



# Oregon

John A. Kitzhaber, M.D., Governor

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POSTED  
5.1.2012

April 24, 2012

Rob Jones  
Salmon Recovery Division  
NOAA Fisheries Service  
1201 NE Lloyd Blvd., Ste. 1100  
Portland, OR 97232

Dear Rob,

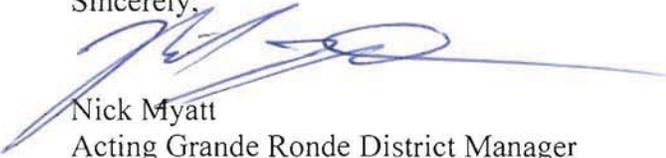
Oregon Department of Fish & Wildlife is pleased to submit the Fishery Management and Evaluation Plan (FMEP) for spring Chinook sport fisheries in the Grande Ronde basin.

This plan considers sport fishery impacts to all major population groupings (MPGs) of Snake River spring/summer Chinook salmon within the Grande Ronde River basin. Therefore, we believe a plan that considers both Washington and Oregon impacts is the most efficient approach for conservation-based management of sport fisheries in the basin.

The abundance-based harvest schedule outlined in this plan is consistent with guidance provided by NOAA fisheries staff. In addition, this plan does not propose impacts to additional populations not considered in Grande Ronde River basin FMEPs previously submitted.

We look forward to NOAA Fisheries' speedy adoption of this plan.

Sincerely,



Nick Myatt  
Acting Grande Ronde District Manager

Enclosures

Cc: Bruce McIntosh  
Ed Bowles  
Stephen Williams  
Bruce Eddy  
Tim Bailey  
Glen Mendel, WDFW  
John Walhen, WDFW

# FISHERIES MANAGEMENT AND EVALUATION PLAN

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## **Snake River Spring Chinook Grande Ronde Subbasin**

**Prepared jointly by:  
Oregon Department of Fish and Wildlife  
Washington Department of Fish and Wildlife**

**April 2012**

**Title. Fishery Management and Evaluation Plan for Grande Ronde River Spring Chinook, part of the Snake River Spring/Summer Chinook ESU**

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**Date Completed.**

April 23, 2012

**SECTION 1. FISHERIES MANAGEMENT**

**1.1) General objectives of the FMEP.**

The objective of this plan is to provide recreational fishing opportunity and related benefits derived from harvest of Grande Ronde basin hatchery-origin spring Chinook in Oregon and Washington in a manner that supports the continued survival and future recovery of natural-origin Chinook salmon.

**1.1.1) List of the “Performance Indicators” for the management objectives.**

**Performance Standard (1):** Hatchery fish release groups are marked to determine fishery impacts and benefits.

**Indicator 1(b):** Mark rate at release is 95% to 100% for all smolts to be available for harvest.

**Performance Standard (2):** Run projection techniques provide reasonable estimates of run size.

*Indicator 2(a):* Comparison of run projections used in annual fishery plan development and estimated escapement. Projections are accurate to  $\pm 25\%$  of estimated escapement.

***Performance Standard (3):*** Harvest and related mortality estimates adequately describe fishery impacts.

*Indicator 3(a):* Statistical creel survey results produce sport harvest estimates with  $< \pm 50\%$  level of precision for all run components.

***Performance Standard (4):*** Sport harvest impacts are consistent with those prescribed by this plan.

*Indicator 4(a):* Estimated run year harvest and harvest related mortality for hatchery and wild fish, by fishery is less than or equal to plan prescriptions.

***Performance Standard (5):*** Post harvest escapement and resulting spawner numbers and composition are consistent with achievement of natural and hatchery production goals.

*Indicator 5(a):* Estimated spawner escapement and hatchery/natural composition.

***Performance Standard (6):*** Hatchery fish are produced and released in a manner enabling effective harvest while avoiding over-harvest of non-target fish.

*Indicator 6(a):* Estimated run year harvest and harvest related mortality for hatchery and wild fish

*Indicator 6(b):* Estimated number of recreational angler days in the Grande Ronde basin Chinook fishery by run year.

***Performance Standard (7):*** Non-monetary societal benefits for which the hatchery program is designed are achieved

*Indicator 7(a):* Number of recreational fishery angler days

*Indicator 7(b):* Number of hatchery fish harvested by recreational anglers

### **1.1.2) Description of the relationship and consistency of harvest management with artificial propagation programs.**

The Grande Ronde River spring Chinook hatchery program is a component of the Lower Snake River Compensation Plan (LSRCP), funded through the U.S. Fish and Wildlife Service (USFWS), developed to mitigate for wild fish production lost as a result of construction of four lower Snake River dams. Hatchery Chinook and steelhead smolts in the Snake River basin are produced at LSRCP hatcheries in Washington, Idaho and Oregon. Subsequent adult returns are meant to provide tribal and recreational fisheries and, in some cases, enhance natural spawner numbers. The Oregon Department of Fish and Wildlife initiated the Grande Ronde spring Chinook hatchery program in 1982 under the LSRCP. Subsequent program management has been coordinated between ODFW, Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Nez Perce Tribe (NPT).

The Grande Ronde spring Chinook hatchery program is managed under a complex framework that includes U.S. vs. Oregon court decisions and agreements and congressional legislation. Although the program currently attempts to support recovery of Chinook populations it does so in the context of a program sized to provide fishery mitigation. As a result, managing adult returns in excess of those needed for conservation actions remains a

fundamental component of the program. Harvest offers an effective means of meeting program conservation and mitigation objectives while providing public benefit.

The Grande Ronde spring Chinook hatchery program is currently comprised of four components, each with smolt acclimation and adult collection facilities located on the upper Grande Ronde River, Lookingglass and Catherine Creeks, and the Lostine River. The Lostine River program interacts with natural production within the broader Willowa/Lostine population unit. Other hatchery program components are discrete to specific populations indicated. The Lookingglass Creek portion of the program focuses on reintroduction of spring Chinook to that stream and targets the release of 250,000 smolts originating from the Catherine Creek population. Each of the three remaining conservation/mitigation program components currently consists of two elements, a temporary endemic captive broodstock project initiated as a developmental phase and a conventional adult collection element. Both elements are integrated with natural production. Smolt release goals, developed to meet LSRCP mitigation responsibilities, include 250,000 for the Lostine and upper Grande Ronde rivers and 150,000 for Catherine Creek.

Objectives of the program are as follows:

**Objective 1.** Restore natural populations of Chinook salmon in the Grande Ronde River basin to ESA-delisting levels.

**Objective 2.** Reestablish tribal and recreational fisheries for Chinook salmon.

**Objective 3.** Maintain the genetic and life history characteristics of the endemic wild population while pursuing mitigation goals and management objectives.

**Objective 4.** Operate the hatchery program to ensure that the genetic and life history characteristics of the hatchery fish mimic the wild fish.

Program management attempts to achieve these objectives through integration of hatchery and natural production and application of risk containment measures that include the use of harvest to manage hatchery fish numbers. A sliding scale incorporated into the management framework specifies the percentage of hatchery (conventional program progeny) and natural fish that can be taken for broodstock, the ratio of natural and hatchery fish released above the weirs to spawn naturally, and the minimum percentage of broodstock that must be natural-origin. The total collection goal is based on the number of broodstock needed to meet current production goals or hatchery capacity but can be limited by availability of both natural and hatchery adults. The LSRCP smolt production goal for the Grande Ronde basin of 900,000 has not been achieved recently due to hatchery facility and management constraints.

The sliding scale management plan was developed cooperatively by ODFW, CTUIR and NPT upon initiation of the captive broodstock hatchery program. The management plan merges natural and hatchery-origin escapement in its management strategies and, like this plan, uses the Interior Columbia Technical Review Team (TRT) Minimum Abundance Thresholds (MAT) to set management criteria. It is premised on the theory that at low population levels the greatest risk to persistence is demographic risk of extinction. Therefore, at low population levels we place fewer constraints on the number of hatchery fish allowed to spawn naturally in an attempt to achieve a minimum natural abundance (BRWG 1994) utilizing the survival advantage provided by the hatchery. As population levels increase, the demographic risks are of less concern and greater constraints are placed on the hatchery program to control the genetic risks associated with the hatchery program

(domestication selection, non-intentional directional selection, Ryman and Laikre effect, etc.).

### **1.1.3) General description of the relationship between the FMEP objectives and Federal tribal trust obligations.**

ODFW and WDFW propose harvest allocations and impact sharing that is consistent with existing agreements with tribal co-managers, U.S. v. Oregon court decisions, and related agreements and strategies. ODFW and WDFW commit to coordinating with tribal co-managers in the Grande Ronde River Subbasin through participation in the Snake Basin Harvest Forum and through contacts local tribal staff.

A goal of the LSRCP spring Chinook hatchery programs within the basin is to provide tribal and non-tribal harvest, both within the Grande Ronde and Snake River basins, and downstream. Columbia River tribal and non-tribal fisheries that occur outside the Grande Ronde will continue to harvest wild and hatchery spring Chinook destined for the Grande Ronde Basin.

This FMEP does not address tribal harvest or tribal fisheries within the Grande Ronde. Harvest impacts proposed in this FMEP are not intended to preclude tribal harvest. The actions and provisions of this FMEP are consistent with provisions of the Columbia River Fish Management Plan (*US v OR 2008*).

## **1.2) Fishery management area(s).**

### **1.2.1) Description of the geographic boundaries of the management area of this FMEP.**

Fisheries identified in this plan will be confined to reaches of: 1) the mouth of the Grande Ronde River to Washington State Highway 129, 2) from Highway 129 at “Boggan’s Oasis” to the OR/WA state line, 3) from the OR/WA state line to Rondowa, 4) the Grande Ronde River from Rondowa to Catherine Creek, 5) the Grande Ronde River from Catherine Creek to Meadow Creek, 6) Lookingglass Creek from the mouth to Jarboe Creek (RM 2), 7) Wallowa River from the mouth to the Minam River, 8) Wallowa River from Minam state park to the Lostine River, and 9) Catherine Creek from the mouth to the Highway 203 bridge (Table 1 and Figure 1). All potential fishery areas are located below spring Chinook release and adult collection locations (Figure 1).

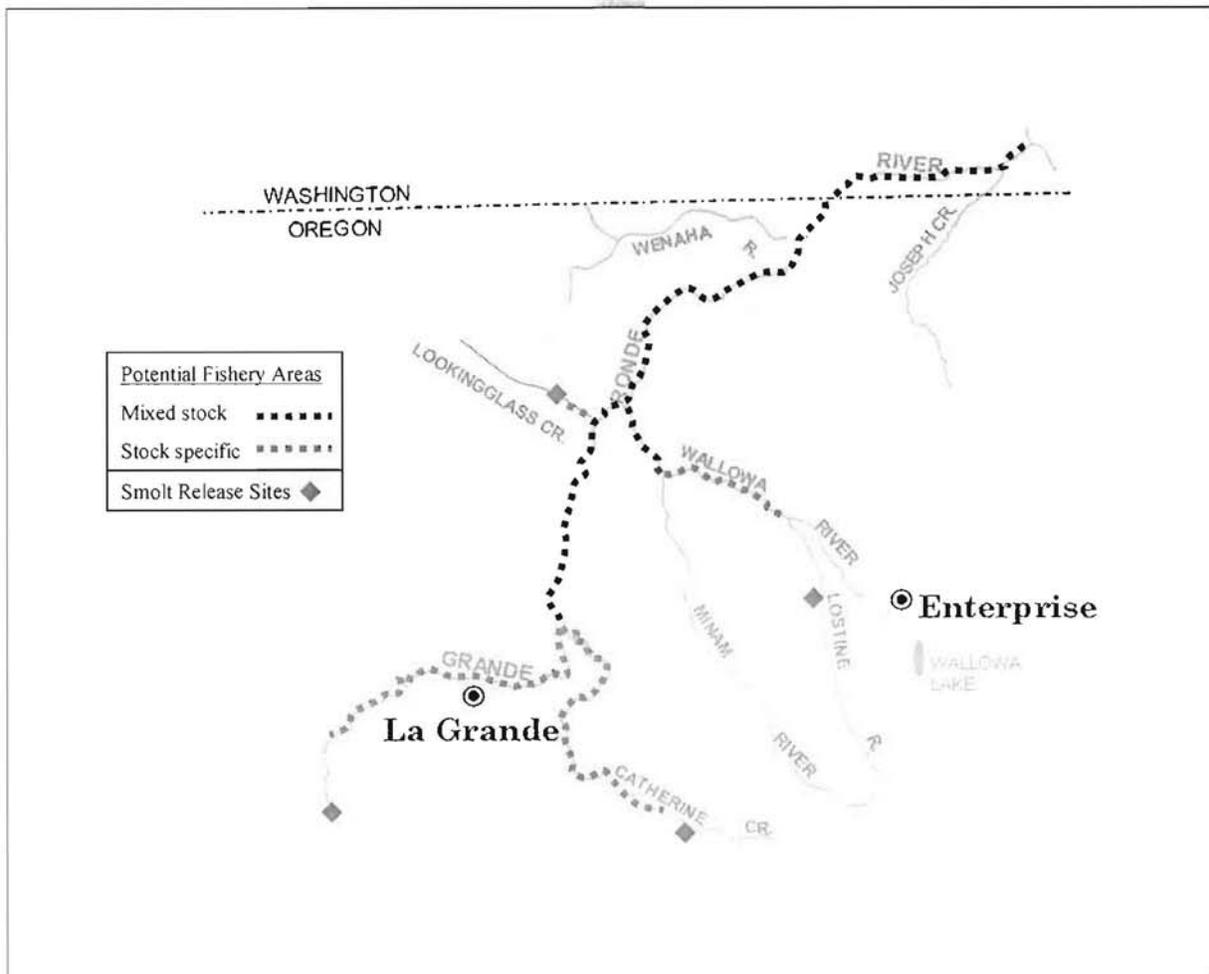
**Table 1. Location and time period of potential spring Chinook fisheries in the Grande Ronde basin. Both states will adopt the same open fishing dates. To protect both steelhead and weak spring Chinook stocks, fisheries may open as early as April 15<sup>th</sup>.**

River	Downstream End	Upstream End	Populations Potentially Affected <sup>1</sup>	Proposed Fishery Dates by Fishery
Grande Ronde R.	Mouth	WA State Route 129	WeR, LGC, WaR, MiR, CC, UGR	Apr 15 – Aug 15
Grande Ronde R.	WA State Route 129	OR/WA state line	WeR, LGC, WaR, MiR, CC, UGR	Apr 15 – Aug 15
Grande Ronde R.	OR/WA state line	Rondowa	WeR, LGC, WaR, MiR, CC, UGR	Apr 15 – Aug 15
Grande Ronde R.	Rondowa	Catherine Creek	LGC, CC, UGR	Apr 15 – Aug 15
Grande Ronde R.	CC	Meadow Creek	UGR	Apr 15 – Aug 15
Lookingglass Cr.	Mouth	Jarboe Creek (RM 2)	LGC	Apr 15 – Aug 15
Wallowa R.	Mouth	Minam River	WaR, MiR	Apr 15 – Aug 15
Wallowa R.	Minam River	Lostine River (RM 26)	WaR	Apr 15 – Aug 15
Catherine Cr.	Mouth	Hwy 203 (RM 27)	CC	Apr 15 – Aug 15

<sup>1</sup> CC - Catherine Cr., LGC – Lookingglass Cr., MiR – Minam R., UGR – Upper Grande Ronde R., WaR – Wallowa/Lostine R. and WeR – Wenaha R.

**1.2.2) Description of the time periods in which fisheries occur within the management area.**

Open seasons will occur between April 15 and August 15 (Table 1). Timing potential fisheries differs between streams due to the various run timing characteristics and flow patterns observed in the Grande Ronde basin.



**Figure 1. Grande Ronde Basin map indicating potential spring Chinook fishery areas and hatchery smolt release locations in Oregon and Washington.**

**1.3) Listed salmon and steelhead affected within the Fishery Management Area specified in section 1.2.**

*Spring Chinook* – Adults spawn in headwaters of the Grande Ronde River and a number of its tributaries. Spawning aggregations/designated population segments include: 1) natural production areas of the Wenaha River and Minam River; 2) supplemented populations in the upper Grande Ronde and Wallowa/Lostine Rivers, Catherine Creek and, 3) Lookingglass Creek where a reintroduction project is underway (Figure 2). Many areas of the basin, including tributaries and reaches below spawning areas, maintain suitable rearing habitat and are utilized by juveniles as well as holding adults. Recent estimates of combined natural returns to the basin have ranged from 423 in 1999 to 1720 in 2001 (Figure 3). Spring Chinook spawning areas in the Grande Ronde Basin within Washington include most of Butte Creek (a northern tributary of the Wenaha River) and the lower portion of the North Fork Wenaha River near the state line.

Adult spring Chinook enter the Columbia River from March through May and move into summer holding areas from May through July. Spawning occurs from early-August through late-September and generally peaks in late-August. Fry emergence begins in February and extends into May. Fry expand their spatial distribution after emergence in the spring; the extent depending on annual environmental conditions. A substantial portion of juvenile

Chinook move into higher-order reaches in the fall to overwinter. Generally, juveniles will rear for one year in freshwater, then smolt and begin downstream migration the following

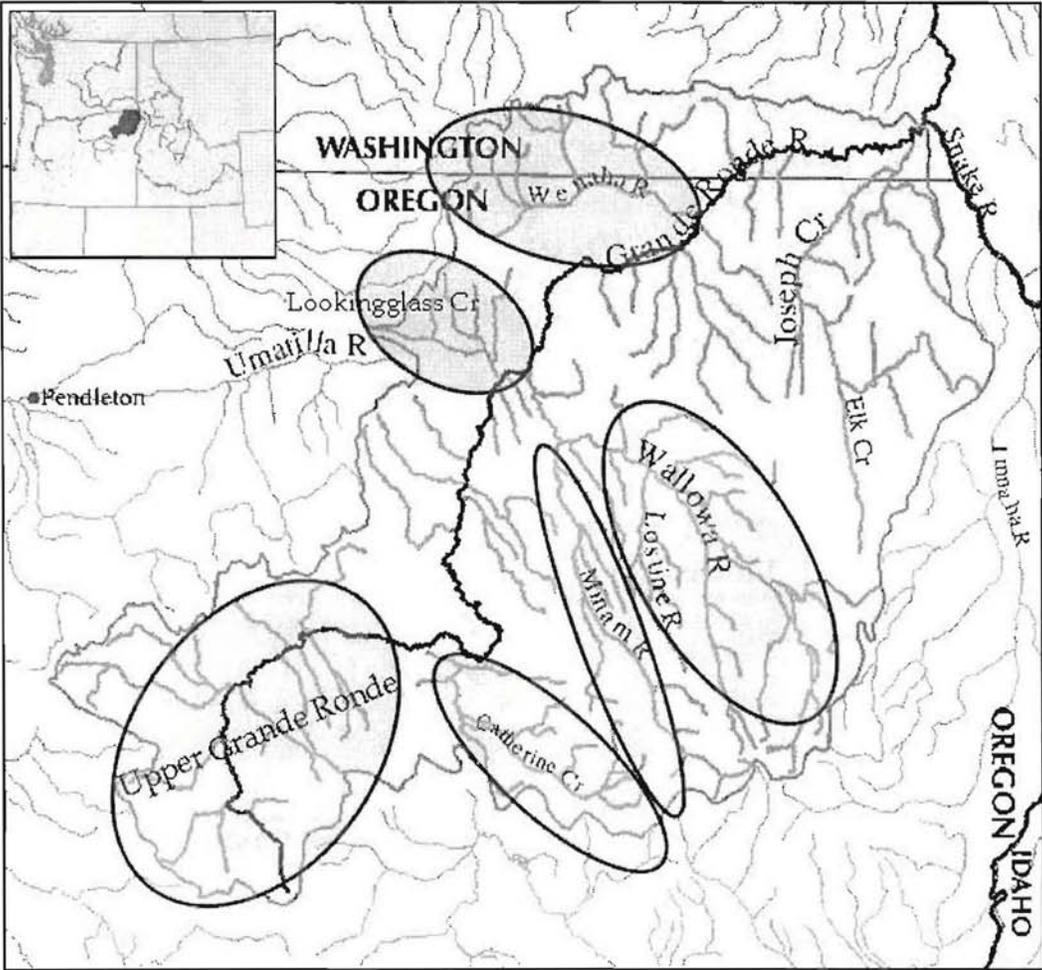
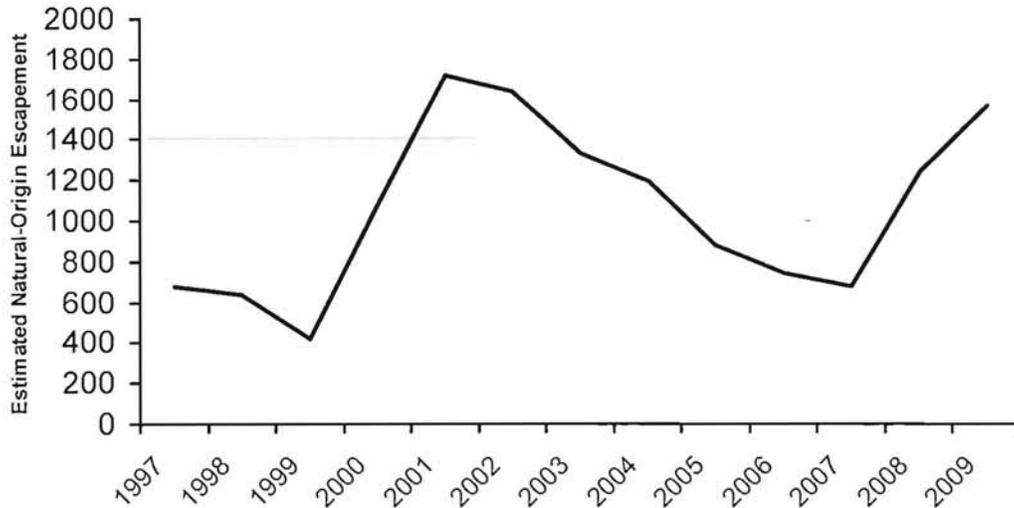


Figure 2. Map the Grande Ronde Watershed indicating designated Spring Chinook population segments.



**Figure 3. Estimated combined natural-origin spring Chinook escapement into the Grande Ronde basin 1997 – 2009. Estimates derived from redd and carcass counts, expanded by a fish per estimate of 2.54 (ODFW, unpublished data). This graph does not include modest numbers of naturally produced spring Chinook that spawn within Washington (particularly Butte Creek).**

spring; smolt migration begins in late-January and extends through early-July with peak movement in April. Grande Ronde basin hatchery spring Chinook are included in the Snake River spring Chinook ESU and are listed as threatened under the Endangered Species Act (ESA).

The LSRCP program utilizes endemic Chinook stocks sourced from fish collected from Catherine Creek and the upper Grande Ronde and Lostine rivers. Both conventional and captive broodstock hatchery techniques are utilized in the program. Wild Chinook from these streams are incorporated into broodstock and hatchery-origin adults are allowed to spawn naturally each year. The Grande Ronde hatchery program provides adult Chinook for; 1) hatchery broodstock, 2) natural spawning in the basin, 3) recreational and tribal harvest within the LSRCP mitigation area (Snake River and tributaries above the mouth of the Snake River) and 4) recreational, commercial and tribal harvest in the Columbia River.

*Summer steelhead* – Grande Ronde basin summer steelhead are typical of A-run steelhead from the mid-Columbia and Snake basins. Four populations have been designated within the basin including; the lower Grande Ronde, Joseph Creek, Wallowa River and the upper Grande Ronde. Most adults return to the basin after one year of ocean rearing, with the remainder returning as two-salt adults. Occasional three-salt fish are observed. Females generally predominate with a 60/40 sex ratio on average. Returning adults range in size from 45 to 91 cm and 1.4 to 6.8 kg. Adults generally enter the Columbia River from May through August and enter the Grande Ronde from September through May. Adults utilize accessible spawning habitat throughout the basin. Summer steelhead begin spawning in March in lower elevation and spring-fed tributaries and continue through early June in higher elevation snowmelt systems. Juveniles utilize a wide range of habitats throughout the basin. Naturally-produced smolts predominately migrate after rearing for two years in freshwater tributaries with a lower percentage migrating after one, three, or four years. Smolt out-

migration extends from late-winter until late-spring; however, peak smolt movement is associated with increased flow events generally between mid-April and mid-May.

Hatchery summer steelhead utilized in the Grande Ronde basin are endemic to the Snake River drainage but are not considered part of the listed Snake River summer steelhead DPS. Fisheries authorized under this FMEP may intercept an occasional natural-origin post spawning “kelt” steelhead. Expected low handle rate and low hook and release mortality (Hooton, 1988) suggest little or no potential for spring Chinook fisheries to impact summer steelhead.

*Snake River Fall Chinook and Sockeye Salmon* – The life histories of both species preclude adult presence in proposed fishery areas during fisheries authorized by this FMEP.

**1.3.1) Description of “critical” and “viable” thresholds for each population (or management unit) consistent with the concepts in the technical document “Viable Salmonid Populations and the Recovery of Evolutionarily Significant Units.”**

*Spring Chinook* - The TRT’s draft document “Viability Criteria for Application to Interior Columbia Basin Salmonid ESUs” (TRT, 2007) classified the size of three Grande Ronde basin spring Chinook populations as large (the Lostine/Wallowa, Catherine Creek and upper Grande Ronde), two as intermediate (Minam and Wenaha rivers) and the one as basic (Lookingglass Creek). The TRT described interim viable population levels associated with these designations, including: large (1000 spawners), intermediate (750 spawners) and basic (500 spawners) (Table 2). The TRT concluded that populations with long-term average spawner numbers fewer than 500 spawners were not viable. We use the term “Minimum Abundance Threshold” (MAT) to describe the interim abundance targets. Critical population thresholds were described by the Biological Requirements Working Group (BRWG, 1994) as 150 spawners for a small population and 300 for a large population. Consistent with these criteria we define critical population levels for both steelhead and Chinook as 30% of the minimum abundance threshold level (Table 2).

**Table 2. List of the natural fish populations, “Viable Salmonid Population” thresholds, and associated hatchery stocks included in this FMEP.**

Natural Populations (or Management Units)	Critical Thresholds (BRWG)	Minimum Abundance Thresholds (MAT from TRT)	Associated hatchery stock(s)	Hatchery stock essential for recovery? (Y or N)
Wallowa/Lostine	<u>Abundance</u> : 300 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 1000 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	Lookingglass Hatchery Lostine stock	Y
Catherine/Indian <sup>1</sup>	<u>Abundance</u> : 300 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 1000 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	Lookingglass Hatchery Catherine Creek stock	Y
Upper Grande Ronde R	<u>Abundance</u> : 300 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 1000 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	Lookingglass Hatchery U. Grande Ronde stock	Y
Wenaha R	<u>Abundance</u> : 225 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 750 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	None	N/A
Minam R	<u>Abundance</u> : 225 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 750 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	None	N/A
Lookingglass Cr	<u>Abundance</u> : 150 adults/yr <u>Productivity</u> : short term avg. replacement rate <0.7	<u>Abundance</u> : 500 adults/yr <u>Productivity</u> : long term avg. replacement rate =1	Lookingglass Hatchery Catherine Creek stock	N

<sup>1</sup> When fisheries target only the Catherine Creek portion of the Catherine/Indian Population, then the fisheries will be managed based on a Critical Threshold of 225 with a MAT of 750 as for an Intermediate-sized population.

*Summer steelhead* - Population viability analysis is not available for all steelhead management units within the FMEP area. However, spawning survey data from a number of Grande Ronde basin streams suggests steelhead populations within the basin are viable and resilient (Chilcote, 2001). Draft intrinsic population size as determined by the Interior Columbia Technical Recovery Team (TRT) is utilized as a surrogate for MAT (TRT, 2007; Table 3). Furthermore, that analysis determined that productivity of these populations was such that they would remain viable and productive under harvest or mortality levels modestly higher than current levels (Chilcote, 2001). We utilized results of analysis completed to infer population status in adjacent management units.

**Table 3. List of the natural steelhead populations, “Viable Salmonid Population” thresholds, and associated hatchery stocks within the Grande Ronde basin (Chilcote, 2001 and TRT 2007).**

Natural Populations (or Management Units)	Critical Thresholds (spawner density, redds/mile)	Critical Thresholds (BRWG Pop. Size)	Minimum Abundance Thresholds (TRT intrinsic size)	Associated hatchery stock(s)	Hatchery stock essential for recovery? (Y or N)
Imnaha	1.2	300	1000	Little Sheep Cr. summer steelhead (# 29)	N
Lower Grande Ronde	0.7	300	1000	Wallowa summer steelhead (WDFW Cottonwood Cr. Releases)	N
Joseph Creek	0.7	150	500		
Wallowa River	0.8	300	1000	Wallowa summer steelhead (#56)	N
Upper Grande Ronde	0.8	450	1500		
Snake River		150	500	Pahsimeroi summer steelhead	N

Recovery planning efforts currently underway may develop specific population viability levels for steelhead and Chinook populations in the Snake River basin along with associated management strategies. This plan will incorporate those changes as they occur through modification of harvest triggers and harvest rate scales as appropriate.

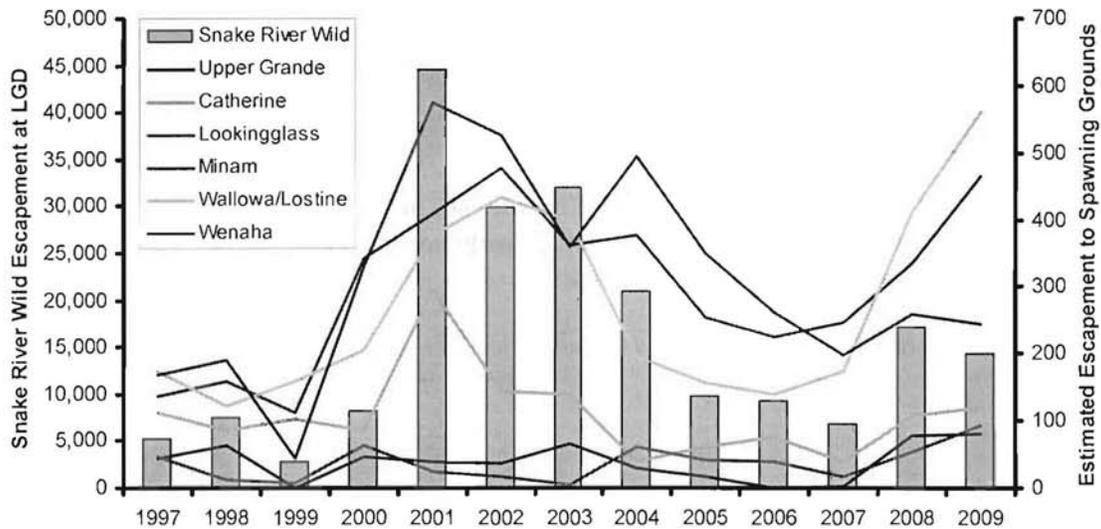
**1.3.2) Description of the current status of each population (or management unit) relative to its “Viable Salmonid Population thresholds” described above. Include abundance and/or escapement estimates for as many years as possible.**

To estimate natural and hatchery-origin escapement to the spawning grounds by population, ODFW utilized total redd counts, multiplied by the proportion of fish carcasses by origin (hatchery or wild) examined during surveys, multiplied by a fish/redd conversion (2.54 fish/redd based on escapement/redd data from Lookingglass Creek, ODFW unpublished data). Utilizing a fish per redd conversion provides a consistent methodology across years when weirs were not operating and with naturally-producing populations. However, in supplemented populations this method does not account for management strategies at weirs (broodstock removal, etc.) and may underestimate overall returns.

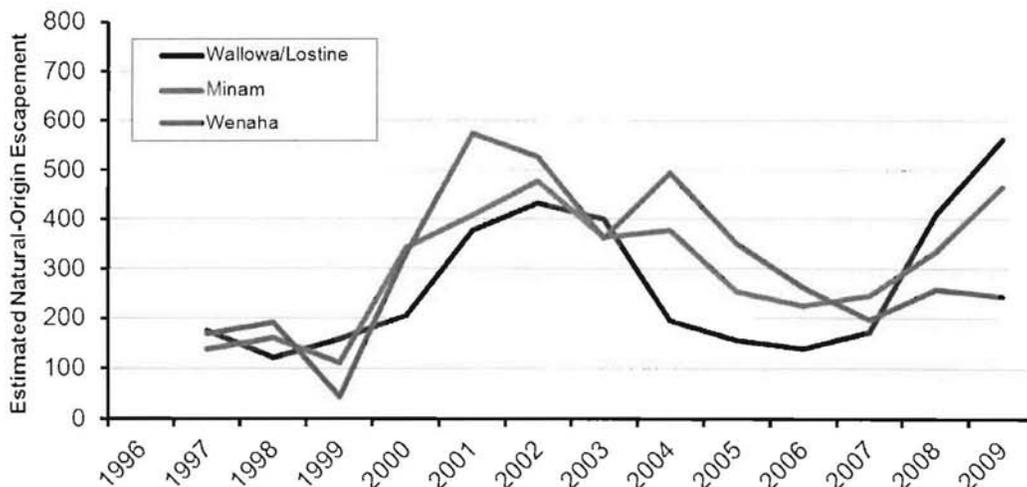
With exception for the upper Grande Ronde River and Lookingglass Creek, populations in the basin tracked with the general Snake River basin trend (with lower escapement in the mid to late-1900’s, peaks in 2001 or 2002, gradually declining escapement from 2003 to 2007, and increases to 2009 (Figure 4). Although redd count expansion is likely conservative, resulting escapement estimates suggest that no natural populations within the Grande Ronde system have achieved our defined MAT level over the last 12 years (Figures 5 and 6). The upper Grande Ronde population failed to meet ODFW’s defined critical threshold in any of

the last 10 years, and the Catherine Creek population has failed to meet critical threshold in all but 2001 (Figure 6).

Hatchery-origin returns to the Wallowa/Lostine, Catherine Creek and upper Grande Ronde populations increased beginning in 2001 as the first adults returned from captive and conventional hatchery program smolt releases (Figures 7 and 8). Lookingglass Creek is the site of an ongoing reintroduction project utilizing Catherine Creek stock. Surplus hatchery fish returning to the Catherine Creek weir may be transported and released in lower Lookingglass Creek to enhance sport and/or tribal harvest opportunity.



**Figure 4.** Estimated escapement to spawning grounds, by population, for Grande Ronde basin Chinook salmon compared with estimated wild Chinook escapement above Lower Granite Dam (LGD) for the Snake River run-at-large (from K. Kostow, ODFW)



**Figure 5.** Estimated natural-origin spring Chinook escapement to Minam, Wenaha and Wallowa/Lostine populations, 1997 – 2009.

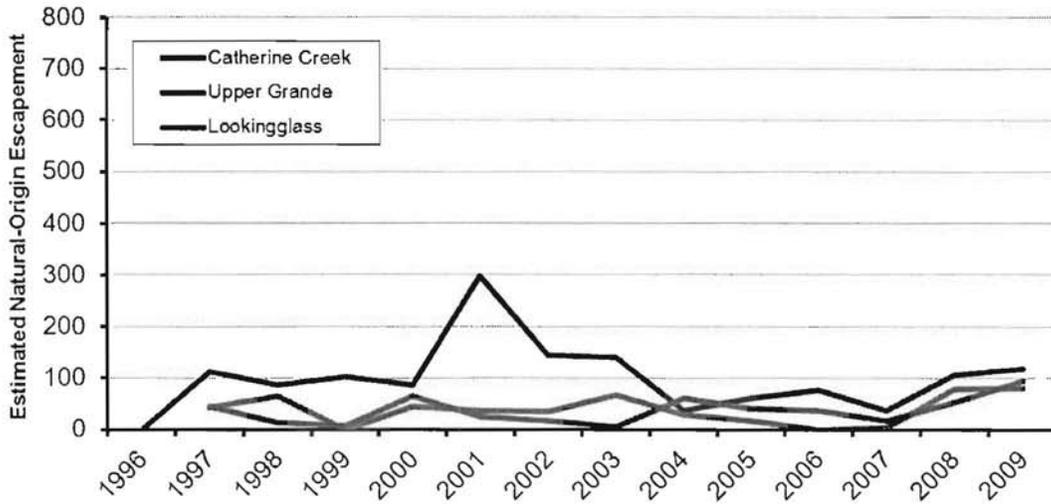


Figure 6. Estimated natural-origin spring Chinook escapement to Catherine Creek, the Upper Grande Ronde and Lookingglass Creek populations, 1997 – 2009.

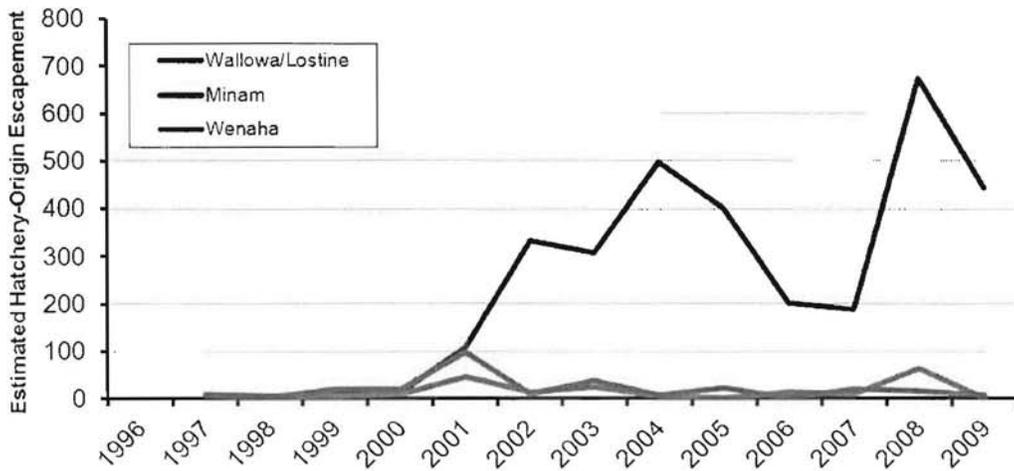
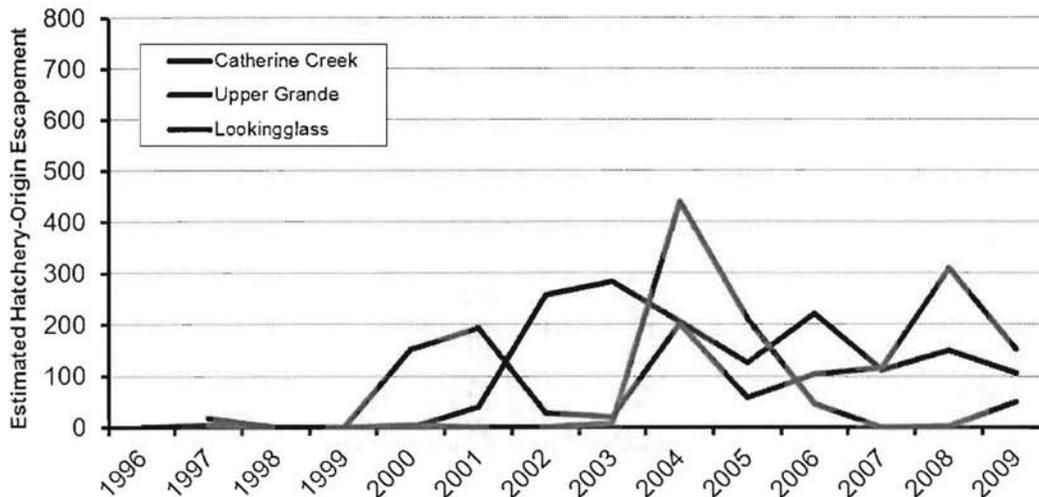


Figure 7. Estimated hatchery-origin spring Chinook escapement to Minam, Wenaha and Wallowa/Lostine populations, 1997 – 2009.



**Figure 8. Estimated hatchery-origin spring Chinook escapement to Catherine Creek, the upper Grande Ronde and Lookingglass Creek populations, 1997 – 2009.**

*Summer Steelhead* – Long-term relative changes in steelhead abundance in NE Oregon populations are based on index redd counts, conducted on over 85 miles of redd surveys within the Grande Ronde and Imnaha basins. WDFW does not have similar long-term monitoring information for the Grande Ronde basin within Washington state. General trends in observed steelhead spawner abundance within the basins can be represented as reaching a low in the late 1970s, gradually increasing to a peak in the mid-1980s, and declining to another low in the mid-1990s. Runs recovered in the late 1990s and early 2000s before declining recently (Figure 9). However, some populations are sampled inconsistently and as a result data are not available for presentation here.

Index redd counts are conducted in areas of prime spawning habitat and/or areas where long-term data is available. Index redd counts do not represent all miles of spawning habitat within entire watersheds; therefore, data are not applicable for expansion. However, referencing redd count data with expansion for fish per redd (average 2.1 fish per redd for four years of data collected from Deer Creek in the Grande Ronde basin, ODFW unpublished data) and considering miles of available habitat by population area (Table 4) suggest that most summer steelhead populations within the FMEP area achieve, and in some cases, exceed MAT levels on a consistent basis. However, the upper Grande Ronde population appears to have been less consistent than others in achieving MAT levels.

Chilcote (2001) calculated population viability for Joseph Creek, upper Grande Ronde and Imnaha (Camp Creek) populations. It should be noted that, due to the method of calculation, the viable population levels described in the analysis are comparable to those described in TRT discussions as ‘critical’. Average abundance over the years analyzed (1995-2000) for all steelhead populations substantially exceeded the critical threshold identified by Chilcote (2001; Table 5). Chilcote found populations examined to be viable and resilient over the period from the mid 1960’s to 2000.

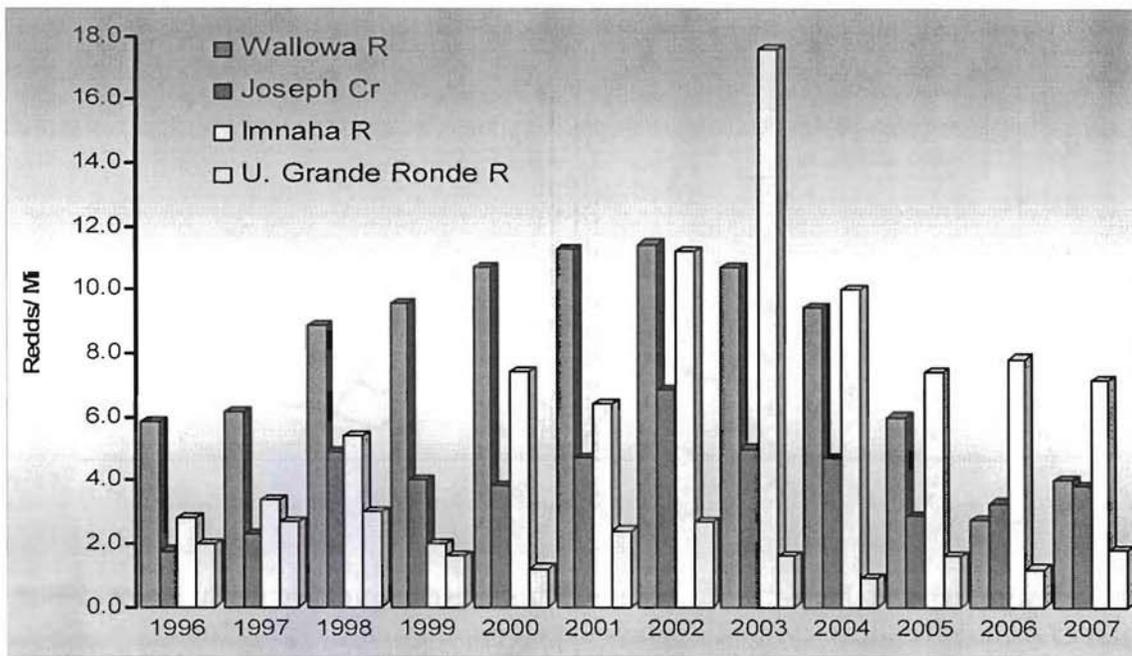


Figure 9. Grande Ronde and Imnaha basin summer steelhead index area spawning ground counts, 1996- 2007.

Table 4. Estimated miles of spawning habitat utilized by summer steelhead within the FMEP management area.

Steelhead Population	Estimated Miles of Spawning Habitat
Lower Grande Ronde <sup>1</sup>	253
Joseph Creek	223
Wallowa	173
Upper Grande Ronde	613
Imnaha	367
Snake River	86

<sup>1</sup> Does not account for approximately 30-40 miles of potential spawning habitat within Washington.

Table 5. Average steelhead spawner density (spawners per mile) during years 1994-2000 for FMEP area population units examined relative to draft TRT critical levels as determined in Chilcote (2001).

Population	Spawner density	Critical Threshold
Joseph	4.6	0.7
Imnaha	4.7	1.2
Upper Grande Ronde	3.3	0.5

## 1.4) Harvest Regime

### 1.4.1) Provide escapement objectives and/or maximum exploitation rates for each population (or management unit) based on its status.

Table 6 describes the proposed abundance-based harvest rate schedule for fisheries in the Grande Ronde River basin. The proposed annual allowable ESA take will be based upon the pre-season adult-only returns to each respective population within the Grande Ronde fishery management area. Figures 10-13 describe impact rates and impact levels, respectively, across a range of natural-origin run sizes based on typical co-manager agreements of impact allocation.

Harvest will not be considered when hatchery run size does not exceed the number of adults identified for broodstock and supplementation needs as described by sliding scale management plans set for each population's hatchery program. Surplus is defined as: adult hatchery run projection less hatchery adults needed for broodstock. Agreements with tribal co-managers apportion what are considered surplus hatchery fish equally between tribal and sport fisheries. This approach limits sport harvest during years when wild fish runs are below MAT and hatchery fish runs are of similar size. In addition, near the lower end of the harvest rate scale, fisheries will not be implemented until allowable hatchery fish harvest exceeds 20 fish due to potential to over harvest within a single week.

Wild fish impact will be limited to incidental hook and release mortality in fisheries targeting surplus hatchery fish, except at natural-origin run sizes greater than twice MAT when direct harvest of natural adults and jacks can be considered. Allowable impact in a fishery directed at unclipped fish would be determined via Table 6 and overall maximum impact would include measures of both direct and indirect mortality. Wild fish harvest will only be considered after implementation of five years of hatchery fish harvest in a given area to allow evaluation of fishery characteristics.

The allowable maximum impact rates for supplemented populations under this plan are based on critical and minimum abundance thresholds for natural populations (Table 2). The proposed strategy gradually increases allowable maximum combined natural origin fishery impact rate from zero at critical level to 8% (of total natural return) at the minimum abundance threshold level, and to 16% (of total natural run) at twice the minimum abundance threshold level for supplemented populations. The Oregon and Washington mainstem fishery strategies are the same. Harvest management triggers and impact rates utilized in this plan are based only on adult run size, as jacks are not included.

Pre-season estimates of natural-origin jack returns are often inconsistent and unreliable; therefore, we will eliminate consideration of the natural-origin jack component in harvest management decisions. Although jack returns will not be considered for harvest planning, the harvest of marked jacks will be allowed in the Oregon and Washington fisheries. Excluding jacks from harvest planning results in conservative natural-origin impacts, as the natural-origin run will be consistently underestimated by a varying margin.

Large population (Wallowa/Lostine, Catherine Creek and upper Grande Ronde River) maximum allowable natural-origin impact rates and numbers are presented in Figures 10 and 11, respectively. Resulting impact rate and number for the Lookingglass Creek population (MAT = 500) of are graphically described in Figures 12 and 13 respectively.

Mixed stock fisheries that may impact unsupplemented populations in the Grande Ronde Basin (notably the Wenaha and Minam) will not be considered unless these populations are expected to achieve a run size of 375 adults or greater (50% of TRT draft MAT level for those populations). At expected run sizes between 375 and 750 adults, maximum allowable impact for unsupplemented populations will be calculated as 1.0%. If expected returns are expected to exceed MAT (greater than 750 for the Wenaha and Minam), then managers may consider more liberal impact rates based on impact schedules previously described for supplemented populations.

For Lookingglass Creek, managers will implement more liberal sliding scale harvest management at low natural-origin return levels and at all hatchery-origin return levels. NOAA Fisheries does not consider the Lookingglass population as essential for recovery or delisting of the Grande Ronde/Imnaha MPG as are the other tributaries included in this plan. This exemption from the regular harvest sliding scale management used in other tributaries will allow increased harvest of abundant hatchery surplus fish for both tribal and non-tribal fisheries in lower Lookingglass Creek.

If natural run sizes allow for mixed stock fisheries in the lower Grande Ronde, the allowable impact of sport fisheries will be apportioned between Oregon and Washington waters in order to remain within the maximum allowable impact rates described in this plan. Available ESA impacts, by population, will be allocated to fisheries above and below Rondowa (mouth of the Wallowa River) in a manner that optimizes the exploitation of surplus fish available for harvest, while minimizing impacts to weak populations and those of special conservation status (Minam and Wenaha). Impacts below Rondowa will be divided equally among Oregon and Washington. Both states will be responsible for submitting a combined annual fishery management plan that describe strategies to manage impact limits, regulations, seasons, monitoring, and enforcement (see section 1.5).

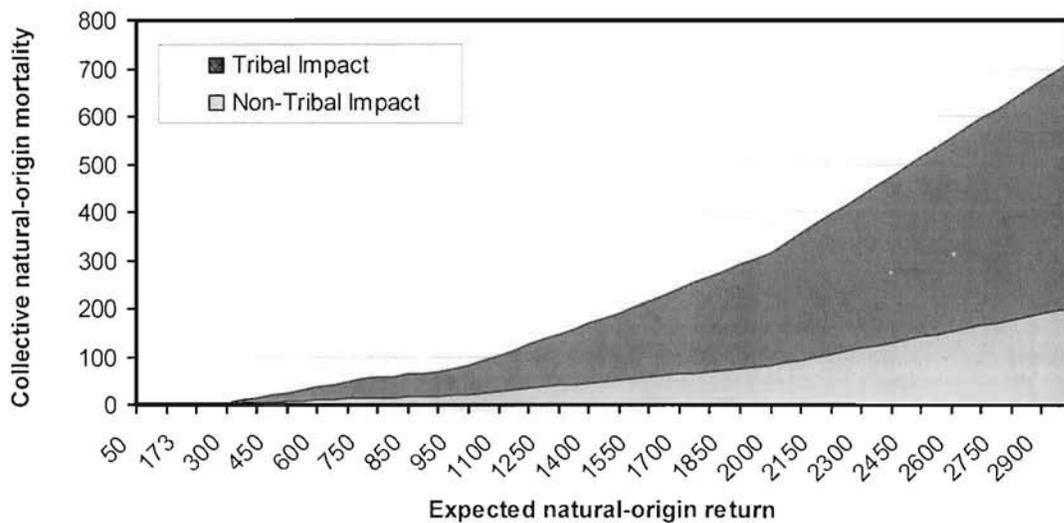
Washington fisheries would only occur in the lower mainstem Grande Ronde River. Spring Chinook spawn in only a few miles of habitat within Washington, thus WDFW has not established escapement goals within this basin. Spawning and rearing habitats for listed Grande Ronde River spring Chinook are located mostly in the Oregon portion of the basin. The Snake River Salmon Recovery Plan (SRSRB 2006) listed an escapement goal of 1,335 wild spring Chinook for the Wenaha River, with 750 of those needed for recovery. The rest of the lower Grande Ronde Basin within Washington does not have a spring Chinook population or production. WDFW's management goals are to protect the weak stocks in the basin and meet the TRT and ESA recovery goals (as identified in the Snake River Salmon Recovery Plan for SE WA – SRSRB 2006 and 2011), as well as meet the restoration (broad sense) goals identified in the Washington and Oregon draft recovery plans.

Salmon sport fisheries are closed in SE WA unless specifically authorized by WDFW under emergency regulations or added to the annual fishing regulations pamphlet and Washington Administrative Codes (WACs). Between 1977 and 2011, WDFW has not implemented fisheries targeting catch and/or harvest of salmon in the Grande Ronde Basin. Spring Chinook fisheries will selectively target adipose clipped hatchery-origin salmon, with wild (and/or unmarked) salmon release requirements.

**Table 6. Total collective natural-origin adult harvest/impact rates relative to minimum abundance threshold (MAT) and critical threshold levels.**

Fishery Scenario	Expected return of natural-origin fish	Total collective natural-origin mortality
A	Below Critical Threshold	1%*
B	Critical to MAT	A + 11% of margin above A*
C	MAT to 1.5X MAT	B + 22% of margin above B
D	1.5X MAT to 2X MAT	C + 25% of margin above C
E	Greater than 2X MAT	D + 40% of margin above D

\* For Lookingglass Creek fisheries will be managed more liberally under fishery scenarios A & B: A = 10% total harvest (tribal 8% and sport 2%); B = A + 16% of margin above critical (tribal 12% and sport 4%).



**Figure 10. Proposed maximum allowable Chinook sport fishery impact levels, based on typical co-manager agreements, at various run sizes for the Wallowa/Lostine, Catherine Creek and upper Grande Ronde River (large) populations determined from Table 6.**

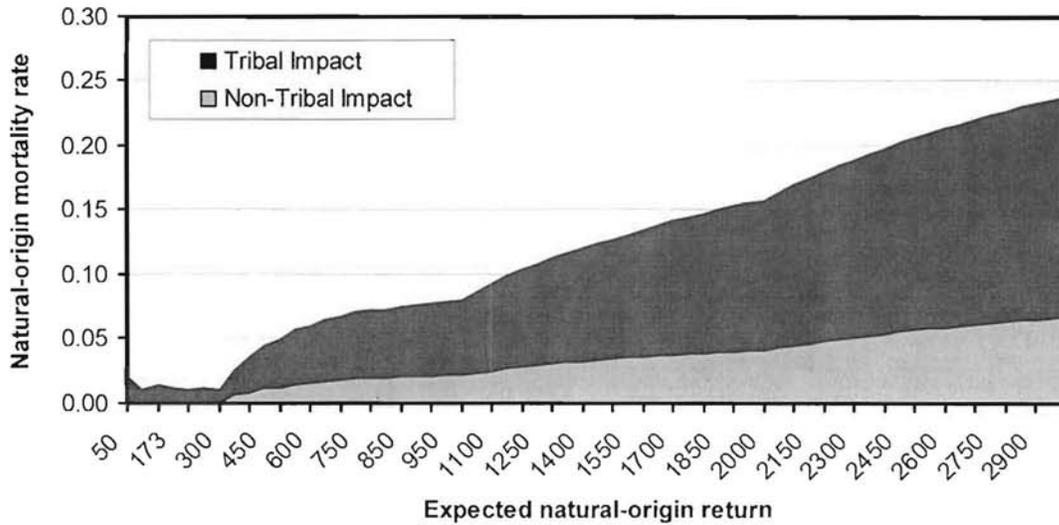


Figure 11. Proposed maximum allowable Chinook sport fishery impact rates, based on typical co-manager agreements, at various run sizes for the Wallowa/Lostine, Catherine Creek and upper Grande Ronde River (large) populations determined from Table 6.

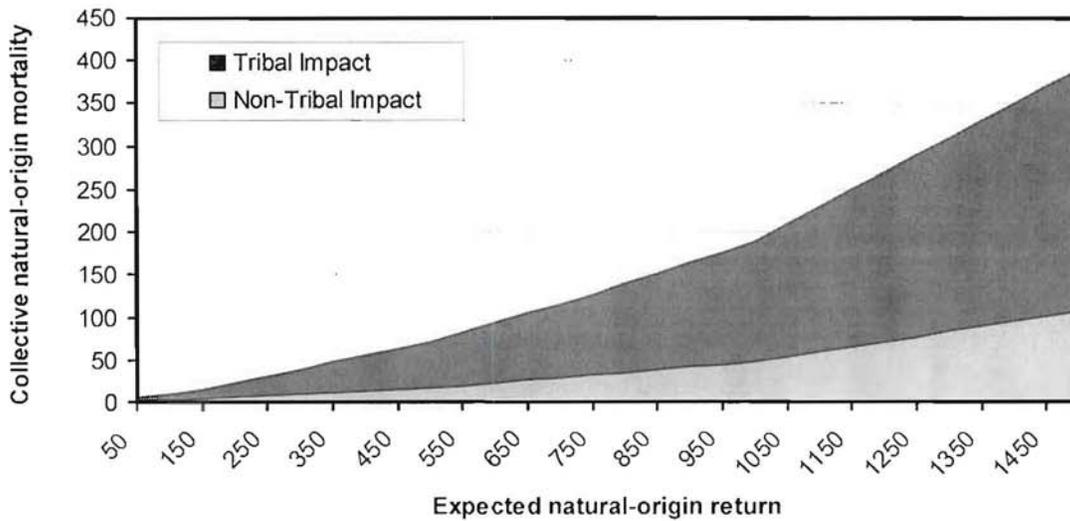
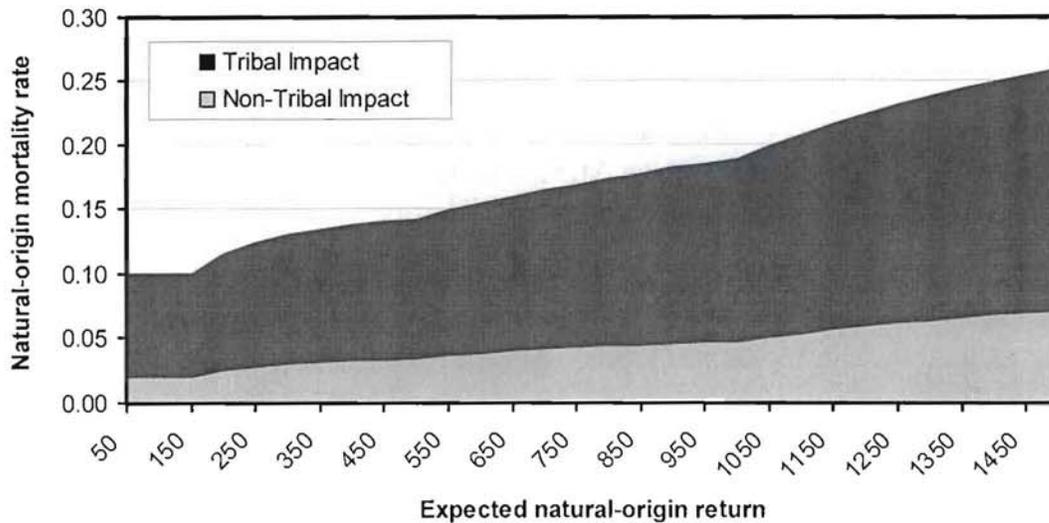


Figure 12. Proposed maximum allowable Chinook sport fishery impact levels, based on typical co-manager agreements, at various run sizes for the Lookingglass Creek population (basic) determined from Table 6.



**Figure 13. Proposed maximum allowable Chinook sport fishery impact rates, based on typical co-manager agreements, at various run sizes for the Lookingglass Creek (basic) population determined from Table 6.**

**1.4.2) Description of how the fisheries will be managed to conserve the weakest population or management unit.**

Hatchery fish sport harvest will only be considered when: 1) allowable impact is available for all populations likely to be in the fishery reach; 2) the combined natural and hatchery runs of an integrated spawning aggregate are above MAT level for natural-origin fish in that population, or 3) hatchery run size is projected to be greater than the number necessary to meet broodstock and natural spawner needs.

Generally, fisheries will not be considered unless all populations likely to be affected by the fishery (see Table 2) are expected to meet and maintain the threshold criteria identified for each population throughout the fishery. For supplemented populations, the critical threshold will be used as the criteria for opening fisheries. For natural populations (Wenaha and Minam Rivers) affected by mixed-stock fisheries, the predicted adult run size must exceed 50% of MAT (375 adults). Timing of mixed stock fisheries in the Grande Ronde basin may also be structured to avoid impacts to sensitive stocks while focusing impacts on populations where ESA impacts and harvestable fish are available.

For the Grande Ronde basin, mixed stock fishery areas include the mainstem Grande Ronde River between the mouth and Catherine Creek, and the Wallowa River below the Minam River. In-basin mixed stock fisheries impacts will be limited to the most restrictive impact rate (calculated using the identified harvest rate scales) for populations affected by the fishery. Upstream of mixed stock fishery areas, harvest targeting discrete populations may be considered when additional allowable impact is available. Impact will be allocated to populations proportionally based on the relationship between most recent run projections and as determined by catch estimates from our statistical creel survey.

Currently, the weakest natural-origin populations within the Grande Ronde basin exist above the confluence with the Wallowa River (see section 1.3.2). Populations in the Wenaha and

Minam Rivers are of special conservation interest due to limited historical interaction with hatchery stocks.

The Wallowa River fishery provides an example of managing a mixed stock fishery that includes the integrated Wallowa/Lostine and the wild Minam River populations. No fishery is considered below the confluence of the Minam or Wallowa rivers unless the expected Minam population returns meet 50% of the suggested MAT; however, harvest may still occur above the Minam River where Minam fish will not be impacted until the allowable impact for the Wallowa/Lostine population is achieved. When Minam population impact criteria are achieved; a fishery will open below the confluence of the Minam River confluence in the Wallowa River, until the allowed impact level on Minam fish is achieved.

Recovery planning efforts currently underway (TRT and others) may develop specific population viability levels for Chinook steelhead and spring Chinook populations in the Snake River basin along with associated management strategies. This plan will incorporate those changes as they occur through modification of harvest triggers and harvest rate scales as appropriate.

**1.4.3) Demonstrate that the harvest regime is consistent with the conservation and recovery of commingled natural-origin populations in areas where artificially propagated fish predominate.**

We will continue to adipose fin mark all hatchery-produced fish potentially available for harvest. Non-tribal fisheries will target adipose-clipped hatchery fish and wild fish impact will be limited to incidental handling mortality under most circumstances. At natural-origin runs above twice the MAT level, fisheries targeting natural-origin fish may be considered only after fisheries have been implemented targeting hatchery fish in that area for at least five years (see section 1.4.2).

Incidental hooking mortality for purposes of this plan will be estimated as 10% of fish handled, except for Lookingglass Creek which will be managed more liberally at 7.5%. Studies focusing on the Willamette River spring Chinook fishery found 11.2% mortality of fish caught and released in that boat fishery (ODFW 2001). However, recent studies on the Nicola River, British Columbia, found much lower mortality rates, on the order of 1%, for Chinook salmon hooked and released in a small river fishery comparable to those considered in this plan (Cowen et al. 2007).

ODFW and WDFW will work closely together to plan and structure fisheries on the mainstem Grande Ronde River. Non-tribal fisheries in Oregon will generally follow Oregon's "General (statewide) gear and bag limit regulations" for spring Chinook (including jack harvest), as outlined in the annual Oregon Sport Fishing Regulations ([www.dfw.state.or.us](http://www.dfw.state.or.us)). In Washington spring Chinook fisheries on the mainstem Grande Ronde would be implemented by emergency regulations. Special regulations may be instituted to: reduce potential natural fish impacts, to limit risk of over-harvest of hatchery fish, or to provide additional harvest opportunity if allowed under the FMEP guidelines.

The Catherine Creek stock is managed as the foundation for reintroduction efforts in Lookingglass Creek. Hatchery-origin Catherine Creek Chinook collected at the Catherine Creek weir (that are surplus to hatchery broodstock and natural production needs) may be transported to Lookingglass Creek, and released to provide sport and tribal harvest opportunities and/or to try and meet LSRCP mitigation fishery goals. This strategy would be

described in an annual fisheries plan designed to minimize impact on natural-origin fish in the system.

### **1.5) Annual Implementation of the Fisheries**

Fisheries will remain closed until pre-season run size triggers outlined in this FMEP are exceeded, whereby opening a spring Chinook season will occur by temporary rule adoption.

ODFW will review pre-season spring Chinook run projections for populations within the Grande Ronde basin as they become available through the LSRCP AOP process in late-December or early-January each year. Grande Ronde basin co-managers have agreed to utilize these local projections as a common standard for planning hatchery operations and harvest management (Tables 6 and 7). Run projections may be reviewed by the U.S. vs. Oregon technical advisory committee (TAC) as part of developing basin-wide pre-season run projections. Projections for the Wenaha and Minam River populations will be estimated using relationships based on long-term redd count data.

When pre-season return estimates are expected to allow sport harvest opportunity, preliminary sport fishery strategies will be based on population-specific allowable ESA impact rates described in Table 6 and consistent with standing co-manager agreements (see section 2.1.3, Table 7). Co-managers will negotiate harvest and ESA impacts allocation through direct coordination or the Snake Basin Harvest Forum. If agreements cannot be reached with other co-managers, ODFW and WDFW may still propose a sport fishery that fits within the total population-specific allowable ESA impacts as per Table 6 and harvest impact based on reasonable assumptions of other party ESA impacts.

Year-specific fishery plans will be developed by ODFW and WDFW and forwarded to NOAA Fisheries on an annual basis. The plan will include: 1) natural and hatchery pre-season run projections; 2) proposed sport ESA impact limits based on Table 6 and standing co-manager agreements (Table 7), or reasonable assumptions of other party impacts; 3) fishery dates and bag limits; 4) expected post-harvest escapement, 5) distribution of adults; and 6) monitoring and enforcement plans.

Updated run projections will be reviewed by ODFW and WDFW to determine if run size allows harvest opportunity based on the FMEP, and to adjust harvest limits and/or fishery strategies if a fishery is planned or ongoing. Fishing regulations may be adjusted to: 1) reduce potential natural-origin impacts, 2) limit risk of over-harvesting hatchery fish; or 3) provide additional harvest opportunity if allowed under the FMEP guidelines. Adjustments will be communicated to co-managers and NOAA Fisheries as modifications to the annual fishery plan.

Once initiated, sport fisheries will be monitored through statistical creel with weekly updates of estimated harvest and ESA impacts for each of the affected populations to ensure consistency with the FMEP. Washington and Oregon will coordinate and implement compatible creel surveys, such that data is congruent for in season and end of season reporting. Based on the creel data, fishery adjustments will be made to ensure ESA impacts to the affected populations remain within those outlined in this plan. In-season run projection updates, and harvest information will be disseminated to co-managers and NOAA Fisheries, with increased frequency when approaching the prescribed ESA limits. Fisheries will be adjusted or terminated when the agreed to co-manager impact limits are reached

and/or when the total ESA take for any of the affected populations identified in Table 6 has been reached.

## **SECTION 2. EFFECTS ON ESA-LISTED SALMONIDS**

### **2.1) Description of the biologically-based rationale demonstrating that the fisheries management strategies will not appreciably reduce the likelihood of survival and recovery of the affected DPS(s) in the wild.**

Sport fisheries within the Grande Ronde basin are designed to limit natural-origin fish impact in supplemented populations (Wallowa/Lostine, Catherine Creek, Lookingglass Creek and the upper Grande Ronde Rivers) to a maximum of 2% when run levels remain at or below MAT level and to 1% for unsupplemented populations (Wenaha and Minam Rivers).

Fisheries described in this plan will affect only a small portion of the Snake River spring Chinook ESU. Based on run composition estimates prior to construction of the Lower Snake River dams, the Grande Ronde basin accounted for 10% of Snake River spring Chinook returns (USACE, 1975). In the near term, it is unlikely that any harvest outlined herein will impact more than one or two of the natural populations in the Grande Ronde basin by more than a few percent in a given year. If impact rates do exceed that level, it will occur based on improved population abundance and productivity. The Grande Ronde basin spring Chinook populations typically follow trends for the rest of the Snake Rivers basin (Figures 3 and 4). As a result, increased harvest rates in the Grande Ronde would occur simultaneously with increases in spring Chinook abundance across the Snake River ESU.

Sport harvest of adults from the natural production areas of the Minam and Wenaha rivers will be limited to incidental hook and release mortality in mixed-stock fisheries targeting other populations. Strength of natural populations within the basin tends to track together (Figures 5 and 6). Consequently, mixed stock fisheries and resulting incidental impact to natural unsupplemented populations of the Minam and Wenaha rivers will likely occur only during years of relative strength for those populations.

No population-specific sport harvest would occur when expected natural-origin returns fail to meet the critical adult threshold (150-300), except in Lookingglass Creek, and very conservative impact to natural-origin returns would occur until MAT levels are assured. At escapement above MAT, harvest impacts could be higher but will continue to allow escapement of a high percentage of natural-origin fish. Fishery strategy decisions will be based on the best information available. Fishery monitoring via statistical creel survey will be provided to NOAA Fisheries with weekly updates of estimated harvest and impact. Fishery adjustments based on the creel survey data, including closure, will be made to avoid impacts above those outlined in this plan.

Few adult steelhead kelts have been encountered during similar spring Chinook fisheries in the Imnaha River from 2001 through 2005. A single steelhead was reported caught and released during the 2005 creel surveys. Statistical expansion of that data resulted in an estimate of 11 steelhead handled (95% CI = 1-25). Data from adult steelhead handled during a 2003-2005 hatchery broodstock collection program on the Lower Grande Ronde (ODFW, unpublished) and Hooton (1988) indicates incidental hooking mortality for steelhead caught and released is low, on the order of 2 to 5% for fish caught with bait. Our expectation is that few wild steelhead will be handled in the course of the proposed fisheries, most of those will

be post-spawn kelts, a high percentage of fish handled will survive, and incidental impact will be limited to a few fish. If the proposed fishery is in June and July, few steelhead kelts are likely to be present and impacts are likely negligible.

Due to run timing and migration characteristics of Snake River fall Chinook and Snake River sockeye and the location and timing of fisheries potentially authorized under this FMEP we expect no impact on those ESUs.

#### **2.1.1) Description of which fisheries affect each population (or management unit).**

The intent of this plan is to allow flexible harvest opportunity on hatchery populations across the basin as it becomes available, while maintaining protection for natural-origin fish (Table 6 and Figures 10-13). A number of possible combinations of open areas, seasons and bag limits exist. On any given year fisheries may affect none, any, or all populations within the basin up to the harvest/impact level determined by the individual population's run strength. Those fisheries will be described in annual fishery plans based on projected run size and strictly limited by the impact levels described in this plan.

#### **2.1.2) Assessment of how the harvest regime will not likely result in changes to the biological characteristics of the affected DPSs.**

This plan will provide a fishery season that encompasses most of the adult upstream migration period when appropriate. We do not expect incidental impacts to wild fish in the fishery to be size or age-selective, and as a result we do not expect the fishery to exert run timing or size selective pressure on natural or hatchery population components.

Guidelines outlined in this plan provide for limited natural-origin impact. For populations affected by fisheries, incidental impacts will not occur in fisheries authorized by this FMEP unless projected combined natural and hatchery run size is large enough to maintain draft TRT minimum abundance levels (as described in TRT (2007) or updated criteria) after allocated take levels are reached. For unsupplemented populations (Wenaha and Minam R), projected return levels must exceed one half MAT (in both cases, 375 adults). When returns are expected to exceed one half MAT, fisheries may impact up to 1% of the expected return. The limited fishery related mortality impact on natural-origin populations as outlined by this plan is unlikely to result in selection that would result in changes to the biological characteristics of individual populations.

This plan will affect only a small portion of the Snake River Spring Chinook ESU. Based on run composition estimates prior to construction of the Lower Snake River dams, the Grande Ronde basin accounted for 10% of Snake River spring Chinook returns (USACE, 1975).

#### **2.1.3) Comparison of harvest impacts in previous years and the harvest impacts anticipated to occur under the harvest regime in this FMEP.**

ODFW and tribal co-managers have collaborated in recent years to reach harvest sharing agreements for the Grande Ronde River fisheries (Table 7). Agreements are founded on a 50:50 total harvest share, regardless of origin. Considering traditional fishing methods employed by tribal members, these agreements allocate a disproportionate share of the natural-origin impact to treaty fisheries. To compensate, sport fisheries are allocated a larger share of the hatchery harvest. At natural-origin run sizes above critical threshold, treaty fisheries are generally allocated between 73-79% of the total natural-origin impact (Table 7).

ODFW and WDFW expect to implement a similar framework for subsequent fisheries, and hopes to maintain an agreement for harvest sharing with co-managers that fits within the total harvest framework outlined in Table 6.

**Table 7. Natural-origin adult harvest/impact rates based on existing co-manager agreements, including collective natural-origin mortality rates as described in Table 6.**

Fishery Scenario	Number of Natural Origin Fish	Annual natural-origin mortality based on co-manager agreements		Total Collective Natural-Origin Mortality (All Fisheries)
		Tribal	State	
<b>A</b>	Below Critical Threshold	<b>1%*</b>	<b>0%*</b>	<b>1%*</b>
<b>B</b>	Critical To MAT	<b>A + 8%</b> of margin above critical*	<b>A + 3%</b> of margin above critical*	<b>A + 11%</b> of margin above critical*
<b>C</b>	MAT To 1.5X MAT	<b>B + 16%</b> of margin above MAT	<b>B + 6%</b> of margin above MAT	<b>B + 22%</b> of margin above MAT
<b>D</b>	1.5X MAT To 2X MAT	<b>C + 19%</b> of margin above 1.5X MAT	<b>C + 6%</b> of margin above MAT	<b>C + 25%</b> of margin above MAT
<b>E</b>	Greater than 2X MAT	<b>D + 28%</b> of margin above 2X MAT	<b>D + 12%</b> of margin above 2X MAT	<b>D + 40%</b> of margin above 2X MAT

\* For Lookingglass Creek fisheries will be managed more liberally under fishery scenarios A & B: A = 10% total harvest (tribal 8% and sport 2%); B = A + 16% of margin above critical (tribal 12% and sport 4%).

Estimated annual sport harvest in the Oregon portion of the basin between 1959 and 1973 ranged from 122 to 1175 and averaged 445 (ODFW, 1986). Washington harvest estimates are limited and sporadic during that time period. However, accurate estimates of basin escapement for the 1959-1973 time period are unavailable and as a result, annual harvest rates are unknown. Until recent years, spring Chinook sport harvest has not occurred in the Grande Ronde basin since 1978. The framework described in this plan prescribed Chinook fisheries on the Wallowa River in 2008 and 2009, with minimal natural-origin impacts (Table 8). Creel surveys indicated that no Chinook were caught in 650 estimated angler hours in 2008. Ten marked adults were harvested, and 11 unmarked adults were released in an estimated 1300 angler hours in 2009. Both fisheries have had less than 1.0% overall impact on both natural and hatchery-origin components of the population (Table 8).

**Table 8. Estimated Grande Ronde River spring Chinook adult sport fishery impact in Oregon, 2008-09. Hatchery-origin impacts resulting from sport fisheries factor a 10% incidental mortality for hatchery-origin fish caught and released.**

Year	Wallowa/ Lostine Adult Returns (H/N) <sup>1</sup>	Estimated Minam Adult Returns (N) <sup>2</sup>	Harvest (95% CI) (H)	Released (95% CI) (N)	Impact	
					N	% (H/N)
2008 <sup>3</sup>	1,408/1,040	693	0 (0-0)	0 (0-0)	0	0.0/0.0
2009 <sup>4</sup>	1,509/833	555	10 (0-52)	11 (0-47)	1	0.6/0.1

- 1 Natural-origin estimates to the Lostine and Wallowa River tributaries (excluding Minam River) based on typical proportion of redds among populations
- 2 Assumes Minam River accounts for 40% of natural-origin returns to Wallowa basin, Lostine 40%, all other tributaries 20%
- 3 Preliminary escapement estimates as of 6-21-10, from Peter Cleary (NPT)
- 4 Preliminary escapement estimates as of 6-21-10, from Joseph Feldhaus (ODFW)

This plan may result in substantial expansion of fishery areas relative to recent restricted opportunity (two miles of Lookingglass Creek), depending on run strength of the various populations. Table 9 below provides an example of plan implementation relative to basin returns in 2009, a recent year when harvest was prescribed as a management action under this plan, and estimated returns.

**Table 9. Estimated returns to the Grande Ronde River basin, by population, in 2009**

	Minam <sup>1</sup>	Wenaha <sup>1</sup>	Wallowa/ Lostine <sup>2,3</sup>	Catherine Creek <sup>2</sup>	Upper Grande Ronde <sup>2</sup>	Lookingglass Creek <sup>2</sup>
<b>Natural</b>	465	244	642	164	38	98
<b>Hatchery</b>	0	8	2004	528	488	306

- <sup>1</sup> Based on proportion of clipped and unclipped fish recovered on spawning ground surveys, and fish per redd conversion of 2.54 fish per redd.
- <sup>2</sup> Based on total fish trapped at weirs, does not account for fish removed for management purposes.
- <sup>3</sup> Natural-origin returns include Lostine, Wallowa, and Bear Creek populations, assuming the Lostine represents 40% of redds within the population, and the remaining Wallowa tributaries (excluding the Minam) represents 20%.

Given the return estimates provided in Table 9, fisheries in 2009 were implemented with the following framework:

- No directed natural-origin fishery would be considered since natural-origin escapement for all populations is below twice MAT level.
- No harvest would occur in the upper Grande Ronde River, Catherine Creek, or Lookingglass Creek populations. All natural-origin run sizes are below critical threshold. Under the revised harvest framework for Lookingglass Creek, a fishery would have been opened allowing a natural origin impact of 2 fish.
- No mixed stock fishery in the lower Grande Ronde River would occur, therefore no impact on the Wenaha population.
- Harvest of hatchery fish could be considered from the Wallowa/Lostine due to natural-origin run size (>300) and availability of surplus hatchery fish.
  - Natural-origin adult impact would be limited to 11 fish (or the handling of 110 adults assuming a 10% handling mortality), overall a 1.7% impact. This level of impact could allow harvest of about 343 hatchery adults.
- Fishery could impact the Minam River population (expected return >375) with an incidental impact of 5 natural-origin adults (1.0%).

**2.1.4) Description of additional fishery impacts not addressed within this FMEP for the listed DPSs specified in section 1.3. Account for harvest impacts in previous year and the impacts expected in the future.**

Grande Ronde basin spring Chinook may be subject to a number of fisheries downstream in Columbia and Snake rivers during any given year. These include commercial, sport and test fisheries and bi-catch in commercial shad fisheries downstream of Bonneville Dam. Harvest also occurs in tribal gillnet, ceremonial and subsistence, and hook-and-line fisheries in addition to Idaho and Washington sport fisheries above Bonneville Dam. The level of impact related to these fisheries is currently regulated through U.S. vs. Oregon negotiations and/or NOAA Fisheries authorization processes. Total downstream harvest of Snake River spring and summer Chinook runs since 2000 has averaged 9.8%, of which 2.6% was attributed to the non-treaty fisheries (Figure 14; Joint Staff Report, 2008).

Coded wire tag recovery data from hatchery-origin fish indicates that mixed stock fisheries downstream do not affect Snake River spring/summer Chinook equally due to differences in fisheries and run timing. Impact rates for some populations exceed fishery average some years. Combined Columbia River fishery impacts are regulated on a sliding scale similar to that proposed in this plan with allowable Snake River wild Chinook impact scaled to expected run size. With the exception of the upper Grande Ronde and Lookingglass Creek, Grande Ronde basin escapement has generally tracked closely with the trend in Snake River spring Chinook abundance (Figures 3 and 4). As a result, downstream sliding scale harvest management tends to work in concert with the harvest strategy outlined in this plan to protect Grande Ronde basin escapement at lower run sizes and provide increased harvest opportunity at higher escapement levels. However, commercial lower Columbia River fisheries can be non-selective or selective by timing and location and as a result are less effective at limiting impact on naturally-produced fish than fisheries we propose.

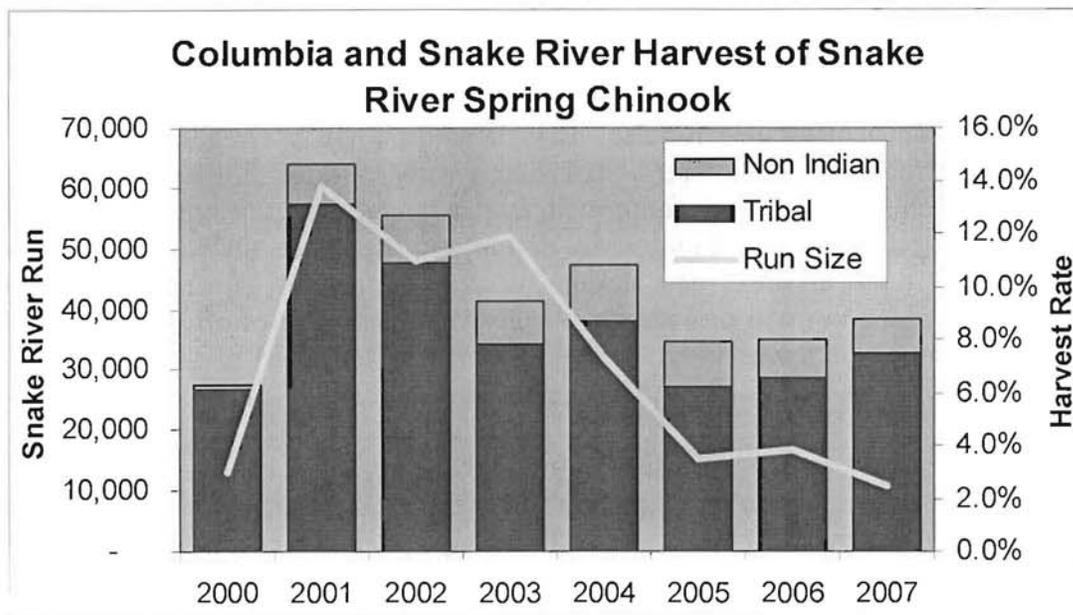


Figure 14. Harvest of Snake River spring Chinook in Columbia River treaty and non-treaty fisheries relative to Snake River run size, 1997 – 2007 (Joint Columbia River Management Staff, 2007).

Tribal harvest within the Grande Ronde River operates under guidance provided through Tribal Resource Management Plans (TRMPs). The TRMPs for Grande Ronde River spring Chinook contains an approach consistent with that outlined in this plan and is reviewed by NOAA Fisheries staff. The scale proposed in this plan allows for coordinated management between all parties in the basin to guide harvest strategies that are consistent with recovery of listed species.

### SECTION 3. MONITORING AND EVALUATION

#### 3.1) Description of the specific monitoring of the “Performance Indicators” listed in section 1.1.1.

Performance Standard:

- (1): Release group mark rate is determined by Lower Snake River Compensation Plan (LSRCP) Research personnel in Oregon via pre-release sub-sampling of juvenile Chinook to determine the rate of missing marks.
- (2): Run projections are developed on an annual basis by ODFW LSRCP Research staff based on age at return data compiled for the Grande Ronde basin and compared to actual run size. More refined mid-season estimates of run size are also made based on PIT tag interrogations at Lower Granite Dam and other Columbia and Snake River mainstem dams, and historic run timing past those sites.
- (3) and (4): Fishery monitoring by ODFW and WDFW, using compatible creel survey methods, will be accomplished via a statistical creel survey that covers all

areas open to Chinook fishing. Creel survey effort will be stratified by weekday-weekend and location, weighted toward weekend sampling and areas of greatest pressure. The WDFW and ODFW collaborative mainstem Grande Ronde, as well as the ODFW Oregon surveys, will incorporate randomized start times with multiple pressure counts per sample day in conjunction with angler interviews to determine effort and success. Details of the survey design will depend on the size and location of the open area. The amount of survey effort will depend on available budget, but will provide statistically valid estimates of effort, harvest and impact on a weekly basis. Those data will be utilized to determine spring Chinook and steelhead ESA impact levels, harvest and release rates, and to inform in-season decisions regarding fishery status. Findings will be reported to NOAA Fisheries on a weekly basis. Data from ODFW and WDFW salmon and steelhead harvest card returns will be available subsequent to fisheries and will be used to compare against in-season creel harvest and impact estimates. ODFW harvest card data is generally not available for several years and WDFW catch record card data are generally not available for six months to a year after the fact due to delays in data collection and data compilation required.

(5): Annual escapement estimates are part of the ongoing LSRCP monitoring in the Grande Ronde basin. Escapement estimates are developed annually by ODFW and the tribes via marking of adults as they pass a weir, counting redds and collecting data from carcasses recovered, developing mark-recapture estimates of natural and hatchery-origin fish above weirs and fish per redd relationships for that year. Estimated fish per redd is then used in conjunction with redd counts and carcass observation data to estimate number of fish below the weir and to develop a total spawner estimate by origin.

(6): see (3) and (4)

(7): see (3) and (4)

### **3.2) Description of other monitoring and evaluation not included in the Performance Indicators (section 3.1) which provides additional information useful for fisheries management.**

Counts of spring Chinook passing Columbia and Snake dams provide information about combined run size and timing relative to past years. River flow is monitored and provides insight into current or expected angling success. Grande Ronde basin flow is provided by USGS gauging stations at a number of sites throughout the system. In addition, ODFW operates a smolt trap in the lower Grande Ronde River within Washington to monitor juvenile migrant run timing, fish size and relative abundance, plus survival and timing downstream to Lower Granite Dam. This information is useful for general stock status monitoring and for mainstem dam passage and management.

### **3.3) Public Outreach**

Implementation of the fishery will occur on an annual basis, i.e., the fishery is closed until it is determined that the run for that year meets criteria described in this plan. Once a decision is made to open a fishery, information will be posted on the ODFW website (<http://www.dfw.state.or.us/>). Local media outlets and sporting goods dealers will be notified as to the season length, bag limits and other related regulations. Interested anglers from around the region are aware of the fishery notification process and are on alert during May and June for news related to the fishery.

In conjunction with ODFW's statewide coordinated invasive species prevention program we will utilize the opportunity during creel interviews and other fishery related public contacts to provide prepared information and answer questions regarding the invasive species threat to native fauna and flora. Our effort will focus on the New Zealand Mud Snail and the Zebra Mussel due to particular potential to impact salmon recovery efforts in the Snake Basin.

### **3.4) Enforcement**

Oregon State Police (OSP) and WDFW's enforcement staff provide an enforcement presence during any open season and whenever adult Chinook are in the system. Roving enforcement will occur unless specific information regarding illegal take is received. In that case, targeted enforcement or undercover efforts would be initiated. Annual Coordinated Enforcement Program discussion and planning between ODFW and OSP staff, and annual coordination and planning between WDFW Fish Management and Enforcement staff, will focus on addressing issues of biological concern for listed species related to prospective fisheries.

Only minor violations have been observed in previous enforcement monitoring of an Imnaha River Chinook fishery over the past five years. However, if significant issues regarding illegal take come to light, adjustments to season parameters would be considered, including area closures or season reduction. Creel surveyors will be trained to stay alert for and report potential enforcement issues. A report of enforcement activities including enforcement effort, number of contacts and number and type of violations will be include as part of annual fishery report.

### **3.5) Schedule and process for reviewing and modifying fisheries management.**

#### **3.5.1) Description of the process and schedule that will be used on a regular basis (e.g. annually) to evaluate the fisheries, and revise management assumptions and targets if necessary.**

Annual fisheries plans including descriptions of projected run size relative to fishery criteria, resulting maximum and expected fishery impacts and analysis of impacts relative to any new data or relevant recovery criteria will be developed as described under Section 1.5 and submitted to NOAA Fisheries subsequent to availability of preseason run projections in December or January. A description and discussion of the fisheries impacts on escapement relative to threshold levels in previous years will be developed as part of each year's fishery proposals.

A temporary Rule for ODFW and an emergency regulation for WDFW will be developed opening up a consumptive fishery for spring Chinook salmon. In Oregon, fisheries will generally follow Oregon's "General (statewide) gear and bag limit regulations" for spring Chinook (including jack harvest), as outlined in the annual Oregon Sport Fishing Regulations

([www.dfw.state.or.us](http://www.dfw.state.or.us)). For Washington, the emergency regulations that are adopted for Snake River spring Chinook fisheries are typically more restrictive than Columbia River fisheries and include metrics that include barbless hooks and night closures. Additionally, to minimize confusion for anglers, WDFW tries to have comparable regulations with the Snake River spring Chinook fisheries and Oregon's Grande Ronde fisheries. Annual reports describing fishery outcomes (harvest and handle rate for natural and hatchery fish and related take, effort, etc.) will be completed and submitted to NOAA Fisheries post-season.

**3.5.2) Description of the process and schedule that will occur every 5 years to evaluate whether the FMEP is accomplishing the stated objectives. The conditions under which revisions to the FMEP will be made and how the revisions will likely be accomplished should be included.**

This plan is intended to form the basis for long term fishery management within the basin. Modification of components, criteria or threshold levels may occur as necessary in the interim to ensure the plan meets outlined objectives. Following approval and adoption of this FMEP by NOAA Fisheries, review and evaluation via a check in process will occur at five year intervals. That evaluation will include: 1) summaries of current management unit status relative to updated critical and minimum abundance threshold levels, 2) a review of performance of elements monitored relative to standards, 3) a review of local sport fisheries impacts relative to other impacts on population status, and 4) recommendations for modification of objectives, strategies, and actions called into question by the review.

**SECTION 4. CONSISTENCY OF FMEP WITH PLANS AND CONDITIONS SET WITHIN ANY FEDERAL COURT PROCEEDINGS**

Current agreements within U.S. vs. Oregon proceedings do not mandate harvest or impact sharing arrangements in tributaries. However, co-manager coordination of tributary fisheries is required. We coordinated with the Nez Perce and Umatilla Tribes during development of strategies presented in this FMEP and incorporated resulting sharing agreements herein. Additionally, ODFW will continue to participate in the Snake Basin Harvest Forum to aid in information sharing between all interested parties.

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