2,139 (475 – 3,803 95% CI)
 - 1,397 1:1-salt; 721 1:2-salt; 18 2:1-salt; 3 2:2-salt.

b. Big Canyon Satellite –

- Marked –1,458 (308-2,607 95% CI)
 - 955 1:1-salt; 495 1:2-salt; 8 2:1 salt.
- Unmarked – 96 (48-143 95% CI)
 - 30 2:1-salt; 24 2:2-salt, 27 3:1 salt; 15 others
- Total – 1,554

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 11th. 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 14, the ladder will be operated from 5 pm Monday through Friday morning. After sorting on Fridays, the ladder will remain closed through Monday 5 pm to keep hatchery fish more available to the angler. On April 14 the ladder will remain open throughout the trapping operation.
- b. Trap/sorting/recycle Frequency** - Work trap on 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 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 5,080 eggs/female.

2. Wallowa Hatchery Spawning Guidelines

a. Expected 1st Spawn – Wednesday, March 12.

b. Spawning Dates – Wednesday.

- March 12 – 19 females (15 Ad and 4 RV)
- March 19 – 33 females (27 Ad and 6 RV)
- March 26 -- 42 females (33 Ad and 9 RV)
- April 2 -- 42 females (33 Ad and 9 RV)
- April 9 -- 41 females (33Ad and 8 RV)
- April 16 -- 31 females (25 Ad and 6 RV)
- April 23 – 17 females (14 Ad and 3 RV)

If 9 females not ripe on March 12, no fish will be spawned for production. The first spawning day will be postponed until March 19 and production will be comprised from only six egg takes. The total of 225 females will be spawned.

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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 12.

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

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

- 50,000 Ad, LV, CWT
- 270,000 Ad only
- 6,000 PIT plus CSS tags

b. Tagged groups are summarized in Table 4.

c. PIT-tagging in each release group (Table 5).

d. Re-cycle—ODFW Fish Research (Flesher) will provide a short summary of fish re-cycled in the fishery.

III. Summer Steelhead - 2008 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 (Appendix D).

A. Smolt Goal — Produce 215,000 smolts at 5.0fpp for release in 2009.

Production and releases include:

- 165,000 Little Sheep Cr. (acclimated) smolts (at least 10% wild parents)
- 50,000 Big Sheep Cr. (direct stream) smolts

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B. Egg Take Goal – A total 313,851 green eggs will be taken to produce 282,152 eyed eggs (89.9%) and 215,000 smolts (76.2% eyed eggs to smolts).

C. Adult Collection

1. Predicted Run – (Table 3).

- Marked – 1,779 (722 - 2,747 95% CI);
 - 1.360 1:1-salt; 400 1:2-salts; 17 2:1-salts; 2 3:1-salts
- Unmarked – 106 (15 to 195 95% CI)
 - 54 2:1-salt and 23 2:2-salts; 20 3:1-salts; 9 3:2-salts and 4:1-salts.

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 6 males and 1 of 10 females will be taken for brood (total wild fish collected is estimated at 39 males and 67 females). Wild composition in hatchery brood is estimated at 10%. The other wild adults collected will be 1-LOP and placed above the weir. Number wild fish released above the weir is estimated at 94 fish with a wild composition of 37.6% for natural spawning.

2) *Hatchery* – For males, 1 of 12 will be collected for brood, 1 of 12 marked with 1-LOP and placed above the weir, and 10 of 12 marked with 2-LOP and out planted to Big Sheep, food bank, or used for nutrient enrichment. For females, 1 of 15 will be collected for broodstock, 1 of 15 marked with 1-LOP and released above the weir, and 13 of 15 marked with 2-LOP out planted to Big Sheep, food bank, or used for nutrient enrichment. 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 156 fish with a hatchery composition of 62% of the 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 1,482 adults may be available for transfer from Little Sheep to Big Sheep. 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 C/S, up to 50 fish for nutrient enrichment, or local food bank*. Fish collected for potential nutrient enhancement will target the ADLVCWT adults to assist with wire recovery, and will be coordinated with Fish Health on their sampling days.

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 –65 collected (63 spawned)
- Females –64 collected (63 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 4,963.

a. Wild broodstock–6 males and 6 females needed for brood. Approximately 94 wild fish will be released above Little Sheep weir.

b. Hatchery broodstock–58 males and 58 females are needed for brood. Approximately 156 adults will be released above the Little Sheep weir. The balance of hatchery origin adults may be outplanted in Big Sheep Creek, utilized for C/S, or nutrient enhancement.

F. Spawning Guidelines

1. Little Sheep Satellite

a. First Spawn - March 18.

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 and release (genetic sample).

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 SAR
- 5,000 CSS

b. Big Sheep (direct release):

- 50,000 Ad only
- 3,500 PIT SAR

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- 1,500 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-2008

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** – Environmental conditions permitting, 1 March through August 1, typically no steelhead captured after mid-June. Lookingglass trap will be operated into early September to collect Chinook.

2. Disposition of fish at weir-

- a. **Steelhead** – Unmarked adults will be sampled (enumerated, fork length, maturity, migration status, scales, sex, marks, condition) opercle punched and passed above the weir. All UGR fish will have scales collected. Catherine Creek and LGCR fish will be sub-sampled for scales (schedule to be given to CTUIR O&M). Marked steelhead will be sacrificed and AdLV marked fish will be sampled for CWT recovery.
- b. **Bull trout** – Record date, number trapped, and estimated fork length (minimizing handling effects and avoid anesthetics). Send summary to Smith, Bailey, and Jacobs (ODFW) and Krakker (USFWS).
- c. **Genetic** – Collect tissue samples (opercle punches) from all wild steelhead for future genetic analysis.
- d. **Adult mortality** – Retain Lookingglass Creek mortality only. Sample immediately or freeze for sampling. Other weir locations, remove otolith (ODFW) and return carcass to river. Collaborate with Fish Health when working dead fish.
- e. **Fallback** fish will be collected and released below the weir. Recaptured fish will be released above weir.

3. Juvenile Sampling

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

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 Weir using angled upstream and downstream portable picket 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-*

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1) Steelhead – Steelhead in the upstream movement box will be dipped out with cotton dip net and placed into a moist canvas sling/measuring box. 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 released 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 LSRC (Krakker).

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

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

C. Key Contacts

1. NPT (Vogel, Hesse, Young)

CHINOOK (*O. tshawytscha*)

Fish production will prioritize 12 raceways for Grande Ronde tributary production and 6 raceways for Imnaha production at Lookingglass Hatchery. Priorities 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 -2006 Brood Year Spring/Summer Chinook– Catherine Creek, Lookingglass Creek, U. Grande Ronde & Lostine River

Smolts target size was 25fpp (actual 25.7fpp) by October 31 with an expected release size of 20fpp in April.

A. Allocation—The estimated number of smolts for the Grande Ronde Sub-basin 2008 release is 627,100 fish weighing 24,400 pounds (Appendix A). Breakdown by tributary is as follows:

- Catherine Creek (CC)- 117,200
 - Conv-117,200
- Lostine River (LR)- 205,900
 - CBS-10,500
 - Conv-195,400
- U. Grande Ronde (UGR)- 260,500
 - CBS-0
 - Conv-260,500
- Lookingglass (LGCR)-43,400

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 3, Catherine Creek on March 10, and on Upper Grande March 11. Acclimation facility operator will notify Scott Patterson if their facility is not operational on scheduled dates. Release number will be determined by last physical

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inventory minus mortality. Facility operators will report final numbers to the ODFW LGH or Shari Beals.

a. Lostine Acclimation schedule

Early Group: Approximately 74,400 smolts will be released after 1 to 3 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH ½ R11 to pond A	March 3 - 4	March 19-W	The screens will be pulled on March 19 allowing fish to leave for 13 days. On April 1, the remaining fish will be forced out
LGH ½ R11 to pond B		April 1-T	
LGH R10 to pond C			
Note: R10 captive brood progeny			

Late Group: Approximately 131,500 smolts will be released after 1 to 3.5 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH½ R9 to pond A	April 2 -3	April 10-Sa	The screens will be pulled on April 10 allowing fish to leave for 10 days. On April 17, the remaining fish will be forced out
LGH ½R9 to pond B		April 17-T	
LGH ½R12 to pond C			
LGH½ R12 to pond D			
Discussion of volitional starting April 10.			

b. Catherine Creek

Approximately 117, 200 smolts will be released after 3 to 4 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH ½ R1 to pond A	March 10	March 24-M	The screens will be pulled on March 24 allowing fish to leave for 14 days. On April 14, the remaining fish will be forced out
LGH ½ R1 to pond B		April 14-M	
LGH ½ R2 to pond C			
LGH ½ R2 pond D			

c. Upper Grande Ronde

Early Group 127,500 smolts will be released after 3 to 4 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH ½ R5 to pond A	March 11-12	March 17-M	The screens will be pulled on March 17 allowing fish to leave for 7 days. On March 24, the remaining fish will be forced out
LGH½ R5 to pond B		March 24-M	
LGH½ R7 to pond C			
LGH ½ R7 to pond D			

Late Group: Approximately 133,000 smolts will be released after 1 to 3.5 weeks of acclimation.			
Location	Transfer in date	Release dates	Comments
LGH½ R6 to pond A	March 24-25	April 7-M	The screens will be pulled on April 7 allowing fish to leave for 10 days. On April 14, the remaining fish will be forced out
LGH ½R6 to pond B		April 14-T	
LGH ½R8 to pond C			
LGH½ R8 to pond D			

d. Lookingglass Creek

Approximately 43,000 smolts will be released into Lookingglass Creek			
Location	Transfer in date	Release dates	Comments
LGH R3, R4	NA	April 1-T 10 day volitional April 14-M 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

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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: Erick VanDyke (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

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

E. Marked Groups no Visual Implant Elastomer (VIE) tags.

- a. Catherine Creek
 - 117,400 ADCWT
 - 21,000 PIT
- b. Lostine River
 - CV 195,500 ADCWT,
 - 5,000 PIT
 - CB 10,500 CWT only
 - 1,500 PIT
- c. Upper Grande Ronde
 - CV 127,100 CWT,
 - CV 64,200 ADCWT,
 - CV 69,200 Ad only
 - 2,000 PIT
- d. Lookingglass Creek-
 - 43,000 ADCWT
 - 1,000 PIT

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. **Hatcheries:** CTUIR (McLean), ODFW (Deal), NPT (Zollman).
2. **Fish Research:** CTUIR (Boe) ODFW (Hoffnagle, Monzyk), and NPT (Hesse, Harbeck, Vogel, Cleary, Young).

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

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

A. Allocation –Scheduled for transfer target size of 22fpp in mid-March 2009.

1. Anticipated Grande Ronde basin production is 675,000 to 701,000 smolts for release in 2008 produced from Lookingglass Hatchery.

- a. **Estimated Captive brood** numbers are:
 - Catherine Creek 0

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- Lostine River 117,000 (outplanted ~18,000 fry eggs in Bear and Prairies Creek (Hayes) 2008; may outplant portion as parr)
 - U. Grande Ronde 53,000
 - Lookingglass Creek 96,500
- b. Estimated Conventional brood numbers are:**
- Catherine Creek 139,000
 - Lostine River 216,000
 - U. Grande Ronde 94,000
 - Lookingglass Creek 50,000

B. Final Rearing—LGH fry will be transferred outside in April or early May (Appendix F).

C. Marking Program--

1. **AD/CWT** is scheduled for June through July 2008. 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

- 92,600 Ad CWT
- 45,800 Ad only

Lostine River (needs resolution)

- 187,500 Ad CWT
- 62,500 CWT only (M&E mark)
- 50,000 to 70,000 parr (Ad only released in Wallowa; Cleary to schedule 1,000 PIT during marking)

Lookingglass Creek

- 81,000 Ad CWT
- 43,000 Ad CWT

Upper Grande Ronde

- 94,000 CWT only
- 53,000 AdCWT

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 2008 (Table 6). Numbers by stock include:

- Catherine Creek—21,000 CSS
- U. Grande Ronde—1,500
- Lostine (captive)—2,000
- Lostine (conventional)—6,000
- Lookingglass Creek-1,500
- 1,000 PIT for parr outplants

3. **No Visual Implant Elastomer (VIE)** is scheduled in 2008 for BY07.

D. Fish Health

Only one medicated feed treatment is planned for conventional 2007 brood and progeny of low titer captive brood adults. Captive brood progeny from adults with moderate levels will receive a second medicated treatment.

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

E. Key contacts

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

VIII. Grande Ronde Basin-Conventional-2008 Brood Year - Spring/Summer Chinook Catherine, Lookingglass, Lostine, and Upper Grande Ronde

The LSRCP production goal is 900,000 smolts to produced 5,800 adults. However, co-managers will target 880,000 smolts for release in 2009.

A. Smolt Production -

1. Production targets include:

- Catherine Creek: 130,000 smolts
- Lookingglass Creek: 250,000 smolts
 - 187,500 from conventional brood
 - 62,500 from CC captive brood
- Lostine: 250,000 for Lostine River
 - 187,500 from conventional brood
 - 62,500 from captive brood
- Upper Grande Ronde: 250,000 smolts (request to target 187,500 from CV and 62,500 from CB)

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. 2008 Adult Collection

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

a. Catherine Creek –

ODFW-362 adults (30 jacks)

- Natural-100 adults (plus 20 jacks)
- Hatchery-262 adults (plus 10 jacks)

CTUIR- 272 adults

- Natural- 115 adults
- Captive- 144 adults
- Conventional- 13 adults

b. Lostine River

ODFW–1,506 Adults (212 jacks)

- Natural-624 adults (plus 37 jacks)
- Hatchery-882 adults (plus 83 jacks)

NPT–1,473 Adults (263 jacks)

- Natural-586 adults (plus 50 jacks)
- Captive-60 adults (plus 15 jacks)
- Conventional-827 adults (plus 198 jacks)

c. Upper Grande Ronde –

ODFW-72 adults (35 jacks)

- Natural-13 adults (plus 27 jacks)
- Hatchery-59 adults (plus 8 jacks)

CTUIR-240 adults

- Natural- 114 (18 – 210) adults
- Captive-6 adults
- Conventional- 120 (53 – 188) adults

d. Lookingglass Creek --

ODFW-491 adults

- Natural-62 adults
- Hatchery-429 adults

CTUIR. 565 adults

- Natural-71 adults
- Hatchery CC-494 adults

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

a. Open Season: May 6- July 6

b. Bag Limit: Two adipose clipped adult Chinook per day, bonus bag of 5 jack salmon per day (anglers may not continue angling after achieving adult bag limit)

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: 2% to 10% of expected return, 24 – 118 fish.
- Maximum hatchery fish harvest rate of 247 ad-clipped fish (16%)
- Maximum incidental wild mortality of 26 fish Wallowa-Lostine (2.8%) and 11 fish on Minam (1.7%)
- Additional harvest of ad-clipped (59) and wild (26) 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 42 pairs should be collected to produce 130,000 smolts. The estimate is based on a female survival of 95%, fecundity of 3,824, and green eggs to smolt survival of 86%.

b. LG CR—An estimated number of 80 pairs should be collected to produce 250,000 smolts. This is based on performance history of the CC stock. In 2008, we will target a collection of 60 pairs. Additional production can be obtained from the Catherine Creek captive brood production.

c. LR—A target of 54 pairs should be collected (51 spawned) to produce 187,500 smolts. The balance of production will be captive brood. A total of 70 a pairs are required to produce 250,000 smolts. These estimates are based on female survival of 95%, fecundity of 4,370, and 85% green egg to smolt survival.

d. UGR— A target of 83 a pairs should be collected to produce 250,000 smolts. This is based on a female survival of 92%, fecundity of 4,062, and 81% survival from green egg to smolt.

D. Trap Operation

1. CC and UGR Trap Operation (CTUIR)– Trapping will begin in March 2008 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.

3. Lookingglass (ODFW)— The intake trap at Lookingglass Hatchery will be operated from March (environmental conditions allow) through mid-September. Known returns of CC smolts released into Lookingglass, and unmarked jacks and four-year olds, will be used for outplants or broodstock.

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 for a mile section 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 of >250, the adult sliding scale for broodstock collection in Catherine Creek supplementation programs calls for collection of <20% of wild and hatchery-origin fish. Hatchery-origin adults released above the weir should be ≤70%. Ten percent of the males above the weir may be age-3 hatchery males.

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

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.

c. Lostine-- At the projected run level of > 1,400 adults, the sliding scale for broodstock collection <20% of wild total fish. Hatchery-origin adults released above the weir should be ≤ 40%, and the hatchery brood stock should contain ≥30% wild origin fish. Ten percent of the males above the weir may be age-3 hatchery males. Pass or out plant all Captive Brood F₁ returning adults.

- Wild fish—keep < 1 of 10 for brood
- Hatchery—keep < 1 of 8 for brood
- Captive—pass or outplant 100% of captive adults

Surplus is expected, but maybe out planted in Bear Creek, Hurricane, Prairie, Wallowa River or re-cycled in the fishery.

d. Lookingglass Creek—Work trap as needed. Draft guidelines management guidelines are located in Appendix M.

1) Unmarked five year old Chinook (≥83cm), considered progeny of Rapid River origin stock, can be given to the Tribes for C/S or released above the weir providing the number is ≤5% of the total release.

2) 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. Fifty percent can be kept for broodstock up to the 60 pair target.

3) Surplus hatchery jacks can be euthanized.

4) 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 (two ocean) and age-5 (three ocean).

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

b. 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

c. Unmarked Chinook can be anesthetized with Aqui-S (pending INAD), 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. *The opercle tissue is generally saved for genetic 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 an Green Tyvek tag and hatchery fish a yellow Tyvek tag. Hatchery fish trapped on Lookingglass Creek, identified as CC, UGR, will either be released back to the stream of origin, marked with 2ROP and identifying tag and held with their respective brood. LR strays will be returned to the Lookingglass Creek. Adults may be

outplanted after July 25 or spawned for production. If outplanted, Lookingglass returning fish will be opercle punched and tissue saved for genetic analysis.

d. 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 weir-effect surveys will also be sent to Fish Health. Data will be sent to ODFW Fish Research (Monzyk). Following examination, the carcasses may be disposed of by Tribal distribution, habitat or landfill.

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 adults will be held in one or two circular tanks in the endemic building (numbers TBA).

E. Spawning Guidelines (for each stock)

1. Anesthetic MS222 or Aqui-S.

2. Sorting – The first sort will occur the week of August 11th.

3. Expected First Spawn – The week of August 11th.

4. Spawning Frequency - Once per week or as required (deceased females will not be spawned). Tentative Schedule: Tuesday-IM, Wednesday-LR, LGCR, Thursday-UGR, CC.

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):

a. 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”.

b. Cryopreserved sperm Fill out request form (Appendix I.)

c. If milt is not available after 7 days of holding a ripe female, transport female(s) to river of origin.

Note: Gene Banking – Sperm from males will be cryopreserved on the day of spawning. NPT will provide staffing and coordination with Lookingglass Hatchery.

F. BKD Management.

Progeny are categorized based on their maternal parent. Categories include:

- $\leq 0.199 = \text{Low}$
- $0.2 - 0.399 = \text{Moderate/Low}$
- $0.4 - 0.799 = \text{Moderate/High}$
- $0.800 - \text{above} = \text{Clinical}$

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 ($>60,000 \text{ uw/cm}^2/\text{sec}$) creek water.

1. Hatchery Program – Each female's eggs will be incubated in one tray until disease screening profiles results are completed. Eggs may be combined after fecundity estimates are completed. Incubation temperatures will be manipulated to bring all spawn dates together during incubation and early rearing.

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 segregation is based on allowable space.
- 3. Catherine Creek, Lostine, and Grande Ronde** smolts produced will target 25fpp in October 2009.
- 4. Lookingglass Creek** production above 150,000 may be transferred to Irrigon for rearing between May and September 2009. Prior to steelhead marking at Irrigon, pre-smolts will be transferred back to Lookingglass in October 2009 and released from the adult holding pond 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 plan (Appendices J, K, L)

J. Key Contacts

1. Transportation

- a. Facility Operators (NPT and CTUIR)** will coordinate all hauling and notify LGH (TBD) 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-managers.

IX. Grande Ronde Basin-2008 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 56.5%)

- LR— $71 \text{ ♀} = 60,200 \text{ smolts}$
- CC/Look— $92 \text{ ♀} = 78,000 \text{ smolts}$
- UGR— $91 \text{ ♀} = 77,100 \text{ smolts}$

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

B. Spawning--See Captive Brood 2008 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)
2. Oxbow Hatchery manager (Banks)

X. Imnaha -2006 Brood Year-Spring/Summer Chinook

A. Anticipated smolt release – A total of 350,300 smolts at 20fpp (current size 24.6fpp).

- Acclimated: 350,300
- Direct stream: 0

B. Liberations (See Appendix A)

1. **Transfer and Acclimation** – Approximately 350,300 smolts will be transferred to Imnaha Satellite between March 12 and 14 and held for acclimation. Satellite personnel will begin volitional release March 25. Any remaining fish will be forced out on April 10. 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 2008.
 - 180,000 AdCWT
 - 170,300 Ad only
 - 21,000 PIT
2. Fish Research staffs will coordinate efforts with hatchery staff for pre-release sampling efforts (Table 2).
3. Lethal sample of 240 smolts (plus the FH 60 pre-liberation samples) to assess maturation in 2008. No sampling in 2009 due to low fish numbers.

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 (426-3198), ODFW (D. Eddy, Monzyk, Hoffnagle), LSRCP office and FPC (TBA) of date and numbers of fish release.

XI. Imnaha –2007 Brood Year-Spring/Summer Chinook

1. **Smolt Production-** An estimated 288,000 smolts will be produced at a target size of 20fpp at release.

a. **Early Rearing** – Fry will be reared in 6 double deep troughs at Lookingglass Hatchery on UV treated water Lookingglass Creek water. Fish will be fed a 14-day “pro-active” feed in lieu of a

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28-day medicated feed treatment prior to transferring outside. Fish will be transfer outside to raw creek water in April or May.

b. Final Rearing - After marking, fish will be divided into 5 raceways with approximately 57,600 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 2008. Approximately 172,000 fish will receive CWT (Table 4).
- 2. PIT tag-** 21,000 fish will be PIT tagged in October 2008 (Table 6).

C. Marking Program –

- 1. AdCWT** – 172,000
- 2. AD-** 116,000 .
- 3. Pit tag** –21,000 .

E. Key Contacts

- 1. Lookingglass** (Deal)
- 2. Fish Health** (Onjukka)
- 3. Fish Research** (Monzyk and Vogel)

XII. Imnaha –2008 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 2010.

B. Adult Collection

1. Predicted Runs- Total estimated return to river is 2,275 adults. The total with jacks is 2,651 fish. This includes 1,927 hatchery produced (males and females) and 348 naturally produced (males and females) adults. Approximately 69% of fish entering the Imnaha River are expected to be collected at the weir and the collection of adults is estimated at: 1,395 hatchery-origin (males, females) and 240 natural-origin (males and females) (Table 11).

C. Imnaha Fishery Proposal Summary –The projected return of 2,275 (348 wild and 1,927 hatchery) Chinook salmon to the Imnaha River in 2008 will exceed the necessary escapement levels for natural spawning, outplanting and broodstock. We plan to use 216 adults (64 wild and 152 hatchery) for artificial propagation, allow the remaining wild adults and jacks to spawn in the Imnaha River, and release 300 hatchery adults and possibly some hatchery jacks into Big Sheep and Lick Creeks. Therefore, recreational and tribal fisheries are recommended (Appendix N).

Proposed Recreational Fishery:

- 1. Season** – June 21 through July 6 or until estimates of anglers catch and release of 13 unmarked Chinook (this corresponds to a handling rate of 10% and maximum incidental mortality rate <0.39% of projected wild run).
- 2. Bag Limit** – 1 adipose-clipped adult Chinook (bonus bag limit of 5 jacks per day).
- 3. Open Area** – Imnaha River mouth upstream to Summit Creek Bridge.
Expected and Maximum Harvest (based on punch card returns from 1957 –1978):
 - Expect 4.0% harvest rate for a harvest of 79 ad-clipped (hatchery) Chinook
 - Expect incidental wild mortality of 1 adult (0.29 %)
 - Sport fishery impact on jacks is expected to be similar or slightly higher than adult impacts
 - Additional harvest of ad-clipped (255) and wild (7) 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. **Adults and jacks** –Fish retained for broodstock, will be opercle punched, injected intraperitoneally (IP) with erythromycin and oxytetracycline (Appendices H and I). If sport or Tribal fishery occurs, only fish retained for broodstock will be injected. Hatchery-origin jacks and hatchery-origin adults, collected above broodstock needs, can be held at Wallowa Hatchery for 21-days and provided to the Tribes for C/S.
 - b. **Tumors** - Fish will be inspected for tumors along the gum line. If a tumor is suspected, fish with will be held for consultation.
 - c. **Adults for outplanting** in Big Sheep and Lick Creek. Up to 300 hatchery-origin adults can be outplanted. 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.
 - d. **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 (Monzyk). Following examination, the carcasses may be disposed of by Tribal distribution, habitat or landfill.

D. Hatchery Broodstock Collection Guidelines

1. **Weir management**—At 2,370 adult estimated escapement, the sliding scale guidelines suggests that: ≤60% of the fish released above the weir may be of hatchery origin; ≥25% broodstock of natural origin; take ≤40% of the wild return for brood; 10% of the males above the weir may be age-3 hatchery 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 97)
 - 32 natural (spawn 30)
 - 76 hatchery (spawn 67-6 jacks equal one male)
Females – 108 (spawn 97)
 - 32 natural (spawn 30)
 - 76 hatchery (spawn 67)

3. Brood collections guidelines: The current projection for adult spring/summer Chinook returns to Imnaha River is 2,651 fish including 2,275 adults (1,927 ad-clipped and 348 unmarked) and 376 jacks (324 ad clipped and 52 natural). However, it is expected that only 51 % of the run will be intercepted at the weir. Fish released above the weir will be managed at 60% hatchery and 40% wild origin ratio.

Estimated Totals:	Estimate 51%			Escapement
Escapement to mouth	collected	Broodstock	OP	above the weir
1,927-Hatchery	983	152	300	171
348-Wild	178	64	0	114

Estimate 360 surplus without harvest and 16 fish with harvest.

Collection guidelines for Imnaha spring Chinook in 2008.

	June 1-22	June 23–30	July 1-8	July 9-16	July 17-23
HOB-152	4	16	34	30	24
NOB-64	4	4	18	16	8

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Outplants	up to 50	up to 75	up to 100	up to 75	
<u>July 24-31</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	4	4	8	2
6	2	2	0	2	0

*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 1,699 adults (16.7% wild) are prognosticated to spawn in the Imnaha sub-basin, 1,399 in the Imnaha River and 300 in Big Sheep and Lick Creek. Natural-origin fish returning to Big Sheep and Lick Creek is unknown. Estimates do not include harvest or jacks.

E. Spawning Guidelines

- 1. Anesthetic Used** – Aqui-S.
- 2. Expected First Spawn** - Tuesday, August 12 or 19.
- 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 plan (Appendices J, K, L)

H. Key Contacts

- 1. Lookingglass** (Deal) monthly reports to ODFW (La Grande & Wallowa fish districts and Hoffnagle), CTUIR (Zimmerman and McLean), NPT (B. Johnson, Hesse, Young, Harbeck, Zollman), LSRCPC 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** (Monzyk) monthly trap reports to ODFW (La Grande & Wallowa fish districts, and Hoffnagle), CTUIR (Boe, James, McLean), NPT (B. Johnson, Hesse, Vogel, Zollman).

Snake River –2007 Brood Year-fall Chinook

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

A. Allocation – Production estimates are determined by Lyons Ferry staff based on adult collections are Lower Granite Dam and swim-ins (SAR).

- Grande Ronde 400,000 sub-yearlings
- North Lapwai Valley 200,000 sub-yearlings.

B. Spawning/rearing/marketing/release--See Lyons Ferry 2008 AOP.

C. Incubation

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

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D. Key Contact

1. **Lyons Ferry Hatchery** (Rodgers, Schuck, Mendal)
2. **Nez Perce Tribal Hatchery** (Rogers, B. Johnson, Young)

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Table 1 (12/8/07)
2008 Irrigon Transport Schedule
(07 brood)

<u>Date</u>	<u>Stock</u>	<u>From Ponds</u>	<u>To</u>	<u>Number</u>	<u>Est. Pounds</u>
Feb. 19-22	5607	7,8*,9*,10*,11*	Wallowa Lower Acc	180,000	40,000
Feb. 22-28	5607	12*,13*,14,16	Wallowa Upper Acc	180,000	40,000
Feb. 29 to Mar. 3	5607	17,19*	Big Cany. Lower Acc	80,000	17,777
Mar. 3-5	5607	18,20	Big Cany. Upper Acc	80,000	17,777
Mar. 6-12	2907	27*,28,29,31	Little Sheep Acc	194,000	38,800
Apr. 7-10	2907	30,32	Big Sheep (Direct)	100,000	20,000
Apr. 14-17	5607	15*,23*,25	Wallowa Lower Acc	120,000	26,666
Apr. 16-17	5607	21*,22	Big Cany. Lower Acc	80,000	17,777
Apr. 17-18	5607	24,26	Big Cany. Upper Acc	<u>80,000</u>	<u>17,777</u>
				1,094,000	236,574

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Table 2. Juvenile spring Chinook salmon and summer steelhead sampling schedule at LSRCF facilities, 2008. 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 (BY)	Location	Pond	Purpose
<i>Spring Chinook</i>					
	Feb. 12-15	Catherine (06)	Lookingglass	1-4	CWT, RS, GS
	Feb. 12-15	U. Grande Ronde (06)	Lookingglass	5-8	CWT, RS, GS
	Feb. 12-15	Lostine (06)	Lookingglass	9-12	CWT, RS, GS
	Feb. 12-15	Imnaha (06)	Lookingglass	13-18	CWT, RS, GS
	June 5-6	All (07)	Lookingglass	1-18	PS
<i>Summer Steelhead (brood 07)</i>					
	Dec 2007	Wallowa	Irrigon	8-13,15,19,21,23	CWT
	Dec 2007	Imnaha	Irrigon	27	CWT
	April 4	Wallowa	Wallowa	LAP, UAP	RS
	April 4	Imnaha	Irrigon	30,32	RS (FL only)
	April 7	Wallowa	Big Canyon	LAP, UAP	RS, GS
	April 1	Imnaha	Little Sheep	AP	RS, GS
	April 25	Wallowa	Wallowa	LAP	RS
	April 28	Wallowa	Big Canyon	LAP	RS
	April 29	Imnaha	Little Sheep	AP	sex ratio
	May 12	Wallowa	Big Canyon	AP	sex ratio

Table 3. Summer Steelhead run projections to LSRCF Facilities in 2008.

2008 PROJECTED Returns to Wallowa Hatchery					
MARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	851	546		
Marked	1:2	191	530		
Marked	2:1	9	9		
Marked	2:2	1	2		
Total		1052	1087	2139	475-3803

2008 PROJECTED Returns to Big Canyon Facility					
MARKED AND UNMARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	498	457		
Marked	1:2	123	372		
Marked	2:1	3	5		
Subtotal		624	834	1458	308-2607
Unmarked	2:1	13	17		
Unmarked	2:2	8	16		
Unmarked	3:1	15	12		
Unmarked	3:2 & 4:1	5	10		
Subtotal		41	55	96	48-143
Total		665	889	1554	

2008 PROJECTED Returns to L. Sheep Cr. Facility					
MARKED AND UNMARKED FISH					
	Age	Males	Females	Total	95% C.I.
Marked	1:1	708	652		
Marked	1:2	80	320		
Marked	2:1	10	7		
Marked	3:1	0	2		
Subtotal		798	981	1779	722-2747
Unmarked	2:1	21	33		
Unmarked	2:2	5	18		
Unmarked	3:1	10	10		
Unmarked	3:2 & 4:1	3	6		
Subtotal		39	67	106	15-195
Total		837	1048	1885	

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Table 4. Estimated numbers of tagged fish released from 2008 brood summer steelhead and 2007 brood spring Chinook salmon.

Species, Stock	Number Marked	Type of Mark	Marking Period	Marking Location
Summer Steelhead				
<u>2008 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>2007 Brood Year (Ad clips in June/July)</u>				
Imnaha River	172,000	Ad+CWT	June/July	Lookingglass
	116,000	Ad only	June/July	Lookingglass
Catherine	91,600	Ad+CWT	June/July	Lookingglass
Catherine	45,800	Ad only	June/July	Lookingglass
Lostine	187,500	Ad+CWT	June/July	Lookingglass
Lostine CB	62,500	CWT only	June/July	Lookingglass
Lostine CB/CV	50,000+	Ad only	June/July	Lookingglass (surplus)
Upper GR.	94,000	CWT only	June/July	Lookingglass
Upper GR.	54,700	Ad CWT	June/July	Lookingglass
Lookingglass/ Catherine	50,000	Ad+CWT	June/July	Lookingglass
Catherine CB	96,500	Ad+CWT	June/July	Lookingglass

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Table 5. PIT-tagging schedule for 2008 brood summer steelhead at Irrigon Hatchery scheduled for 1-5, 8-11 December 2008. Raceways need to be off feed 2 days prior to and after 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). 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 ^A	LSRCP tags	CSS tags	Total tags ^B
Wallowa stock				
WAP, forced April	8, 10	3,000	1,400	4,400
WAP, forced April	12	1,500	600	2,100
WAP, volitional May	23	1,500	600	2,100
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	3,000	1,300	4,300
BC, forced May	21	3,000	1,300	4,300
Subtotal		15,600	6,500	22,100
Imnaha stock				
Little Sheep, volitional April	27	5,800	2,500	8,300
Little Sheep, volitional April	29	5,700	2,500	8,200
Big Sheep, direct stream April	30	3,500	1,500	5,000
Subtotal		15,000	6,500	21,500
Grand total		30,600	13,000	43,600

^A Raceway numbers may change for the 2008 brood.

^B 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 2008 (BY2007). 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	45,800	7,000
Catherine Conventional	2	45,800	7,000
Catherine Conventional	3	45,800	7,000
Catherine CBS-low/Lookingglass Cr	4	69,500	500
Catherine CBS-mod/Lookingglass Cr	5	27,000	500
Lookingglass Conventional	6	50,000	500
U. Grande Ronde Conventional	7	47,000	500
U. Grande Ronde Conventional	8	47,000	500
U. Grande Ronde CBS	9	53,000	500
Lostine Conventional	10	62,500	2,000
Lostine Conventional	11	62,500	2,000
Lostine Conventional	12	62,500	2,000
Lostine CBS	13	62,500	2,000
Imnaha	14	57,600	4,200
Imnaha	15	57,600	4,200
Imnaha	16	57,600	4,200
Imnaha	17	57,600	4,200
Imnaha	18	57,600	4,200
Grand total		967,900	53,000

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

Mark	Age	Males	Females	Total	95%CI	
Return to River						
Hatchery	3	20	0	20	6	to 34
Hatchery	4	110	137	247	35	to 457
Hatchery	5	10	5	15	0	to 30
Total		140	142	282	41	to 521
Natural	3	10	0	10	0	to 21
Natural	4	45	39	84	3	to 164
Natural	5	8	8	16	2	to 29
Total		63	47	110	6	to 215
Grand Total		203	189	392	47	to 736
Total to weir (87% of run trapped at weir - five year average)						
Hatchery		122	124	245	16	to 243
Natural		55	41	96	3	to 103

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Table 8. Projected spring Chinook salmon returns to the Upper Grande Ronde in 2008.

Mark	Age	Males	Females	Total	95%CI		
Return to River							
Hatchery	3	27	0	27	2	to	53
Hatchery	4	22	31	53	12	to	95
Hatchery	5	4	2	6	0	to	16
Total		53	33	86	14	to	164
Natural	3	8	0	8	0	to	21
Natural	4	0	0	0	0	to	0
Natural	5	7	6	13	0	to	36
Total		15	6	21	0	to	57
Grand Total		68	39	107	14	to	221
Total to weir (80% of run trapped at weir - five year average)							
Hatchery		42	26	69	5	to	72
Natural		12	5	16	0	to	20

Table 9. Projected spring Chinook salmon returns to the Lostine River in 2008.

Mark	Age	Males	Females	Total	95%CI		
Return to River							
Hatchery	3	82	1	83	4	to	161
Hatchery	4	379	474	853	327	to	1,378
Hatchery	5	16	13	29	0	to	62
Total		477	488	965	331	to	1,601
Natural	3	36	1	37	21	to	52
Natural	4	281	296	577	342	to	811
Natural	5	29	18	47	10	to	83
Total		346	315	661	373	to	946
Grand Total		823	803	1,626	704	to	2,547
Total to weir (69% of run trapped at weir - five year average)							
Hatchery		327	334	661	166	to	698
Natural		237	216	452	194	to	447

Table 10. Projected spring Chinook salmon returns to Lookingglass Fish Hatchery in 2008.

Mark	Age	Total
Marked (CC)	3	--
Marked (CC)	Adult	494
UnMarked	3	--
UnMarked	Adult	71
	Total	565

Table 11. Projected spring Chinook salmon returns to the Imnaha River in 2008.

Mark	Age	Males	Females	Total	95%CI		
Return to River							
Hatchery	3	324	0	324	132	to	515
Hatchery	4	854	844	1,698	1,196	to	2,201
Hatchery	5	89	140	229	62	to	396
Total		1,267	984	2,251	1,390	to	3,112
Natural	3	52	0	52	7	to	97
Natural	4	171	91	262	193	to	330
Natural	5	37	49	86	49	to	122
Total		260	140	400	249	to	549
Grand Total		1,527	1,124	2,651	1,640	to	3,662
Total to weir (51% of run trapped at weir - five year average)							
Hatchery		646	502	1,148	632	to	1,359
Natural		133	71	204	154	to	268

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Appendices

APPENDIX A. PROPOSED JUVENILE SALMONID RELEASES IN THE GRANDE RONDE (GR) AND IMNAHA (IM) BASINS IN 2008

Basin	Species	Stock	Hatchery	Number ⁽¹⁾	Lbs	fpp	Location	In Facility	In River	Pond # ⁽²⁾	Release Method ⁽³⁾	Marks
GR	STS	5607	IR	180,000	45,000	4.0	Wallowa Lower Acc	Feb 19-22	Apr 6-7	7,8*,9*,10*,11*	Forced	75K AdRVCWT; 75K AdLVCWT; 210K Ad only,
GR	STS	5607	IR	180,000	45,000	4.0	Wallowa Upper Acc	Feb 22-28	Apr 7-8	12*,13*, 14, 16	Forced	
GR	STS	5607	IR	80,000	20,000	4.0	Big Canyon Lower	Feb.29 – Mar 3	Apr 9-10	17,19*	Forced	25K AdLVCWT; 55K Ad
GR	STS	5607	IR	80,000	20,000	4.0	Big Canyon Upper	Mar. 3-5	Apr 10-11	18,20	Forced	80K Ad
IM	STS	2907	IR	198,000	39,600	5.0	Little Sheep Acc	Mar 6-7	Apr 1 -29	27*, 28, 29,31	Volitional	25K AdLVCWT; 172K Ad
IM	STS	2907	IR	100,000	20,000	5.0	Big Sheep Cr	NA	Apr 7-10	30, 32	Direct Stream	100K no mark
GR	STS	5607	IR	120,000	30,000	4.0	Wallowa Lower Acc	Apr. 14-17	Apr 26-May 8	15*,23*,25*	Volitional	25K AdLVCWT; 25KAdRVCWT; 70K Ad 25K AdLVCWT; 55K Ad
GR	STS	5607	IR	80,000	20,000	4.0	Big Canyon Lower Acc	Apr 16-17	Apr.29-May 12	21*, 22	Volitional	
GR	STS	5607	IR	80,000	20,000	4.0	Big Canyon Upper Acc	Apr 17-18	Apr 30-May 12	24,26	Volitional	80K Ad
				1,098,000	259,600	4.23						
GR	CHS	8006	LG	127,400	5,790	22	Grande Ronde Acc	Mar. 11-12	Mar.-17-24	5,7	Volitional	63K CWT; 64.4K AdCWT
GR	CHS	8006	LG	129,900	5,900	22	Grande Ronde Acc	Mar 24-25	Apr 7-14	6,8	Volitional	63K CWT, 66.9K Ad,
GR	CHS	20006	LG	63,900	2,900	22	Lostine Acc	Mar 3-4	Mar 9-Apr.1	11	Volitional	AdCWT,
GR	CHS	200F06	LG	10,500	480	22	Lostine Acc	Mar 3-4	Mar 9-Apr.1	10	Volitional	CWT
GR	CHS	20006	LG	131,900	6,000	22	Lostine Acc	Apr. 2-3	Apr 17-30	9, 12	Volitional	AdCWT
GR	CHS	20106	LG	117,200	5,330	22	Catherine Cr Acc	Mar 10	Mar.24- Apr 10	1, 2	Volitional	58.2KAd; 59K AdCWT
GR	CHS	201F06	LG	43,400	2,170	20	Lookingglass Creek	NA	Apr 1-14	3,4	Volitional	AdCWT
IM	CHS	2906	LG	350,300	15,920	22	Imnaha Acc	March 12-14	Mar. 25-Apr 10	13-18	Volitional	170.3K Ad; 180K AdCWT
				977,400	44,490	22.0						

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

⁽²⁾ * Indicates CWT groups, Brood evaluation groups include: AdLVCWT (8,10,12,23) 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	2007 & 2008	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	2007	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	2007	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	Will need to rear Rb on each water supply (well and spring) – brought in as eyed eggs	Must be on water supply for 6 months
Wallowa & Little Sheep	2008	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	2008	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	2008	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.

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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 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, wiping down fish to be spawned with iodophor prior to spawning.

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	
Chlorine or Aqueous solution as sodium hypochlorite (Household Bleach)	Lib truck tanks	10 ppm	10 min.	Organic matter binds and neutralizes

***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 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	2007	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).	*1st Aquamycin feeding in March/April/May at ~500 fpp for 201F and 80F fish. An 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 and coded wire tagging for two consecutive days. Formalin is used under a local veterinarian prescription. Coldwater disease- Oxytetracycline or Florfenicol maybe used.
Lookingglass Hatchery	2006	200W 200F 201W 201F 80W 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	2006		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.

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Appendix F. Ponding plan for 2008 at Lookingglass Hatchery

Group	Strategy Treatment	BKD	Eyed Eggs (Dec 07)	Initial Ponding (fry)	Initial Pond #		Smolts marked (est.)	Final Pond #	Smolt Numbers	Mark	Release Site
Catherine Creek	Conventional	Low	146,207	139,000	3&4	From rcy 3&4 into 1	46,300	1	45,800	AdCWT	CC
						From rcy 3&4 into 2	46,300	2	45,800	AdCWT	CC
						From rcy 4 into 3	46,400	3	45,800	Ad only	CC
Catherine Creek	CBS	Low	65,312	59,000	5	From rcy 5 into 4	29,000	4	29,000	AdCWT	Look
Catherine Creek	CBS	Moderate	21,000	21,000	6	From rcy 6 into 5	21,000	5	21,000	AdCWT	Look
Lookingglass	CV	Low	52,333	50,000	7	From rcy 7 into 6	50,000	6	50,000	AdCWT	Look
U. Grande Ronde	Conventional	Low	99,139	94,000	9	From rcy 9 into 7	47,000	7	47,000	CWT	UGR
U. Grande Ronde	Conventional	Low				From rcy 9 into 8	47,000	8	47,000	CWT	UGR
U. Grande Ronde	CBS	Low&Mod	58,927	53,000	10	From rcy 10 into 9	53,000	9	53,000	AdCWT	UGR
Lostine River	Conventional	Low	227,838	216,000	12&13	From rcy 12 to 10	62,500	10	62,500	AdCWT	LR
Lostine River		Low				From 12&13 to 11	62,500	11	62,500	AdCWT	LR
Lostine River		Low				From rcy 13 to 12	62,500	12	62,500	AdCWT	LR
Lostine River	CBS	Low	99,853	89,800	14	From rcy 14 into 13	62,500	13	62,500	CWT	LR
Lostine River-surplus parr	CV/CBS	Low		55,800				14		Ad	WA
Imnaha River	Conventional	Low	303,057	288,000	16-18	From 16 into 15	57,600	15	57,600	AdCWT	IM
						From 16&17 into 16	57,600	16	57,600	AdCWT	IM
						From 17 into 14	57,600	14	57,600	AdCWT	IM
						From 17&18 into 17	57,600	17	57,600	Ad only	IM
						From 18 into 18	57,600	18	57,600	Ad only	IM

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.

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 2008 adult spring Chinook run projections for the Grande Ronde River and a proposed sport fishery plan including, a description of the proposed fishery, an analysis of the harvest impacts, resulting adult distribution and fishery monitoring plan.

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 936 and 624 natural fish, respectively (table 1).

Table 1. 2008 pre-season adult spring chinook return projections by population.

<i>Population</i>	<i>Projected Run Size</i>		
	Natural	Hatchery	Total
Catherine Creek	100	262	362
Lookingglass Creek	62	429	491
Upper Grande Ronde River	59	13	72
Wallowa/Lostine River	936	882	1,818
Minam River	624	0	624

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). Allowable natural fish impact from the FMEP at that run level is approximately 26 fish from the Wallowa - Lostine population. In addition an allowable natural fish impact of 11 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, and (3) the 10% handling mortality for natural fish handled in the fishery (FMEP), the sport fishery could harvest up to 247 hatchery fish without exceeding the designated natural impact level (table 2).

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.

Proposed 2008 Fishery

Open season: May 17 through July 6

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

Expected Outcomes

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 total spawner numbers during low natural return years and manages negative impacts of the hatchery program as 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. Following recently modified draft HGMP guidelines we plan to allow hatchery fish above the Lostine weir at a two to three ratio with natural fish (60% natural; table 2). Based on run projections, maximum harvest expectations, management strategies and estimated trapping efficiency, implementation of this fishery proposal will result in the following distribution of adults:

- 537 or 56% wild adult fish spawning in the Lostine River,
- 418 or 44% hatchery adults spawning in the Lostine River,
- 43 natural and 65 hatchery adults utilized for hatchery broodstock (40% wild),
- a maximum recreational harvest of 247 hatchery adults,
- a maximum incidental handling mortality of 26 wild adults for the Wallowa – Lostine and 11 for the Minam
- 93 adults handled at the weir but surplus to needs identified above (Table 2).

We also expect some level of tribal harvest according to the Nez Perce Tribe TRMP, estimated for our purposes in Table 2.

Given the projected ratio of natural and hatchery fish, we expect minimal impact to wild fish numbers, less than 2.8% in the Wallowa – Lostine population and less than 2% in the Minam population, with potential to substantially reduce surplus hatchery fish numbers. Such a reduction in hatchery fish numbers will increase the proportion of natural origin spawners in the Lostine River (table 2). 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 25 in Table 2, respectively. This fishery plan is integrated with hatchery program management and is intended to provide an alternate outlet for hatchery fish identified as surplus to broodstock and natural spawning. For reference, Lines 35 and 37 of Table 2 describe the potential for a modest shift toward natural spawners for the Wallowa/Lostine spawning area as a result of sport harvest and without consideration of tribal harvest or out-plant. The ultimate distribution of hatchery fish indicated as

“available for outplanting or other use” is generally determined through co-manager negotiation. That decision could affect the composition of natural spawners in spawning areas outside the Lostine River

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
Run Projections and Expected Harvest Impacts				
1	Projected adult run to Lostine	624	882	1,506
2	Projected run to Wallowa - Lostine	936	882	1,818
3	Projected composition (Wallowa - Lostine)	51.5%	48.5%	100.0%
4	Allowable Wild Impact from FMEP (Wallowa-Lostine)	26.2		
5	Allowable Wild Impact Rate (Wallowa - Lostine)	2.80%		
6	Allowable Wild Fish Handle @ 10% Hooking Mortality	262		
7	Resulting maximum hatchery fish sport harvest		247	
8	¹ Proposed sport harvest and impact to accommodate brood and nat. spawners	26.2	247	
9	Anticipated Lostine Tribal Harvest	26	59	85
10	Projected Minam River Return	624	0	624
11	Allowable Wild Impact from FMEP (Minam)	11.4		
12	Allowable Wild Impact Rate (Minam)	1.82%		
13	Allowable Wild Fish Handle @ 10% Hooking Mortality (Minam)	114		
Post Harvest Allocations and Predicted Results				
14	Post Sport Harvest Adult Escapement (Wallowa - Lostine)	884	576	1,460
17	Post Sport Harvest Adult Escapement (Lostine)	581	576	1,156
18	Escapement to Weir (0.85)	493	490	983
19	Escapement above Weir Before Weir in Place (0.2)	99	98	197
20	Fish Expected to Be Handled at Weir	394	392	786
21	Broodstock Composition Target	40%	60%	100%
22	Broodstock (per AOP)	43	65	108
24	Post Broodstock Escapement Handled At Weir	351	327	678
25	Target Percentage Passed above weir	60%	40%	
26	Passed Above the Weir	351	234	585
27	Available for Outplanting and Other Use	na	93	93
Spawner Composition - Lostine				
28	Spawning Upstream of Weir	450	332	782
29	Composition of Natural Spawners above Weir	58%	42%	100%
30	Spawning Downstream of Weir (.15 of line 11)	87	86	173
31	Composition of Natural Spawners Downstream of Weir	50%	50%	100%
32	Lostine River Natural Spawners	537	418	955
33	Composition of Lostine River Natural Spawners	56%	44%	100%
Spawner Composition - Wallowa/Lostine				
34	Natural Spawners w/ sport harvest w/o outplants & tribal harvest	555	570	1125
35	Comp. of Natural Spawners w/sport harvest w/o outplants & tribal harvest	49%	51%	100%
36	Natural Spawners w/o sport harvest, outplants and tribal harvest	581	817	1398
37	Comp. of Natural Spawners w/o sport harvest, outplants and tribal harvest	42%	58%	100%

Required inputs identified in blue cells

¹ Based on the lesser of FMEP calculated hatchery harvest or hatchery projection minus broodstock, natural spawners needed and 100 outplants

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. FMEP criteria provide an allowable natural fish impact of 1.82% or 11 fish for the Minam population's projected 624 natural fish return (table 2). Several aspects of the fishery proposal act together to insure mixed stock fishery impacts to the Minam population remain within that limit. First, only 2 of the 15 miles proposed as open area will affect the Minam population (fig. 1). As a result, the Minam population will be subject to a small proportion of the fishery effort targeting chinook from the Lostine River. Secondly, because the fishery is based on fish returning to the Wallowa – Lostine population, allowable impact level for that population (an incidental impact of 2.80% of 936 natural Wallowa – Lostine returns or 262 fish handled) would be achieved and the fishery curtailed before impacts in the mixed stock portion of the fishery could reach the maximum allowable impact for the Minam population (1.82% of 1560 Wallowa – Lostine plus Minam returns or 284 fish handled). We have no run timing data to suggest potential for differential impact rates in the mixed stock fishery.

FMEP guidelines provide for a modest hatchery fish sport harvest. However, it is unlikely, given current snow pack and the nature of the run-off pattern that harvest will achieve 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. It appears we can expect high flow conditions and limited angler success during May and most of June. 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.

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.

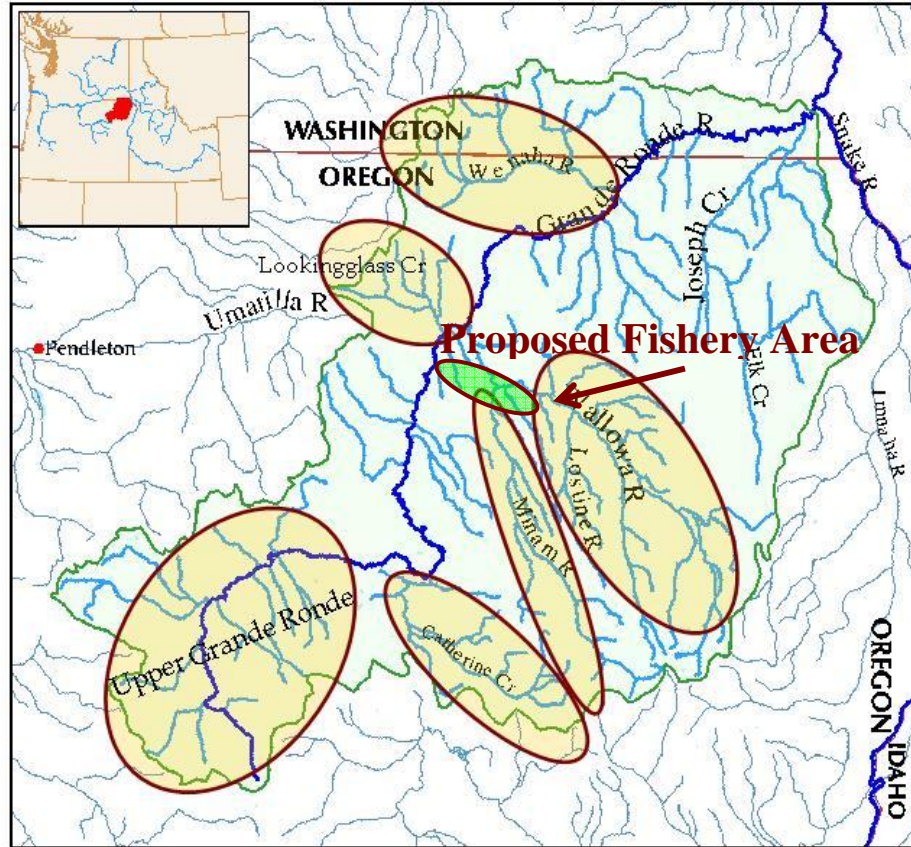


Figure 1. Map of The Grande Ronde sub-basin indicating proposed spring chinook fishery area (green) and spring Chinook population areas (yellow).

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.

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, and Upper Grande Ronde fish culture production metrics summarized for Grande Ronde 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	117,200
2007	30	15	33.3%		3,801	171,065	146,207	
	67	100	59.9%		3,818	637,568		406,216

*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	260,500
2007	25	6	19.4%		3,960	122,750	99,136	
Total	133	85	39.0%		3,846	838,372		599,562

*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, 1997-2007

Brood Year	Marked Females Spawned	Unmarked Females Spawned	% Un-marked	Spawning Ratio F/M	Average Fecundity	Egg Take	Fry Poned	Smolt releases (1,000's)
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	195,500
2007	38	20	34.4%		4,512	261,719	227,838	
	163	156	48.9%		4,426	1,411,914		963,516

*Inventory correction due to large losses with egg shipment;
 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%

February 15, 2008

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 2008

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 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

Disease Treatments and other Drugs for Adult Chinook Broodstock

Location	Brood year	Stock	Treatment for	Chemical/Drug	Protocol	Comment
Lookingglass	2008	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	2008	200W 201W 80W 29W 81	BKD Furunculosis	Erythromycin Oxytetracycline	Injection 20 mg/kg (Veterinary Prescription) Injection 10 mg/kg (Veterinary Prescription)	Erythromycin 100 New charts will be provided, if needed.
Lookingglass	2008	200W 201W 80W 29W 81	Anesthetic	Aqui-S	INAD	The Aqui-S field studies are temporarily suspended. Notification of status should come after February 2008. Send reports to Monitor by December 1st 2008.

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	<p>Only fish kept for broodstock</p> <p>Re-injection will be done only if deemed necessary based on mortality rate and pathogens detected in mortality.</p> <p>Do not inject fish that are fully ripe or are going to be spawned by the next day</p>

Injection Route Plan for 2008

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 2008
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 April or May.

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 H)

Methods:

- 1) Use erythromycin or gallimycin 100 and oxytetracycline 100 (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 2008, 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

Introduction

The Grande Ronde endemic spring Chinook (GRESKP) artificial production of 900,000 smolts is authorized under the US Fish and Wildlife Lower Snake River Compensation Program (LSRCP). LSRCP program was approved by the Water Resources Development Act of 1976 (PL 94-587, Section 102) to mitigate for the losses of fish and wildlife caused by the construction of dams on lower Snake River.

Initiation of the Bonneville Power Administrations Fish and Wildlife program reallocated 650,000 smolts from LSRCP mitigation program for experimental supplementation programs on Catherine Creek, Lostine River, and Upper Grande Ronde. The hatchery-produced fish could be experimentally used as a recovery tool to supplement natural production but also provide tributary harvest during years of high adult escapement. This re-allocation of hatchery production resulted in a reduction of Lookingglass Creek mitigation to 250,000 smolts.

Background

Historical potential-The ICTRT recently classified the Lookingglass Creek as an “extinct” basic population within the Snake River spring/summer Chinook ESU. The extinct classification was primarily based on out of basin releases of Rapid River and Carson hatchery stocks and the elimination of natural spawning adults above the hatchery between 2000-2003. Actions resulted in the loss of a localized Lookingglass Creek population.

The ICTRT analysis categorized the historical habitat potential of Lookingglass Creek as a “basic” rating, and a minimum abundance threshold criteria of 500 naturally produced spawners. Approximately 90% of the habitat is located above the hatchery intake.

Artificial production-Carson and Rapid River origin fish were used from the onset of the Lookingglass Hatchery program in 1982. Releases of Rapid River and Carson origin fish was discontinued after parr were released in the summer 2000 (Figure 1).

In 2002, Catherine Creek, a more localized stock, was selected as an appropriate stock to be used for Lookingglass Hatchery mitigation program. Guidelines were developed to use surplus captive brood progeny and surplus captive brood adults returning Catherine Creek for Lookingglass Creek production. Surplus Catherine Creek captive brood adults have been available for smolt production and adult outplants into Lookingglass Creek. Surplus captive brood eggs have also been available for smolt production. However, it is expected that the captive brood program will be phased out within the next three to five years. At such time, ongoing Lookingglass Creek program will be dependent on the success of past releases.

The first Catherine Creek parr were released from the hatchery in 2001, and first adults were released above the hatchery in 2004. Projected and actual numbers of fish juvenile fish will be intermittent through 2008 (Figure 1).

Co-managers and have taken aggressive measures to reduce the influence of Rapid River/Carson stock in Lookingglass Creek by eliminating their propagation and removing suspected F₁ naturalized Rapid River/Carson adults. The last known (marked) returns were collected at Lookingglass Hatchery in

2004. Unmarked adults have been removed since 2002 and will continue through 2007 and 2008 (five-year-olds). It is unclear how strongly the Rapid River/Carson stocks have naturalized to lower Lookingglass Creek. Since redd counts of 10, 50, 10, 28 were observed in 2003, 2004, 2005, and 2006, respectively, it is contemplated that the Rapid River/Carson stocks will have some genetic influence on the new Lookingglass Creek stock.

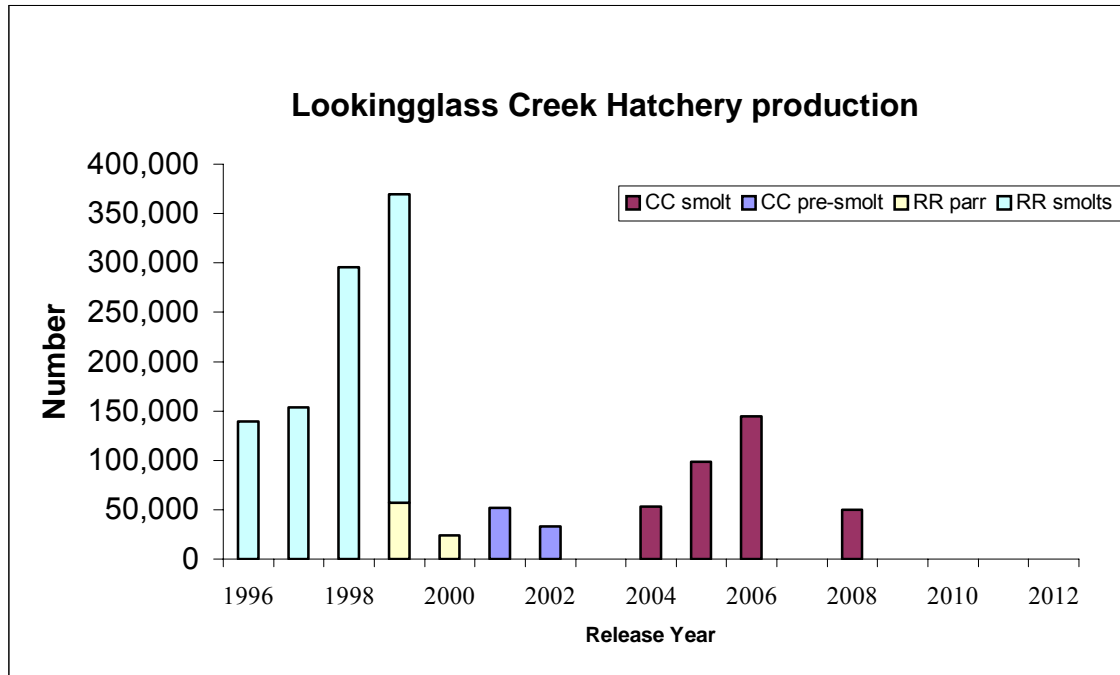


Figure 1. Actual and projected smolt releases in Lookingglass Creek from 1996 through 2008. Release in 2008 is a projected numbers based on current inventory at Lookingglass Hatchery.

The first unmarked adults, considered progeny of Catherine Creek stock, will return in 2008 (age-four). Only known CC stock adults will be passed above the hatchery from 2002 to 2008. All adults in 2009 (unmarked and marked) will be considered appropriate for natural escapement and/or brood stock for Lookingglass Creek production.

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 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	Any	50	50	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

Appendix N. 2008 Imnaha River Spring Chinook Sport Fishery Implementation 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. Projected 2008 Spring Chinook escapement to the Imnaha River is similar to runs over the past several years - modest and composed predominately of hatchery origin fish. Projected natural and hatchery adult run size provides some 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.

Run Projections

Oregon Department of Fish and Wildlife (ODFW) Northeast Region staff expects a modest return of ESA-listed spring/summer Chinook salmon to the Imnaha River in 2008 relative to runs from 2001 through 2004, but more consistent with 2005 through 2007 returns. Initial projections suggest a run heavily weighted toward hatchery fish, including 348 unmarked natural origin and 1,927 marked hatchery adults (table 1).

Allowable Sport Fishery Impact

Consistent with hatchery program goals, FEMP criteria guidance and existing management agreements, ODFW proposes a spring Chinook sport fishery on the Imnaha River similar to the fishery in 2005 and more restrictive than those held in 2001-2004. FMEP guidelines provide for an allowable sport fishery impact of 1.37 natural fish or 0.39% 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 76 hatchery fish without exceeding the designated natural impact level (table 1).

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 of 433 (16.0%), 15 (1.3%), 83 (4.8%), 29 (5.9%) and 22 (7.1%) of unmarked spring chinook were handled in sport fisheries from 2001 through 2005, 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 of 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 fisheries resulted in an estimated harvest of 304 (7.8%), 153 (3.6%), 127 (3.2%), 194 (8.3%) and 22 (2.1%) from the marked hatchery return to the Imnaha, respectively (table 2).

Table 1. Imnaha River adult Spring Chinook run projections, proposed allocations (indicating maximum expected sport harvest rate on hatchery fish) and expected outcomes for 2008.

Imnaha River 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	348	1,927	2,275
2	Projected composition	15.3%	84.7%	100.0%
3	Allowable Wild Impact from FMEP	1.37		1.37
4	Allowable Wild Fish Handle @ 10% hooking mortality	13.7		13.7
5	Allowable Wild Impact Rate	0.39%		
6	Resulting maximum hatchery fish harvest		76	
7	¹ Proposed sport harvest and impact to insure, broodstock and nat. spawning	1.37	76	
8	Anticipated Tribal Harvest	7	255	262
<u>Post-Harvest Allocations</u>				
9	Post Harvest Adult Escapement	340	1,596	1,936
10	Escapement to Weir (.75 of line 9)	255	1,197	1,452
11	Escapement above Weir Before Weir in Place (.35 of line 10)	89	419	508
12	Fish Expected to Be Handled at Weir (.65 of line 10)	166	778	944
13	Broodstock Composition Target	25%	75%	100%
14	Broodstock (per AOP)	52	156	208
15	Post Broodstock Escapement At Weir	114	622	736
16	Target Wild Percentage Passed above weir	40%		
17	Passed Above the Weir	114	171	285
18	Available for Outplant or Other Use	na	451	451
19	To Big Sheep Creek (\leq 300 fish)	na	300	300
20	Available for Alternative Use	na	151	151
<u>Spawner Composition w/ Tribal and Sport Harvest</u>				
21	Spawning Upstream of Weir	203	590	793
22	Composition of Natural Spawners above Weir	25.6%	74.4%	100.0%
23	Spawning Downstream of Weir (.273 of line 11)	85	399	484
24	Composition of Natural Spawners Downstream of Weir	17.6%	82.4%	100.0%
25	Imnaha River Natural Spawners (w/o B. Sheep)	288	989	1,277
26	Composition of Imnaha River Natural Spawners (w/o B. Sheep)	22.6%	77.4%	100.0%

Required inputs identified in blue cells

¹ Based on the lesser of FMEP calculated hatchery harvest or hatchery projection minus broodstock, natural spawners needed and 300 outplants

Table 2. Imnaha River Spring Chinook Sport fisheries impact for years 2001 through 2005.

Year	Sport Season	Escapement to River (H/W)	Harvest (95% CI)		Released (95%CI)		Impact	
			(H)	(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	

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

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

Proposed 2008 Fishery

Open season: June 21 – July 6

Bag limit: One 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

Expected Outcomes

Management of Imnaha River spring Chinook is guided by a Hatchery Genetic Management Plan (HGMP) which incorporates an adult sliding scale to take advantage of hatchery fish numbers during low return years and to manage potential negative impacts of the hatchery program as 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. 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 300 hatchery adults into Big Sheep Creek (table 1). Based on run projections, maximum harvest expectations, management strategies and estimated trapping efficiency, implementation of this fishery proposal will result in the following distribution of adults:

- 288 or 22.6% wild adult fish spawning in the Imnaha River,
- 989 or 77.4% hatchery adults spawning in the Imnaha River,
- 300 hatchery spawners out-planted to Big Sheep Creek,
- 52 natural and 156 hatchery adults utilized for hatchery broodstock (25% wild),
- a maximum recreational harvest of 76 hatchery adults,
- an incidental handling mortality of 1 wild adult
- 151 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, estimated for our purposes in Table 1.

Given; 1) the restricted fishery opportunity proposed for 2008, 2) the similarity in run size and fishery length to that of 2005, and 3) the outlook for a good snow pack and resulting June – July stream flows, we expect harvest and handling rates to be low and consistent with or less than those seen in 2005 (table 2). Based on 2005 outcomes we expect the fishery to result in harvest of 2 – 3% of the hatchery

adult run or 39-59 Chinook and incidental handling of 7-10 unmarked natural Chinook (Table 2). That level of fisheries related handling equates to an estimated mortality of less than one wild adult based on 10% handling loss set forth in the FMEP.

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. Unusually low flow conditions, relatively large numbers of fish and a two fish bag limit contributed to high angler success. Those conditions are unlikely to occur in 2008 given the runoff expected from current snow pack, lower projected run size this year and reduced bag limit. Using 4% as a maximum impact rate for a one week fishery results in an estimated harvest of 77 adult hatchery chinook and fishery related handling of 14 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 one unmarked fish. The fishery would be curtailed after the first week if this situation occurred.

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. However, as a result of the late and short season, most steelhead and bull trout will have moved downstream or upstream out of the fishery area prior to peak angler activity and success. Incidental impact to these species is expected to be low.

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 a modest number of hatchery fish proposed will benefit natural spawning population by reducing the number of hatchery fish relative to natural fish.

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 for the nine day season and presented in a post season fishery report.

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

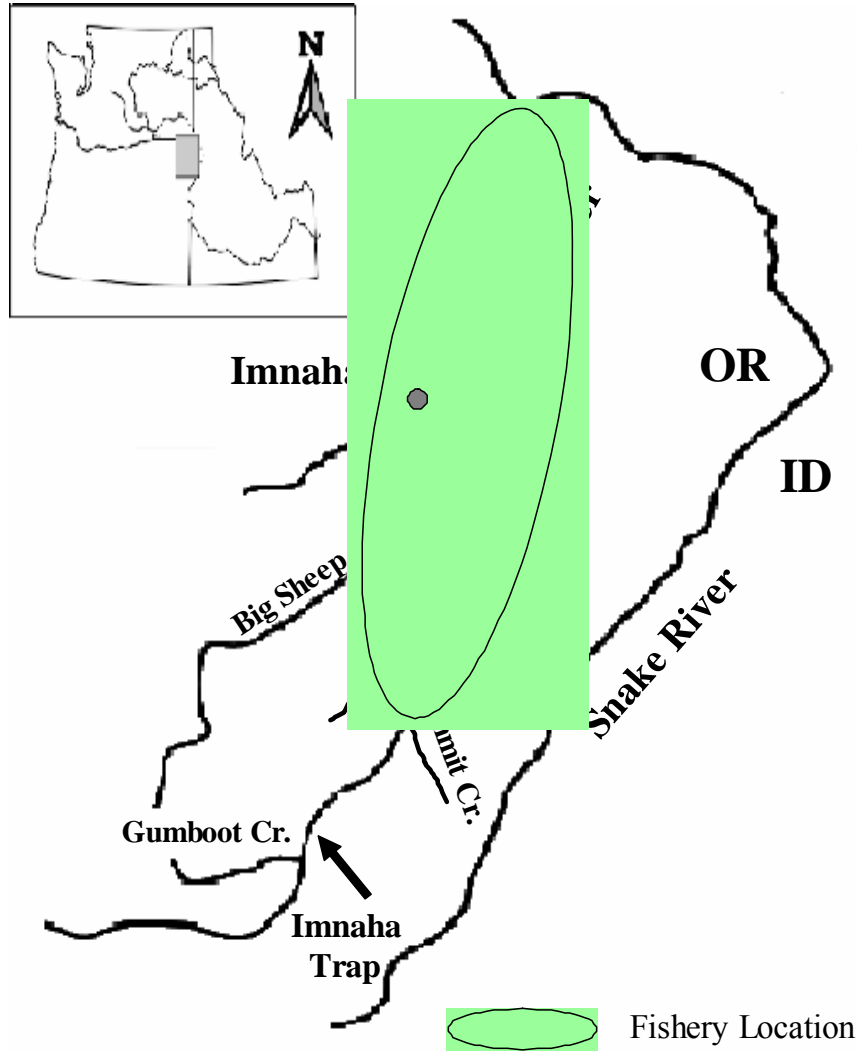


Figure 1. Map of the Imnaha River indicating boundaries of the proposed 2008 spring Chinook sport fishery.

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Appendix O. Preliminary CTUIR data from Catherine Creek releases between 1998 and 2007 summarized by ODFW.

<u>Brood Year</u>	<u>Release Year</u>	<u>Release Type</u>	<u>Number</u>	<u>Return Years</u>			<u>Total Return</u>	<u>SAR Percent</u>	
1998	2000	Conventional	0	<u>2001</u>	-	-	-	-	
		Captive	38,149	157	205	57	419	1.10	
		Natural-Redds	34	46	190	192	428		
1999	2001	Conventional	0	<u>2002</u>	-	-	-	-	
		Captive	136,833	17	194	19	230	0.168	
		Natural-Redds	40	19	71	9	99		
2000	2002	Conventional	0	<u>2003</u>	-	-	-	-	
		Captive	180,343	73	570	24	667	0.3699	
		Natural-Redds	34	6	77	7	90		
2001	2003	Conventional	24,392	<u>2004</u>	22	27	5	54	0.2214
		Captive	105,292	39	89	2	130	0.1235	
		Natural-Redds	133	5	49	7	61		
2002	2004	Conventional	70,071	<u>2005</u>	10	69	4	83	0.1185
		Captive	91,791	19	138	15	172	0.1874	
		Natural-Redds	158	4	114	2	120		
2003	2005	Conventional	120,753	<u>2006</u>	7	55		62	.0513
		Captive	68,827	0	63		63	.0915	
		Natural-Redds	167	12	43		65		
2004	2006	Conventional	23,216	<u>2007</u>	4			4	
		Captive	45,604	24			24		
		Natural-Redds	96	7			7		
2005	2007	Conventional	49,783	<u>2008</u>					
		Captive	21,647						
		Natural-Redds	74						
2006	2008	Conventional	121,000	<u>2009</u>					
		Captive	0						
		Natural-Redds	117						

Appendix P. Preliminary CTUIR data from Upper Grande Ronde releases between 1998 and 2007 summarized by ODFW.

<u>Brood Year</u>	<u>Release Year</u>	<u>Release Type</u>	<u>Number</u>	<u>Return Years</u>			<u>Total Return</u>	<u>SAR Percent</u>
1998	2000	Conventional	0	<u>2001</u>	<u>2002</u>	<u>2003</u>	4	0.2653
		Captive	1,508	0	3	1		
		Natural-Redds	42	0	83	229		
1999	2001	Conventional	0	<u>2002</u>	<u>2003</u>	<u>2004</u>	14	0.5469
		Captive	2,560	0	8	6		
		Natural-Redds ¹	0	1	6	0		
2000	2002	Conventional	0	<u>2003</u>	<u>2004</u>	<u>2005</u>	631	0.2763
		Captive ^{2,3}	228,385	60	545	26		
		Natural-Redds	20	3	43	9		
2001	2003	Conventional	26,923	<u>2004</u>	<u>2005</u>	<u>2006</u>	104	0.3863
		Captive ⁴	242,913	12	92	0		
		Natural-Redds	15	6	12	2		
2002	2004	Conventional	69,856	<u>2005</u>	<u>2006</u>	<u>2007</u>	177	0.2405
		Captive	75,063	9	159	9		
		Natural-Redds	23	0	1	0		
2003	2005	Conventional ⁵	104,350	<u>2006</u>	<u>2007</u>	<u>2008</u>	30	0.0287
		Captive	1,019	2	28	0		
		Natural-Redds	40	4	0	22		
2004	2006	Conventional	19,061	<u>2007</u>	<u>2008</u>	<u>2009</u>	63	0.0013
		Captive	90	18	0	0		
		Natural-Redds	186	0	52	11		
2005	2007	Conventional	119,002	<u>2008</u>	<u>2009</u>	<u>2010</u>	26	0.0000
		Captive	20,687	0	0	0		
		Natural-Redds	91	4	22	0		
2006	2008	Conventional	260,000	<u>2009</u>	<u>2010</u>	<u>2011</u>	63	0.0013
		Captive	0	0	0	0		
		Natural-Redds	28	0	52	11		

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 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		163	0.16%
		Captive	62,124	10	82		92	0.15%
		Natural	33,646	26	167		NA	NA
2004	2006	Conventional	199,586	134			134	0.07%
		Captive	40,982	8			8	0.02%
		Natural	30,202	37			NA	NA
2005	2007	Conventional	205,406				NA	NA
		Captive	24,604				NA	NA
		Natural	NA				NA	NA

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

Appendix R. Preliminary data from Imnaha River releases between 1982 and 2007.

<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	195	48	4	247	0.9911
		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	91	239	
1988	1990	Conventional ¹	253,042	260	551	440	1,251	0.4944
		Natural-Redds	237	19	150	349	518	
1989	1991	Conventional	267,670	100	472	98	670	0.2503
		Natural-Redds	116	18	133	71	222	
1990	1992	Conventional	262,500	24	64	12	100	0.0381
		Natural-Redds	115	5	65	7	77	
1991	1993	Conventional	157,659	11	76	12	99	0.0628
		Natural-Redds	178	2	95	35	132	
1992	1994	Conventional	438,699	102	94	7	203	0.0463
		Natural-Redds	240	140	289	40	469	
1993	1995	Conventional ²	394,255	91	351	62	504	0.1278
		Natural-Redds	468	14	106	154	274	
1994	1996	Conventional	91,240	7	31	4	42	0.0460
		Natural-Redds	154	6	104	48	158	
1995	1997	Conventional	50,911	161	585	32	778	1.5282
		Natural-Redds	60	31	155	46	232	
1996	1998	Conventional	93,108	689	530	131	1,350	1.450
		Natural-Redds	136	88	318	314	719	

¹ Includes only Ad marked hatchery releases and returns.

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

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Appendix N. continued.

Brood Year	Release Year	Release Type	Number	Returns			Total Return	SAR Percent
				Age 3	Age 4	Age 5		
1997	1999	Conventional	194,967	1,091	2,479	343	3,913	2.007
		Natural-Redds	224	340	2,245	359	2,944	
1998	2000	Conventional	179,716	1,153	3,212	1,077	5,442	3.028
		Natural-Redds	143	107	633	709	1,449	
1999	2001	Conventional	123,014	469	1,162	67	1,698	1.380
		Natural-Redds	189	111	862	82	1,055	
2000	2002	Conventional	303,737	1616	1199	106	2,921	0.9617
		Natural-Redds	261	113	345	75	533	
2001	2003	Conventional	268,426	747	957	33	1,737	0.6471
		Natural-Redds	635	27	225	29	281	
2002	2004	Conventional	398,185	238	1006		1,244	0.3124
		Natural-Redds	1,111	14	213		227	
2003	2005	Conventional	435,186	156			156	
		Natural-Redds	726	15			15	
2004	2006	Conventional	448,268					
		Natural-Redds	495					
2005	2007	Conventional						
		Natural-Redds	349					
2006	2008	Conventional						
		Natural-Redds	235					

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