Draft Supplemental Environmental Assessment

To Analyze Impacts of a NOAA's National Marine Fisheries Service Determination that the Fishery Management and Evaluation Plan Submitted by the Oregon Department of Fish and Wildlife Satisfies the Section 4(d) Rule and that the Tribal Resource Management Plans submitted by the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation and the Shoshone-Bannock Tribes satisfy the Tribal 4(d) Rule and Do Not Appreciably Reduce the Likelihood of Survival and Recovery of Snake River Spring/Summer-run Chinook Salmon Evolutionarily Significant Unit or Snake River Steelhead Basin Distinct Population Segment under the Endangered Species Act

National Marine Fisheries Service
Northwest Region

January 2013

Cover Sheet
January 2013 Draft Supplemental Environmental Assessment

Title of Environmental Review:	Supplemental Environmental Assessment to Analyze Impacts of a NOAA's National Marine Fisheries Service Determination that the Fishery Management and Evaluation Plan Submitted by the Oregon Department of Fish and Wildlife Satisfies the Section 4(d) Rule and that the Tribal Resource Management Plans submitted by the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation and the Shoshone-Bannock Tribes satisfy the Tribal 4(d) Rule and Do Not Appreciably Reduce the Likelihood of Survival and Recovery of Snake River Spring/Summer-run Chinook Salmon Evolutionarily Significant Unit or Snake River Steelhead Basin Distinct Population Segment under the Endangered Species Act
Evolutionarily Significant Units:	Snake River Spring/Summer-run Chinook salmon and Snake River Basin Steelhead
Responsible Agency and Official:	Barry Thom Deputy Regional Administrator National Marine Fisheries Service Northwest Region 7600 Sand Point Way N.E., Building 1 Seattle, WA 98115
Contacts:	Enrique Patiño Salmon Management Division National Marine Fisheries Service Northwest Region 7600 Sand Point Way N.E., Building 1 Seattle, WA 98115
Legal Mandate:	Endangered Species Act (ESA) of 1973, as amended and implemented – 50 CFR Part 223
Location of Proposed Activities:	Grande Ronde River and Imnaha River
Activity Considered:	ESA determination regarding two Fishery Management and Evaluation Plans and ~~two~~ three Tribal Resource Management Plans through part of the range of the ESA-listed Evolutionarily Significant Unit and Distinct Population Segment pursuant to the ESA 4(d) Rule and Tribal 4(d) Rule, respectively.

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EXECUTIVE SUMMARY

A Draft Environmental Assessment on the effects of two Fishery Management and Evaluation Plans (FMEPs) from the Oregon Department of Fish and Wildlife (ODFW), one Tribal Resource Management Plan (TRMP) form the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and one TRMP from the Shoshone-Bannock Tribes (SBT) was released by the National Marine Fisheries Service (NMFS) for a 30-day public comment period on August 11, 2011 (76 FR 49735). Since the draft EA was published, ODFW modified the Grande Ronde River PMEP to include fisheries managed by the Washington Department of Fish and Wildlife (WDFW) in the Washington State portion of the Grande Ronde River (ODFW 2012), the CTUIR provided clarifications regarding their original TRMP (CTUIR 2012), and the Nez Perce Tribe (NPT) submitted to NMFS a TRMP for the Grande Ronde and Imnaha Rivers (NPT 2012). NMFS considered these changes, clarifications and new TRMP to be substantial new information warranting additional information in the NEPA analysis, and warranting further public review. Consequently, NMFS prepared this Draft Supplemental Environmental Assessment to address the following:

- Inclusion of spring/summer Chinook salmon Fisheries in the Washington State portion of the Grande Ronde River to be managed by WDFW
- Clarification by the CTUIR on their original spring/summer Chinook salmon Fisheries TRMP in the Imnaha and Grande Ronde River subbasins
- A spring/summer Chinook salmon Fisheries TRMP in the Imnaha and Grande Ronde River subbasins submitted by the NPT

Supplemental Environmental Assessment Format

The Draft Supplemental Environmental Assessment reflects changes from the Draft Environmental Assessment based on new information collected since the draft was published. All new text is indicated in redline/strikeout format to show changes from the Draft Environmental Assessment, or is indicated with a new subsection title and explanation of the new text, as illustrated under this Executive Summary.

Draft Environmental Assessment Public Comment Period

NMFS published a document in the Federal Register on August 11, 2011 (76 FR 49735), concerning the availability of a draft document for public comment related to two FMEPs submitted by ODFW, one TRMP submitted by the CTUIR and one TRMP submitted by the SBT. The comment period for review of the EA on this action expired on September 12, 2011. NMFS received comments from ODFW, the CTUIR, and the NPT.

Draft Supplemental Environmental Assessment Comment Period

The Draft Supplemental Environmental Assessment has been published for an additional 30-day comment period. Once the comment period closes, NMFS will review all comments received and will prepare comment responses. Comments and responses will be combined into the Final Supplemental Environmental Assessment. Additionally, the

Final Supplemental Environmental Assessment will reflect any modifications to the Draft Supplemental Environmental Assessment resulting from public comments or new information gathered since the Draft Supplemental Environmental Assessment was published.

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) is the lead agency responsible for administering the Endangered Species Act (ESA) as it relates to listed salmon and steelhead. Actions that may affect listed species are reviewed by NMFS under section 7 or section 10 of the ESA or under section 4(d), which can be used to limit the application of take prohibitions described in section 9. NMFS issued a final rule pursuant to ESA section 4(d) (4(d) Rule), adopting regulations necessary and advisable to conserve threatened species (50 CFR 223.203). Similarly, NMFS issued a final Tribal 4(d) Rule (50 CFR 223.209). These 4(d) Rules apply the take prohibitions in section 9(a)(1) of the ESA to salmon and steelhead listed as threatened, and also set forth specific circumstances when the prohibitions will not apply, known as 4(d) Limits. With regard to fisheries described in Fisheries Management and Evaluation Plans (FMEPs), NMFS declared in the 4(d) Rule that section 9 take prohibitions would not apply to activities carried out under those FMEPs that have been approved by NMFS and that are implemented in accordance with a letter of concurrence from NMFS. With regard to fisheries management described in Tribal Resource Management Plans (TRMPs), NMFS declared in the Tribal 4(d) Rule that section 9 take prohibitions would not apply to activities carried out under those TRMPs deemed by the Secretary of Commerce to not appreciably reduce the likelihood of survival and recovery of a listed species.

On April 22, 2010, NMFS received a TRMP for fisheries in the Grande Ronde and Imnaha Rivers from the Shoshone-Bannock Tribes (SBT), addressing activities affecting Snake River spring/summer Chinook salmon and Snake River steelhead in 2011 and beyond (SBT 2010). On June 28, 2010, NMFS received a TRMP for fisheries in the Grande Ronde and Imnaha Rivers from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), addressing activities affecting Snake River spring/summer Chinook salmon and Snake River steelhead in 2011 and beyond (CTUIR 2010). On July 21, 2010, NMFS received two FMEPs (one for the Grande Ronde River and one for the Imnaha River) from the Oregon Department of Fish and Wildlife (ODFW), addressing activities affecting Snake River spring/summer Chinook salmon and Snake River steelhead in 2011 and beyond (ODFW 2010a and ODFW 2010b). There were two small inconsistencies related to the application of the fishery framework among the plans submitted in 2010 and in June 2011, the SBT, the CTUIR and ODFW submitted their respective amended fishery plans to NMFS with the necessary corrections (SBT 2011; CTUIR 2011; ODFW 2011a; ODFW 2011b). A Draft Environmental Assessment on the effects of these plans was prepared and made available for public comment though a Federal Register Notice (76 FR 49735, August 11, 2011). This Federal Register Notice did not include the Washington Department of Fish and Wildlife's (WDFW) fishery in the Grande Ronde River or the NPT's Grande Ronde River and Imnaha River subbasins TRMP.

On February 17, 2012, the NPT submitted a revised TRMP for spring/summer Chinook salmon fisheries in Grande Ronde River and Imnaha River subbasins to NMFS that included the necessary management provisions for NMFS to include the TRMP in its review (NPT 2012). Concurrently, the WDFW consulted with ODFW to include the

WDFW fishery as part of ODFW's Grande Ronde River FMEP. On April 24, 2012, ODFW submitted a modified FMEP for the Grande Ronde River subbasin to include WDFW's fishery (ODFW 2012). On March 6, 2012, the CTUIR resubmitted its Grande Ronde and Imnaha Rivers TRMP (CTUIR 2012). The CTUIR's 2012 TRMP included important clarifications, but it did not result in any changes that merit further analysis.

For the purpose of this analysis, ODFW and WDFW are considered applicants to the Proposed Action. NPT, CTUIR, and SBT are considered parties to the Proposed Action (collectively referred as "State applicants and parties").~~engaged in fisheries management in the Grande Ronde and Imnaha Rivers.~~ For the purpose of this analysis, the four submitted plans will be collectively referred to as Management Plans.

In the review of FMEPs and TRMPs, NMFS must consider whether these Management Plans satisfactorily address the criteria contained in the ESA 4(d) Rule and Tribal 4(d) Rule. If NMFS determines that the FMEPs and TRMPs submitted by the ~~parties~~ State applicants and parties "...are not likely to appreciably reduce the likelihood of survival and recovery..." and otherwise satisfy criteria of the 4(d) Rule and Tribal 4(d) Rule, whichever applies, then NMFS can approve the FMEPs and publish its determination on the TRMPs. NMFS' approval or determination, respectively, constitutes the Federal action that is subject to analysis as required by the National Environmental Policy Act (NEPA).

NMFS seeks to consider, through NEPA analysis, how its pending action may affect the natural and physical environment and the relationship of people with that environment. NMFS is also required to review compliance of ESA actions with other applicable laws and regulations. The NEPA analysis provides an opportunity to consider, for example, how the action may affect conservation of non-listed species, and socioeconomic objectives that seek to balance conservation with wise use of affected resources and other legal and policy mandates.

1.2 Description of the Proposed Action

The Federal action evaluated here is the proposed approval by the Secretary (through the Northwest Regional Administrator for NMFS) of ODFW's FMEPs and the proposed determination by the Secretary that the NPT's TRMP, the SBT's TRMP, and the CTUIR's TRMP would not appreciably reduce the likelihood of survival and recovery of the ESA-listed Snake River Spring/Summer-run Chinook Salmon Evolutionarily Significant Unit (ESU), and Snake River steelhead Distinct Population Segment (DPS)[1]. Activities identified in the FMEPs and TRMPs include fisheries that incorporate conditions intended for the conservation of salmon stocks, consistent with restoration objectives. The Proposed

[1] An 'evolutionarily significant unit' (ESU) of Pacific salmon (Waples 1991) and a 'distinct population segment' (DPS) of steelhead (71 FR 834, January 5, 2006) are considered to be 'species,' as defined in Section 3 of the ESA. Unless otherwise stated, this document uses the term 'species' to refer to both ESUs and DPSs.

Action would result in the implementation of fisheries as described in the FMEPs and TRMPs.[2]

Two alternatives are considered in this EA: (1) Not approve the FMEPs and issue a determination that the TRMPs would appreciable reduce the likelihood of survival and recovery of the ESA-listed species (i.e., No-action), and (2) Approve the FMEPs and issue a determination that the TRMPs would not appreciable reduce the likelihood of survival and recovery of the ESA-listed species (i.e., Proposed Action). No other alternatives that would meet the purpose and need were identified that were appreciably different from the two alternatives analyzed below (Section 2.0, Alternatives Including the Proposed Action).

1.3 Purpose of and Need for the Action

The purpose of and need for the Proposed Action is

1) For ODFW to provide fishing opportunities for the citizens of Oregon State,
2) For the SBT, NPT, and CTUIR to ~~provide~~ obtain ESA coverage for the proposed fisheries, and
3) For NMFS to protect and enhance natural-origin populations of the affected listed species through ESA compliance.

The FMEPs and TRMPs include adaptive management measures to limit ESA impacts and propose conservative harvest regimes on the affected listed species. The FMEPs and TRMPs describe monitoring programs that would be in place to ensure that the implementation of the fisheries is as intended, and that assumptions regarding the effects of the fisheries, particularly in application of the proposed ESA take limits, continue to remain valid such that the action would not reduce the likelihood of survival and recovery of the Snake River Spring/Summer Chinook Salmon ESU and Snake River Basin Steelhead DPS listed under the ESA.

1.4 Action Area

The action area includes the Grande Ronde and Imnaha Rivers subbasins. The Grande Ronde River flows through Oregon and Washington and enters the Snake River at river mile (RM) 168. The Imnaha River in northeast Oregon joins the Snake River above the mouth of the Grande Ronde River at about RM 192. The Grande Ronde and Imnaha River subbasins are 4,000 and 850 square miles in size, respectively. While the action area is large due to the habitat for the species being analyzed, the actual fishing locations for this action would be localized as depicted below. Fisheries maps outlining fishery locations were provided by ODFW (Figure 1), the SBT (Figure 2), ~~and~~ the CTUIR (Figure 3), and the NPT (Figure 4).

[2] NMFS's ESA review of Tribal Resource Management Plans does not permit the operation of the described fishery. The Unites States' treaties with Indian tribes are the supreme law of the land, and thus, NMFS cannot make judicially binding determinations regarding the nature and extent of tribal treaty rights. Such determinations are the province of Federal courts. NMFS's role is solely limited to making a determination as to whether a fishery would be likely to appreciably reduce the survival and recovery of ESA-listed fish.

Figure 1. Two maps: 1- Grande Ronde; 2- Imnaha Rivers, indicating area of spring Chinook salmon fisheries ~~by~~ set forth in ODFW's FMEP.

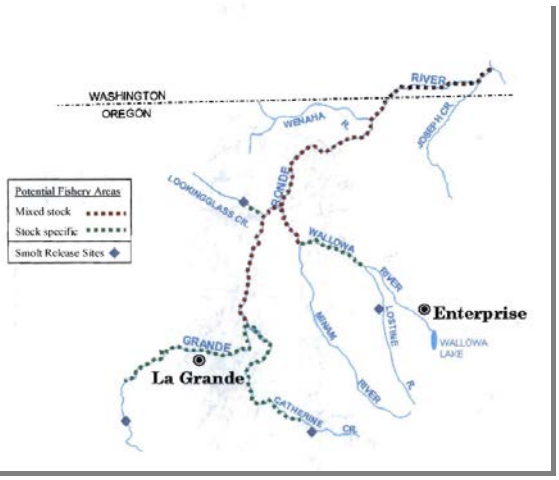

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Figure 2. Map of the Grande Ronde and Imnaha Rivers indicating area of spring Chinook salmon set forth in SBT's ~~fisheries~~TRMP.

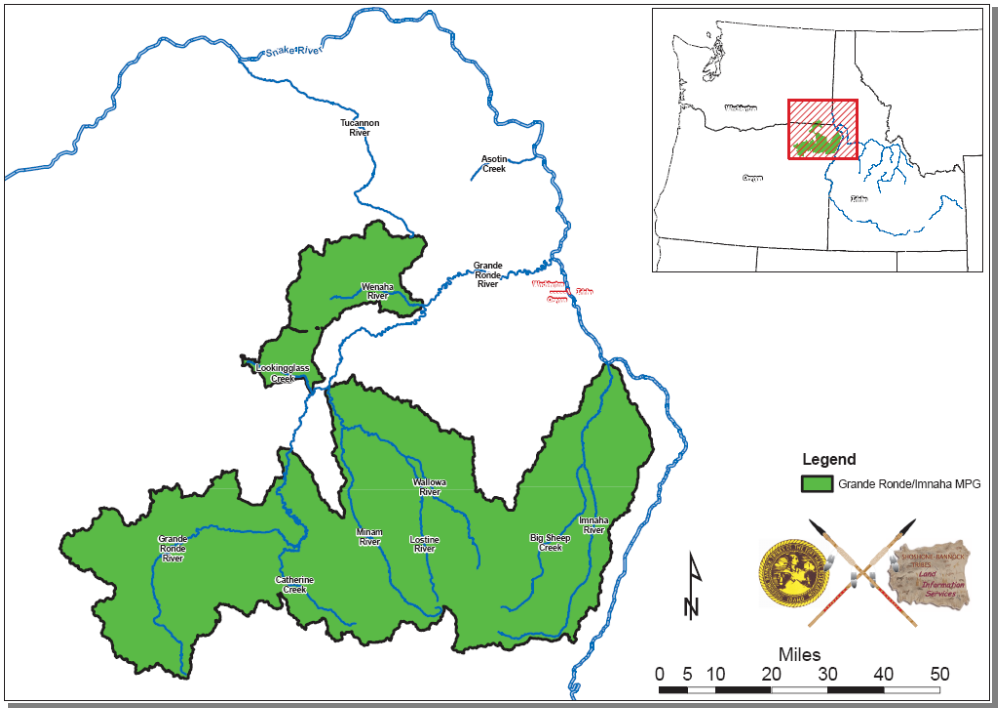


Figure 3. CTUIR spring Chinook salmon fishing areas in the Grande Ronde and Imnaha Rivers subbasins set forth in CTUIR's TRMP.

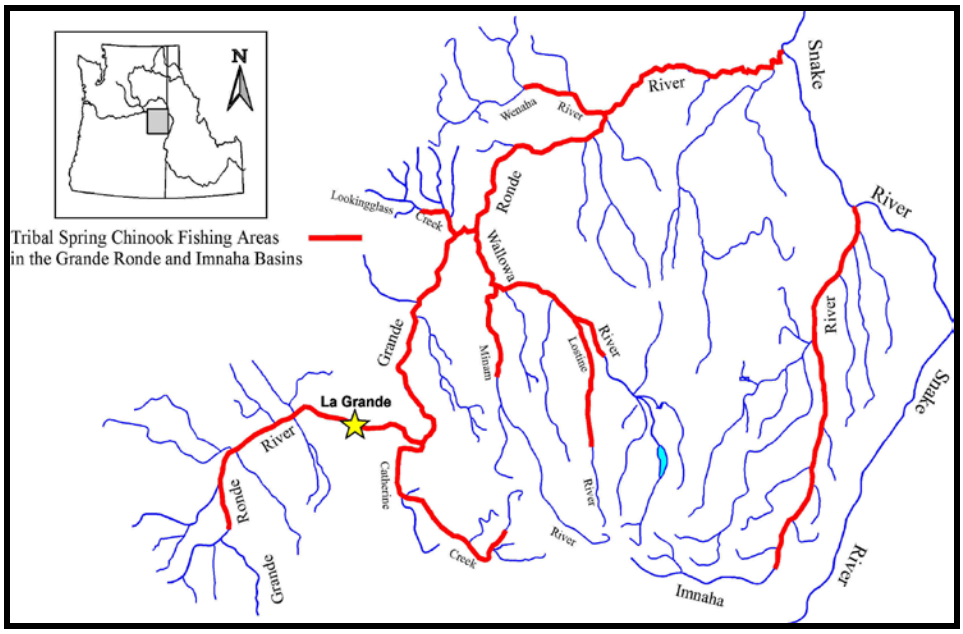
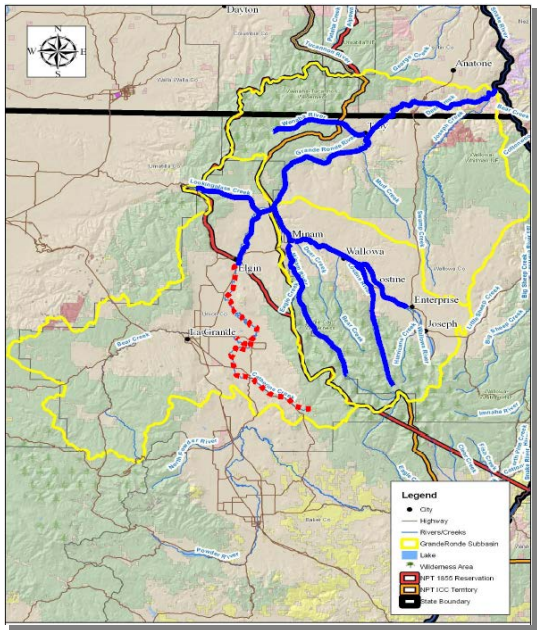


Figure 4. Two maps: 1- Grande Ronde; 2- Imnaha Rivers, indicating area of spring Chinook salmon fisheries set forth in the NPT's TRMP.



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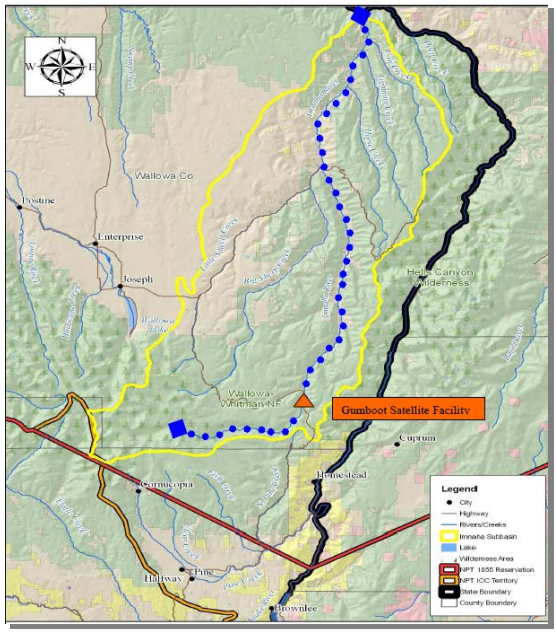

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1.5 Scope

The scope of the action considered here includes ESA coverage for fisheries proposed for Snake River spring/summer Chinook salmon in the Grande Ronde and Imnaha Rivers (see footnote 2). The review addresses potential effects in the entire action area, although fishing would occur in localized areas only. The FMEPs and TRMPs are open-ended and would be in effect after the associated 4(d) determinations are signed. There will be periodic reviews of these Management Plans every 5 years, and the plans will be modified as warranted.

1.6 Relationship to Other Plans and Policies

This environmental assessment (EA) was prepared pursuant to regulations implementing NEPA (42 USC 4321), in compliance with Federal regulations for preparing an EA (40 CFR 1502), and consistent with recovery plans being developed pursuant to section 4 of the ESA by NMFS in conjunction with interested stakeholder groups. The Proposed Action analyzed in this EA relates to other plans and policies regarding the management and restoration of anadromous fish resources in the Pacific Northwest and ESA recovery planning. Recovery plans are in place or being developed for most parts of the Columbia River system in which anadromous fish occur (for example, see NMFS 2005a; NMFS 2009; Snake River Salmon Recovery Board 2006; also, a recovery plan for the Snake River Basin is currently under development by NMFS' Northwest Regional Office). Typically, development and on-going implementation of these plans includes participation by multiple Federal, tribal, state, and local agencies and stakeholder groups. These recovery plans contain (1) measurable goals for delisting, (2) a comprehensive list of the actions necessary to achieve delisting goals, and (3) an estimate of the cost and time required to carry out those actions.

After listing 27 Pacific salmon ESUs as threatened or endangered under the ESA, NMFS initiated a coastwide process to develop recovery plans for these species. An important part of this process was the creation of geographically based Technical Recovery Teams (TRTs). The TRTs are multi-disciplinary science teams chaired by Northwest Fisheries Science Center or Southwest Fisheries Science Center staff. They were tasked with providing science support to recovery planners by developing biologically based viability criteria, analyzing alternative recovery strategies, and providing scientific review of draft plans.

With the imminent publication of recovery plans for most ESA-listed salmon and steelhead in the Pacific Northwest, the Pacific Northwest TRTs either have completed or are close to completing their initial tasks of developing viability criteria and providing science support for recovery plan development. Most of the original TRTs have, therefore, been phased out as the TRTs completed their final tasks in late 2007 and early 2008.

A draft recovery plan for northeast Oregon is being developed by NMFS in coordination with a Technical Team representing staff from tribes and relevant agencies and organizations, together with a diverse Sounding Board representing local stakeholders in

Union and Wallowa Counties. The Technical Team and Sounding Board include representatives from CTUIR, Nez Perce Tribe, Grande Ronde Model Watershed, and various state and Federal agencies. The SBT and the Burns Paiute Tribe also participate on the Technical Team on an ad-hoc basis. All factors that have been identified as leading to the decline of ESA-listed salmon and steelhead are being addressed in this draft recovery plan. For ESA-listed spring/summer Chinook salmon and steelhead, these factors include hydroelectric operations, harvest, habitat use, and artificial propagation. Snake River fall Chinook salmon will be addressed in a separate recovery plan. The draft Northeast Oregon Snake River Recovery Plan will then be consolidated into a DPS/ESU-wide Snake River Recovery Plan also now being developed.

As discussed below (Section 3, Affected Environment), the FMEPs and TRMPs describe the salmon and steelhead that would be affected in a manner consistent with the population descriptions given by the Interior Columbia Basin Technical Recovery Team (ICTRT 2003) and updated in ICTRT (2007a). They also incorporate Viable Population Thresholds provided by the ICTRT (2007b).

In 2008, NMFS concluded multiple ESA consultations for several Federal actions that occur simultaneously affecting the same listed species of Columbia River salmon and steelhead (NMFS 2008a, 2008b, 2008c). The Federal Columbia River Power System (FCRPS) Action Agencies, and the U.S. Bureau of Reclamation for its Upper Snake projects, based their two biological assessments for their actions on a common comprehensive analysis entitled Comprehensive Analysis of the Federal Columbia River Power System and Mainstem Effects of Upper Snake and Other Tributary Actions (Corps et al. 2007a). NMFS later prepared its own Supplemental Comprehensive Analysis (SCA) to capture the best available data and analysis contemporaneous with its issuance of its biological opinions in 2008 (NMFS 2008a). NMFS' SCA builds on the FCRPS Action Agencies' Comprehensive Analysis, incorporating by reference the information relevant to NMFS' analysis on the FCRPS; that analysis includes information relevant to the consideration of fishery harvest in the Columbia and Snake Basins (NMFS 2008a).

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives considered in this EA are: (1) Not approve the FMEPs and issue a determination that the TRMPs would appreciable reduce the likelihood of survival and recovery of the ESA-listed species (No-action); or (2) Approve the FMEPs and issue a determination that the TRMPs would not appreciable reduce the likelihood of survival and recovery of the ESA-listed species (Proposed Action). The following describes the alternatives.

2.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs Would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Under this alternative, the Secretary would determine that the FMEPs and TRMPs do not meet the criteria of the 4(d) Rule and Tribal 4(d) Rule, in which case all activities conducted under the FMEPs and TRMPs would not qualify for the limitations on

application of section 9 take prohibitions. Consequently, the Management Plans would not have ESA coverage. Although the level of fishing impacts ~~most of these fisheries~~ have been ongoing, for the purpose of this analysis, NMFS treats the No-action Alternative as resulting in no fishing in the action area in 2011 and into the future. The rationale for this is to provide a wide range of alternative analyses for comparisons of effects on the human environment. However, mainstem harvest in the Columbia River, which represents the majority of harvest effects for these species, would continue under the No-action Alternative.

There are a number of other potential outcomes that might occur under this No-action scenario – the SBT, the NPT, the CTUIR, WDFW and ODFW could pursue other ~~regulatory~~ mechanisms for ~~allowing the continuation of~~ executing fisheries without ESA coverage, for example. However, assuming the Management Plans would be implemented without NMFS approval would likely result in regulatory distinctions, but the same resource effects as under the Proposed Action. Consequently, because the closure of state-managed and tribal fisheries is one possible outcome, and because it represents one end of the spectrum of potential effects, NMFS has defined the No-action Alternative as no fisheries to provide the broadest possible range of effects to evaluate.

2.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs Would not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Under this alternative, the Secretary would determine that the FMEPs and TRMPs do meet the criteria of the 4(d) Rule and the Tribal 4(d) Rule, whichever applies, in which case activities conducted under the FMEPs and TRMPs would qualify for the limitations on application of section 9 take prohibitions. For the purpose of this analysis, NMFS treats the Proposed Action Alternative as resulting in the level of fishing impacts as described in the FMEPs and TRMPs in 2011 and into the future, with a mandatory 5-year review. In the case of the tribal fisheries, NMFS does not assume the identity of which tribes would conduct the fishery; this is a matter for the tribes or the legal system to determine, ideally through the *U.S. v. Oregon* forum. The assumption herein for analytical purposes is that fisheries would take place (See footnote 2).

Alternative 2 would result in ESA coverage for ~~ongoing~~ fisheries in the action area as set forth in the TRMPs and FMEPs ~~regulated by ODFW and the SBT and CTUIR in the action area~~. Additionally, mainstem harvest in the Columbia River, which represents the majority of harvest effects for these species, would continue as under the No-action Alternative. While the action area described above is a large geographic area, fishing under the Proposed Action would only occur in a limited portion of this area at specific fishery access points. Furthermore, fishing would only occur for a short period of time each year because the fishery would be limited by potential effects under ESA requirements and by the amount of available fish to harvest.

A harvest report would be submitted annually to NMFS post-season each year under the FMEPs and TRMPs to evaluate its ESA compliance.

Fishing methods and gears proposed by ODFW include only hook and line. Fishing methods and gear proposed by the tribes include spear, hoop-net, hook and line, or other traditional and contemporary methods.

2.2.1 Escapement Goals

The FMEPs and TRMPs analyzed in this EA propose to use Viable Population Thresholds (VPT) described as "minimum abundance threshold" (or MAT) as decision criteria (or reference points) that trigger specific actions at a population level. A summary of spring/summer Chinook salmon minimum abundance thresholds for the Imnaha River and Grande Ronde subbasin tributaries are described in Table 1. Individual tributary run projections and fishery access within tributary reaches provides managers the ability to provide harvest opportunity differentially among the populations.

Table 1. Name, critical level, viable population thresholds, and associated hatchery stocks included in the Imnaha and Grande Ronde River subbasins.

Fishery Management Area	Critical Level	Minimum Abundance Threshold
Catherine Creek/Indian Creek[1]	300	1000
Wallowa/Lostine Rivers	300	750
Upper Grande Ronde	300	1000
Lookingglass Creek[2]		
Wenaha River	225	750
Minam River	225	750
Imnaha River/Big Sheep Creek[3]	300	1000

[1] Catherine Creek population is considered a large (300/1000) when combined with Indian Creek. 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 and Minimum Abundance Threshold of 750, that of an Intermediate-sized population.

[2] Given that Lookinglass Creek is considered extinct, the co-managers agree to manage Lookingglass Creek based on a modified harvest rate schedule as indicated in Table 4 below.

[3] Given that Big Sheep Creek is considered functionally extirpated, the co-managers agree to manage Big Sheep Creek as part of the Imnaha River population and change the ICTRT classification from intermediate (750) to large (1000).

2.2.2 Natural-origin Framework

The FMEPs and TRMPs analyzed in this EA propose to manage all Chinook salmon fisheries to achieve escapement objectives. The FMEPs and TRMPs utilize a harvest rate with five tiers based on predicted adult abundance to each of the affected populations. The majority of the harvest is anticipated to come from hatchery-origin stocks, as these are generally higher in abundance than the natural-origin populations. The ~~parties~~ State applicants and parties recognize that natural-origin populations defined at the critical population level (less than 30 percent of MAT) are at a high risk of extinction; therefore, a very conservative harvest approach would be employed (Table 2). Table 2 illustrates the

framework, providing the total allowed population-specific ESA impacts according to the expected yearly forecasts for each of the affected populations.

Table 2. Harvest rate steps associated with the Viable Population Threshold for natural-origin populations for Imnaha River, Grande Ronde River, and tributaries.

Fishery Scenario	Number of natural-origin fish returning to a population	Total collective natural-origin mortality for all fisheries (tribal fisheries only)[1]
A	Below Critical Population Threshold (CAT)[2]	(1%)[1,3]
B	Critical to Minimum Abundance Threshold (MAT)[2]	A + 11% of margin above CAT (8%)[1,3]
C	MAT to 1.5X VPT	B + 22% of margin above MAT (16%)[1,3]
D	1.5X MAT to 2X MAT	C + 25% of margin above 1.5X MAT (19%)[1,3]
E	Greater than 2X MAT	D + 40% of margin above 2X MAT (28%)[1,3]

[1] Allocation of ESA impacts for tribal fisheries is provided as an example of what could occur on any given year, but fisheries will be managed subject to the total combined allowable ESA impacts.
[2] Population thresholds based on agreed to critical and viable population threshold values listed in Table 1.
[3] For Lookingglass Creek, fisheries will be managed slightly more liberal under fisheries scenarios A & B: A = 10% total harvest (tribal 8% and non-Indian 2%); B = A + 16% of margin above critical (tribal 12 %).
> = greater than
% = percent

In addition to Table 2, the common framework proposed by the ~~parties~~ State applicants and parties also includes the following steps:

1. A process ~~to come up with~~ to develop pre-season forecasts by population to be used by the State applicants and parties.
.
2. A process to determine the year-specific allowable ESA take by population using Table 1 and Table 2.

3. A process for providing NMFS with year-specific fishery plans prior to implementing fisheries on any given year.

4. A process to update pre-season forecasts.

5. A process for monitoring and reporting ESA impacts and harvest of hatchery-origin fish to the ~~parties~~ State applicants and parties and NMFS.

6. A process to terminate or modify fisheries to avoid exceeding the total population-specific impacts (determined by the processes 1-5 above) for any of the affected populations on any given year.

2.3 Alternatives Considered but Not Analyzed in Detail

Alternatives that would consider increases or decreases for harvest of hatchery-origin Chinook salmon, increases or decreases for allowable take of ESA-listed fish, or the approval of tribal fisheries only, were considered, but determined to be less likely to provide the intended benefit of ~~providing~~ ensuring fishing opportunities with ESA coverage while conserving and enhancing the natural-origin populations.

- Higher ESA Take Limit – NMFS could have considered a higher ESA take limit than what the ~~parties~~ State applicants and parties proposed; however, because the Proposed Action was designed in consideration of what is generally considered take levels consistent with conservation of the species, a higher ESA take limit would likely exceed what is deemed appropriate for a no-jeopardy determination under the ESA, and thus would not meet requirements under the ESA. Consequently, this alternative would not meet the purpose and need for the action because it would not meet the ESA conservation requirement.

- Lower ESA Take Limit – NMFS could have considered a more restrictive fishery than that proposed; however, the proposed abundance-based harvest rate schedule that would determine the allowable take in any given year carefully balances the need for protection of ESA-listed fish and the need for fishing opportunity by the ~~parties~~ State applicants and parties. Consequently, this alternative would not meet the purpose and need for the action.

- Issue a determination that the TRMPs would not appreciably reduce the likelihood of survival and recovery of the ESA-listed species, but not approve the FMEPs – NMFS could have considered a favorable determination on the TRMPs while determining that the state's FMEPs do not meet 4(d) Rule criteria. However, because the TRMPs and FMEP would be managed under the same overall ESA-impact limit for all fisheries in any given year, implementing only the TRMPs would not result in greater protection of ESA-listed fish than approving them jointly. In addition, implementing the TRMPs but determining that the FMEPs do not meet 4(d) Rule criteria would not meet the purpose and need of the Proposed Action because it would not provide opportunities for state recreational fisheries. Finally, the FMEPs and TRMPs are integrally linked in their management purposes and, therefore, are considered related or similar actions within the same scope of NEPA review.

3.0 AFFECTED ENVIRONMENT

The two alternatives considered in this EA can potentially affect the physical, biological, social, and economic resources within the action area. Below is a description of the environmental resources that would be affected by these alternatives and the current baseline condition.

3.1 Water Quality

Habitat conditions important to the various ESA-listed salmonids in the action area vary widely; however, factors such as water quality and flow conditions are important to most fish species in the action area. Instream flows are addressed under the water quality affected environment conditions and corresponding analysis because decreasing the overall volume of water generally increases the contaminant concentration or ability to impair water quality. The draft recovery plans for the Imnaha subbasin, the Wallowa River, the Lostine River, the Wenaha River, the Upper Grande Ronde River, and the Catherine Creek and Lookingglass Creek systems identify that high stream temperatures and alteration to flows and the hydrograph are primary factors limiting spring/summer Chinook salmon (Huntington 1994; GRMW 1995; USFS 2002; NPCC 2004; ODEQ 2006).

Stream flow, or discharge, is the volume of water flowing in a stream channel expressed as unit per time (cfs, or cubic feet per second). Stream flow is an important determinant of water quality and aquatic habitat conditions. High water temperature, low levels of dissolved oxygen, and deleterious levels of toxins can all be exacerbated by low stream flow. Moreover, the quantity, quality, and connectivity (e.g., suitability for fish migration) of aquatic habitats are also influenced by flow. Agricultural and domestic water diversions are common sources of impacts on aquatic resources. Diversions and associated diking, damming, and dredging are a large contributing factor to the loss of salmon and steelhead habitat in some river basins (Beechie et al. 1994; McBain and Trush 1997). Stream flow is also a powerful determinant of aquatic habitat conditions through the effects of peak or flood events. It is during these flood flows that banks are either built or eroded, pools are deepened or filled, and large woody debris is contributed and redistributed. It is also during these flood flows that very high rates of mortality occur for salmonids in the egg or alevin life stage (McHenry et al. 1994). Changes in vegetation, such as extensive clear cutting, can increase the frequency and intensity of flood flows due to accelerated runoff. Zeimer (1998) found a 35 percent increase in mean peak flows after logging of the North Fork of Caspar Creek. While this effect disappears with forest stand recovery, urbanization has a more profound effect on peak flows because impervious surfaces increase speed of runoff (May et al. 1996). Both removal of vegetation and urbanization decrease the lowest flows by reducing the water storage capacity of watershed soils.

Mortality as a result of fisheries can reduce the transport of marine-derived nutrients to freshwater spawning and rearing areas. Gresh et al. (2000) estimated that only 6 to 7 percent of the marine-derived nitrogen and phosphorus that was delivered to the rivers of the Pacific Northwest by spawning salmon 140 years ago is currently returning to those

streams. He attributed the loss to habitat destruction due to beaver trapping, logging, irrigation, grazing, pollution, dams, urban and industrial development, and commercial and sport fishing. Bilby et al. (2002) found a positive linear relationship between the biomass of juvenile anadromous salmonids and the abundance of carcass material at sites in the Salmon and John Day Rivers, suggesting that spawning salmon may be influencing aquatic productivity and the availability of food for rearing fishes, but mechanisms were not postulated.

Salmon carcasses also appear to promote the growth of riparian forests, a source of large woody debris and stream shading. Helfield and Naiman (2001) hypothesized that there were several pathways for the transfer of marine-derived nutrients from streams to riparian vegetation, including the transfer of dissolved nutrients from decomposing carcasses into shallow subsurface flow paths and the dissemination in feces, urine, and partially-eaten carcasses by bears and other salmon-eating fauna. In studies with juvenile coho salmon, Quinn and Peterson (1996) correlated increased body size with higher rates of overwinter survival, although this study was not designed to determine whether the effect was related to carcass density. In summary, there is an increasing body of work suggesting that the biomass of carcasses affects the productivity of salmonid rearing habitat, but functional and quantitative relationships are poorly understood and difficult to generalize from the specific conditions studied. Limiting factors, and thus the ecological importance of marine-derived nutrients, differ among streams. Hatchery-origin fish in the action area are not expected to substantially contribute marine-derived nutrients to the ecosystem because most ~~these~~ are removed either by fisheries or at hatchery weirs and not allowed to spawn and die in the wild.

Human activity such as beaver trapping, logging, irrigation, grazing, pollution, dams, urban and industrial development have all contributed to a decline in water quality parameters in the action area. Other human activities that are unrelated to the proposed fisheries in the FMEPs and TRMPs that could affect water quality in the action area, such as boating, agricultural practices, logging, irrigation, pollution, dams, urban and industrial development, would continue for the duration of the proposed FMEPs and TRMPs.

3.2 Anadromous Fish Listed Under the ESA

Since 1991, NMFS has identified 12 ESUs and DPSs of Columbia River Basin salmon and Columbia River Basin steelhead as requiring protection under the ESA. Four of the listed anadromous salmonid species originate in the Snake River Basin. Only one ESU and one DPS are expected to be impacted by the fisheries evaluated in this EA, based on location of the fisheries and the run timing of the ESA-listed fish in the Snake River Basin. The current status of the one ESU and one DPS are described below.

3.2.1 Snake River Spring/Summer Chinook Salmon ESU

Snake River spring/summer Chinook salmon were listed under the ESA as threatened in 1992 and reaffirmed in 2005 (70 FR 37160, June 28, 2005). The Snake River Spring/Summer Chinook Salmon ESU consists of 28 extant populations that spawn and

rear in the tributaries of the Snake River between the confluence of the Snake and Columbia Rivers and the Hells Canyon Dam and are grouped into five major population groups (MPGs). The factors that contributed to their decline include intensive harvest and habitat degradation in the early and mid-1900s, high harvest in the 1960s and early 1970s, and Federal and private hydropower development, as well as poor ocean productivity in the late 1970s through the late 1990s (ICTRT 2007a).

The proposed fisheries would take place in areas designated as critical habitat for Snake River spring/summer Chinook salmon. Designated critical habitat for Snake River spring/summer Chinook salmon includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake Rivers as well as specific stream reaches in a number of tributary subbasins. Key statistics associated with the current status of Snake River Basin steelhead are summarized in Tables 8.5.2-1 through 8.5.2-4 of the SCA (NMFS 2008a). Only the Grande Ronde/Imnaha MPG is affected by the proposed fisheries.

3.2.1.1 Status and Trends

Historically, the Snake River drainage is thought to have produced more than 1.5 million adult spring/summer Chinook salmon in some years during the late 1800s (Matthews and Waples 1991). By the 1950s, the abundance of spring/summer Chinook salmon had declined to an annual average of 125,000 adults, and continued to decline through the 1970s. Returns were variable through the 1980s, but declined further in the 1990s. In 1995, only 1,797 spring/summer adults returned. Returns at Lower Granite Dam (hatchery and wild fish combined) dramatically increased after 2000, with 185,693 adults returning in 2001. The large increase in 2001 was due primarily to hatchery returns, with only 10 percent of the returns from fish of natural-origin. Large returns in recent years may be a result of cyclic ocean and climatic conditions favorable to anadromous fish and improved operation of the FCRPS. The 2001-2010 average abundance for spring/summer Chinook salmon adults over Lower Granite Dam is 80,195 and 21,026 for total combined and natural-origin fish, respectively (NMFS 2011). However, the overall viability ratings for all populations in the Snake River Spring/Summer Chinook Salmon ESU remain at high risk after the addition of more recent year abundance and productivity data (Ford et al. 2011, in progress).

Table 3 is used to illustrate the recent and current abundance of the populations of spring/summer Chinook salmon in the Grande Ronde/Imnaha MPG of the Snake River spring/summer Chinook salmon ESU, as well as the corresponding prescribed ESA limit using data from Table 2 and assuming current abundances continue for the duration of the FMEPs and TRMPs under consideration. Recent abundance trends for Snake River spring/summer Chinook salmon incorporate the fishery framework proposed in the FMEPs and TRMPS under consideration in this EA, as these levels of fisheries impacts have been ongoing in a manner similar to that proposed.

3.2.1.2 Limiting Factors and Threats

Limiting factors for the Snake River Spring/Summer Chinook Salmon ESU include Federal and private hydropower projects, predation, harvest, the estuary, and tributary habitat. Ocean conditions have also affected the status of this ESU. These conditions have been generally poor for this ESU over at least the last four brood cycles, improving only in the last few years. Although hatchery program management is not identified as a limiting factor for the ESU as a whole, the ICTRT has indicated potential hatchery program effects for a few individual populations.

Table 3. Current (2005-2009) number of natural-origin spawners for six populations of Chinook salmon for the Grande Ronde/Imnaha MPG of the Snake River spring/summer Chinook salmon ESU, and the allowed ESA take that would be prescribed if these abundances would continue for the duration of the FMEPs and TRMPs.

	Natural-Origin Spawners (5 year geometric mean)*			Prescribed ESA Limit for Current Abundance as per Table 2	Prescribed ESA Limit as Percent of Current Population Abundance as per Table 2
Populations	**Listing (1992-1996)**	**Prior (1997-2001)**	**Current (2005-2009)**		
Wenaha	260	303	364	18	5.0
Lostine/ Wallowa	118	265	812	66	8.1
Minam	180	277	460	28	6.1
Catherine Creek	69	103	205	2	1.0
Upper Grande Ronde	76	34	109	1	1.0
Imnaha	482	855	1094	101	9.2

*Data from Ford et al. (2011, in progress).

3.2.2 Snake River Basin Steelhead DPS

The Snake River Basin Steelhead DPS was listed as threatened on August 18, 1997 (62 FR 43937). The listing was revised on January 5, 2006 (71 FR 834), after a review of the relationship of wild steelhead to hatchery fish and resident O. mykiss. The revised Snake River Basin Steelhead DPS includes 23 extant anadromous populations in five MPGs that spawn in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho, and six hatchery stocks, including fish from the Dworshak National Fish Hatchery and the rearing facilities in Lolo Creek. There are only two natural-origin steelhead expected to be taken as a result of the implementation of the proposed fisheries and both fish are from the Imnaha MPG.

The proposed fisheries would take place in areas designated as critical habitat for Snake River Basin steelhead. Designated critical habitat for Snake River Basin steelhead includes all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake Rivers as well as specific stream reaches in a number of tributary subbasins. Key statistics associated with the current status of Snake River Basin steelhead are summarized in Tables 8.5.2-1 through 8.5.2-4 of the SCA (NMFS 2008a).

3.2.2.1 Status and Trends

Information on the range-wide status of Snake River Basin steelhead is described in the steelhead status review (Busby et al. 1996), the status review update (BRT 2003), the DPS listing (71 FR 834, January 5, 2006), the U.S. v. Oregon biological opinion (NMFS 2008d) and its Supplemental Comprehensive Analysis (SCA) (NMFS 2008a), and the most recent status review update by Ford et al. (2011, in progress).

Only two of the 23 extant populations of Snake River steelhead have estimates of population-specific spawning abundance. Adult abundance data series are limited to a set of aggregate estimates (total A-run and B-run counted at Lower Grande Dam), for two Grande Ronde populations (Joseph Creek and Upper Grande Ronde River), and index area or weir counts for subsections of several other populations. The ICTRT used aggregate estimates of abundance at Lower Granite Dam, along with juvenile indices of abundance available for some areas, to infer abundance and productivity ratings for populations without specific adult abundance time series (Ford et al. 2011, in progress). Both populations with specific spawning abundance data series are in the Grande Ronde MPG. The overall viability rating for the Joseph Creek population remained as highly viable after updating the analysis to include returns through the 2009 spawning year. The increase in natural-origin abundance for the other population with a data series, the Upper Grande Ronde River, was not sufficient to change the abundance/productivity criteria rating from moderate risk. The overall viability ratings for populations in the Snake River steelhead DPS range from moderate to high risk (Ford et al. 2011, in progress). Population-level natural-origin abundance and productivity inferred from aggregate data and juvenile indices indicate that many populations are likely below the minimum levels defined by the ICTRT viability criteria (Ford et al. 2011, in progress).

3.2.2.2 Limiting Factors and Threats

Limiting factors identify the most important biological requirements of the species. Historically, the key limiting factors for the Snake River Basin steelhead include hydropower projects, predation, harvest, hatchery program effects, and tributary habitat. Ocean conditions have also affected the status of this DPS. These ocean conditions generally have been poor over at least the last 20 years, improving only in the last few years.

3.3 Non-listed Fish

Approximately 60 other species of fish live in the Snake River and tributaries. About one-half are native species primarily of the families Salmonidae, Catastomidae, Cyprinidae,

and Cottidae. White sturgeon (Acipenser transmontanus) occur in the main Snake and Salmon rivers. The Snake River Basin also supports at least 25 introduced species, primarily representing the taxonomic families Percidae, Centrarchidae, and Ictaluridae. Most of the introduced species are game fish, which may be the targets of fisheries that could incidentally take listed anadromous salmonids (Simpson and Wallace 1978). Fisheries for introduced species are not included in the TRMPs and FMEPs, and are not considered as part of the Proposed Action.

3.4 Instream Fish Habitat

The draft recovery plans for the subbasins identify that the reduced availability and quality of instream habitat, lack of large wood, low pool frequency, and reduced wetted width are primary limiting factors for the Imnaha River mainstem, Upper Grande Ronde River, Wallowa/Lostine River, Wenaha River, Catherine Creek, and Lookingglass Creek spring/summer Chinook salmon populations (Huntington 1994; GRMW 1995; Nez Perce Tribe 1999; USFS 2002; NPCC 2004; ODEQ 2006). Returning adults use pools and backwater habitat for holding/resting during migration, while habitat diversity, such as large wood, is an important feature for rearing habitat.

Habitat complexity issues primarily are a result of channel modifications, reduced wetted widths, and a lack of pools and large woody debris. Roads parallel many of the streams used by spring Chinook salmon in the action area impairing instream habitat. The Wallowa-Union railroad line runs from Elgin to Joseph and parallels the Wallowa River, and Oregon State Highway 82 parallels the Wallowa River for most of its length from Minam to Wallowa Lake. Other reaches have been channelized to accommodate road construction, residential development, and irrigated agriculture; many of these streams have water diversions, e.g., channel-spanning weirs and other impediments to fish passage. Past removal of beavers and large wood from stream channels contributed to poor quality and reduced frequency of pools throughout the subbasins in the action area.

The lower 30 miles of the Minam River still show the effects of loss of habitat diversity, channelization, and large woody debris from splash dam log transportation that occurred over 80 years ago. A splash dam was constructed at “Big Burn” (river mile 30) in 1918 and was used until 1924. The river continues to have a high width-to-depth ratio and lacks habitat complexity. The lowest 10 miles of the Minam River watershed (approximately 15,795 acres) are in private ownership, where it has been affected by roads and livestock grazing (Wallowa County-Nez Perce Tribe 1999). In Lookingglass Creek, the instream habitat limiting factors primarily affect spring Chinook salmon by reducing spawning, rearing, and migration potential. In Catherine Creek, reduced habitat complexity is primarily due to reduced wetted stream widths, and a lack of pools and large woody debris, while some streams have push-up dams or other impediments to fish passage (Huntington 1994; GRMW 1995; NPCC 2004). Habitat conditions in the Wenaha subbasin have had few impacts from human activities, and there are no ongoing land-use activities other than dispersed recreation. Habitat conditions are generally good and unlikely to change (NPCC 2004).

The limiting factors listed above can be primarily attributed to naturally occurring conditions, which are due to the river's large size and natural riffle-dominated character (Huntington 1994). Habitat effects caused by historical splash damming are reported to persist in many portions of the Upper Grande Ronde drainage (e.g., Meadow Creek, McCoy Creek, and Rock Creek and the mainstem of the Grande Ronde River above La Grande) (Huntington 1994; NPCC 2004; USFS 2004). Where used, these splash dams caused scouring that, in turn, caused substantial reduction in spawning gravel, pool habitat, in-channel structure, and increased width-to-depth ratios (NPCC 2004; USFS 2004). Spawning habitat has been lost in the upper reaches above Starkey due to gold dredging impacts (McIntosh et al. 1994). McIntosh (1994) compare historical and current stream habitat conditions in the Upper Grande Ronde River Basin from the Grande Ronde River valley upstream to the headwaters, showing a 66 percent mean decrease in pool frequency in managed (non-wilderness) watersheds from 1934 to 1992. Additionally, substrate composition shifted towards finer substrates and habitat diversity decreased. Habitat diversity and quantity issues primarily are due to reduced wetted widths and a lack of pools and large woody debris (Huntington 1994; GRMW 1995; NPCC 2004).

3.5 Wildlife

The diverse habitats in the Imnaha River and Grande Ronde River subbasins support a spectrum of terrestrial organisms including neo-tropical birds, small mammals, fur bearers, and larger mammals including beaver, whitetail and mule deer, elk, wolverine, and black bears. Approximately 381 wildlife species occupy the Hells Canyon National Recreation Area (USFS 1998). Some of these species may feed minimally during limited times of the year on juvenile salmonids after emergence (or release in the case of hatchery-origin juveniles) or on decomposing carcasses of spawned adult salmonids.

Within the action area, fish are an important part of the diets of a variety of wildlife species including giant salamander, common loon, grebes, American white pelican, double-crested cormorant, herons, turkey vulture, harlequin duck, common and Barrow's goldeneye, common and red-breasted merganser, osprey, bald eagle, golden eagle, gulls, terns, belted kingfisher, Steller's jay, black-billed magpie, American crow, common raven, and American dipper. Mammals that consume salmon include Virginia opossum, water shrew, coyote, black bear, raccoon, mink, northern river otter, and bobcat. During salmonid freshwater rearing, these wildlife species may consume salmonid eggs, juveniles, adults, and carcasses.

Wildlife habitats within the Snake River Basin consist primarily of riparian/floodplain, shrub steppe, and agricultural lands. Other important habitats include forest lands and transitional steppe areas near the mountains and foothills (SRSRB 2006). The riparian/floodplain habitat lies along the Snake River and its tributaries. The shrub steppe and agricultural habitats encompass the uplands and comprise agricultural croplands, rangeland, and undeveloped areas. Areas of healthy riparian vegetation in the lower elevations are important to wildlife because they provide refuge and habitat (SRSRB 2006). The majority of wildlife is found in riparian, forest, and transitional steppe habitats where food and refuge are plentiful. Deer and elk are often found in agricultural fields.

Riparian zones are important habitats for a variety of wildlife species (SRSRB 2006). Some species are dependent upon riparian zones and some use the areas only for specific life stages. For example, black-crowned night herons and great blue herons use riparian areas for nesting. Furbearers, such as mink, muskrat, and beaver, are found along rivers and streams in riparian zones. Deer often use riparian zones to have their fawns. Neo-tropical birds use riparian zones as they migrate back and forth from Central and South America. And scavengers eat salmon carcasses in the riparian zone.

Invasive species infestations impacting salmon and habitat are currently limited to invasive fish and plant species within the action area. Existing boat traffic, recreation activities, and wading in the streams pose risks as vectors of introduction of new invasive species, like the New Zealand mud snail and the zebra mussel.

3.6 Listed Plants

ESA-listed plants in the action area include Spalding's catchfly (Silene spaldingii), Howell's spectacular thelypody (Thelypodium howellii ssp. spectabilis), and MacFarlane's four o'clock (Mirabilis macfarlanei), all three listed as threatened under the ESA.

Spalding's catchfly is an herbaceous perennial plant in the pink family (Caryophyllaceae) (USFWS 2007). It is a regional endemic found predominantly in bunchgrass grasslands and sagebrush-steppe, and occasionally in open pine communities, in eastern Washington, northeastern Oregon, west-central Idaho, western Montana, and barely extending into British Columbia, Canada (USFWS 2007). There are currently 99 known populations of S. spaldingii, with two-thirds of these (66 populations) composed of fewer than 100 individuals each. There are an additional 23 populations with at least 100 or more individuals apiece, and the 10 largest populations are each made up of more than 500 plants (USFWS 2007). Occupied habitat includes five physiographic (physical geographic) regions: the Palouse Grasslands in west-central Idaho and southeastern Washington; the Channeled Scablands in eastern Washington; the Blue Mountain Basins in northeastern Oregon; the Canyon Grasslands of the Snake River and its tributaries in Idaho, Oregon, and Washington; and the Intermontane Valleys of northwestern Montana. Spalding's catchfly was listed as a threatened species under the ESA on October 10, 2001 (USFWS 2001). No critical habitat has been designated for this species (USFWS 2010a). A recovery plan was finalized by the U.S. Fish and Wildlife Service (USFWS) in September 2007 (USFWS 2007).

Howell's spectacular thelypody (Thelypodium howellii ssp. spectabilis) was listed as a threatened species on June 25, 1999 (64 FR 28393). This taxon is endemic to the Baker-Powder River Valley in eastern Oregon. It is currently found in five populations in Baker and Union Counties, Oregon. It formerly also occurred in the Willow Creek Valley in Malheur County. Howell's thelypody is a herbaceous biennial that occurs in mesic, alkaline habitats in the Baker- Powder River Valley region in northeast Oregon. Sites range from approximately 3,000 feet (1,000 meters) to 3,500 feet (1,100 meters) in elevation. The thelypody is threatened by a variety of factors including habitat destruction and fragmentation from agricultural and urban development, seasonal grazing by domestic livestock, competition from non-native vegetation, and alterations of wetland hydrology.

At least five stable or increasing thelypody populations are distributed throughout its extant or historical range. All five populations are located on permanently protected sites. Permanently protected sites are either owned by a State or Federal agency or a private conservation organization, or protected by a permanent conservation easement that commits present and future landowners to the conservation of the species. No critical habitat has been designated for this species (USFWS 2010). A recovery plan was finalized by the USFWS in June 2002 (USFWS 2002).

MacFarlane's four-o'clock (Mirabilis macfarlanei) is a perennial plant with a deep-seated, thick tap-root and bright magenta flowers. The flowers form in clumps of four to seven, and each flower is up to 1 inch long and 1 inch wide. This species typically blooms in May to mid-June. Based on limited monitoring conducted by the U.S. Bureau of Land Management, individual plants have been observed to live well over 20 years. MacFarlane's four-o'clock occurs in steep river canyon grassland habitats that are characterized by regionally warm and dry conditions. In these habitats, less than 12 inches of precipitation occurs annually, mostly as rain during winter and spring. Thirteen populations of MacFarlane's four-o'clock are currently known. Three of these populations are found in the Snake River Canyon area (Idaho County, Idaho, and Wallowa County, Oregon), seven in the Salmon River area (Idaho County, Idaho), and three in the Imnaha River area (Wallowa County, Oregon). The total geographic range of the species is an area of approximately 29 by 18 miles. No critical habitat has been designated for this species (USFWS 2010). A recovery plan was finalized by the USFWS in June 2000 (USFWS 2002).

3.7 Socioeconomics

~~Prior to contact with European settlers, native peoples harvested fish from the Snake and Columbia Rivers and hunted elk, deer, bear, and waterfowl.~~ Salmon are culturally, economically, and symbolically important to the Pacific Northwest. Historically, natural resources have been the mainstay of the economies of the Native Americans in the Columbia Basin. Salmon were an important aspect of the cultural life and subsistence of the Indian tribes that occupied the Columbia Basin. Hunting, fishing, and gathering have been important to tribes for thousands of years. These activities continue to be important today, both economically and for subsistence and ceremonial purposes[3].

The early history of non-Indian use of fishery resources in the Columbia River Basin is described in Craig and Hacker (1940). Due to the importance of recreational fisheries, the USFWS and NMFS jointly issued the “The Policy for Conserving Species Listed or Proposed for Listing Under the Endangered Species Act While Providing and Enhancing Recreational Fisheries Opportunities” on June 3, 1996 (61 FR 27978),which was issued pursuant to the Presidential Executive order 12962, issued on June 7, 1995. That order requires Federal agencies, to the extent permitted by law, and where practical and in cooperation with States and the tribes, to improve the quality, function, sustainable productivity, and distribution of aquatic resources for increased recreational fishing opportunity. Among other actions, the order requires all Federal agencies to aggressively

[3] See also U.S. Department of the Interior, Secretarial Order No. 3206 (1997).

work to promote compatibility and reduce conflict between administration of the ESA and recreational fisheries.

Portions of three counties, Union and Wallowa Counties in Oregon and Asotin County in Washington, are found within the Grande Ronde and Imnaha Rivers subbasins. Table 4 demonstrates that the populations of all three counties are predominately white; all three counties have relatively small Hispanic and Native American populations (U.S. Census Bureau 2006).

Table 4. Demographic information regarding counties in the action area (U.S. Census Bureau 2006).

County	Population (2005)	Percent Hispanic Origin (%)	Percent Native American (%)
Asotin	21,247	2.5	1.3
Wallowa	6,875	2.1	0.8
Union	24,345	3.3	1.0

The median income in these three counties is substantially lower than the median income for the state. The 2003 median income in Asotin County was $35.672, Union County's was $37,069, and Wallowa County's was $34,769; the statewide median income was $48,438 in Washington and $42,568 in Oregon (U.S. Census Bureau 2006). The statewide average of people below the poverty line in Washington was 11.6 percent and 12.9 in Oregon, whereas in Asotin County it was 15.4 percent, in Union County it was 13.8 percent, and in Wallowa County it was 12.6 percent (U.S. Census Bureau 2006).

The fish that escape the ocean and Columbia River fisheries are targeted in tribal fisheries as well as retained in recreational fisheries in the action area. Tribal fisheries occur within the action area, using traditional fishing equipment created by local tribal craftsman. Fish caught in the tribal fisheries may be for ceremonial, subsistence, or commercial purposes. It is difficult or impossible to monetize these purposes to tribal people. The availability of local fish reduces tribal reliance on other consumer goods, or travel costs to participate in other fisheries. In 2012, the tribes harvested about 887 spring/summer Chinook salmon within the action area. It is difficult to place a monetary value on the tribal catch because many of the fish are used as a primary food source for which there may not be a substitute. The harvest of adult Chinook salmon is expected to have a monetary benefit for tribal members and their families by providing a local, traditional food source as well as supporting local craftsmen who make traditional fishing gear for harvest. The sale of some harvested fish also brings in revenue for tribal members and their families.

3.7.1 Tourism and Recreation

There are recreational activities that are specifically related to spring/summer Chinook salmon fisheries within the Imnaha and Grande Ronde River watersheds, in addition to

fishing, including: hunting; river rafting and kayaking; hiking and camping; firewood, berry, and mushroom gathering; trail riding on horses, mountain bikes, and off-road vehicles; and non-consumptive observation of wildlife and scenery (Runyan 2009).

The economic impacts and effort of freshwater recreational fisheries statewide may be found in Runyan (2009). In 2008, nearly 2.8 million Oregon residents and nonresidents participated in fishing, hunting, wildlife viewing, and shellfish harvesting in Oregon. Of the total number of participants, 631 thousand fished, 282 thousand hunted, 175 thousand harvested shellfish, and 1.7 million participated in outdoor recreation where wildlife viewing was a planned activity. In 2008, state residents and nonresidents made three distinct types of fish and wildlife recreation expenditures: (a) travel, (b) local recreation (less than 50 miles from home), and (c) equipment purchases (includes boats and recreation vehicles). When all three categories are combined, fish and wildlife recreation resulted in expenditures of $2.5 billion in 2008. Oregon residents and nonresidents who traveled overnight and on day trips of 50 or more miles from home (one-way) made travel-generated expenditures of $862 million (Runyan 2009).

Local recreation expenditures of $147 million were made by Oregon residents while participating in these activities less than 50 miles from home. State residents and nonresidents also spent an additional $1.5 billion on specialty equipment and other activity-related purchases from retail establishments and suppliers based in Oregon. During 2008, travel-generated expenditures accounted for over $100 million in four of Oregon's travel regions (North Coast, Central Coast, Central, and Eastern). In all nine travel regions, travel-generated expenditures for wildlife viewing and fishing were particularly notable. While travel-generated expenditures for hunting occurred in each of the nine travel regions of the state, spending in the Eastern, Southern, and Willamette Valley travel regions accounted for nearly two-thirds of the total.

Local recreation expenditures occurred most notably in travel regions with large urban-centered populations (Willamette Valley, Portland Metro/Columbia, and Southern), with fishing, hunting, and wildlife viewing representing the bulk of all local recreation expenditures made throughout the state. Table 5 shows detailed expenditures by county in the action area (Runyan 2009).

In 2008, the economic impact directly associated with freshwater fishing in the action area was over $12,000,000 (Runyan 2009). Other sources indicate that angler days for catching Chinook salmon in the 2001 Lookingglass Creek fishery were estimated to be 2,387 angler/days to catch 741 adults – 84 were natural-origin and the rest were hatchery-origin (Keniry 2004). While the 2,387 angler days in 2001 only represent a direct expenditure of $150,381, $250,635 in economic output, or $64,449 in worker earnings, similar outcomes with an average of 29 days of fishing per catch of natural-origin adult may be expected for the four other fisheries. This could be an important contribution to economic activity for the communities in Northeast Oregon, especially when natural-origin adult abundance levels increase for each population. Tribal fishers are generally fewer in number and more effective than recreational anglers, and therefore spend fewer days fishing. However, although the economic contribution of the tribal fishery is likely

smaller than the non-tribal recreational fishery, fuel, food, and equipment purchases occur at local retail vendors.

Table 5. Expenditures by activity by county, 2008 (in thousands of dollars).

County	Freshwater Fishing ($)	Hunting ($)	Wildlife Viewing ($)
Travel			
Baker	5,670	4,524	8,259
Union	1,729	5,435	4,318
Wallowa	2,821	2,771	5,171
Subtotal	10,220	12,730	17,748
Local Recreation			
Baker	640	491	317
Union	700	596	170
Wallowa	567	217	115
Subtotal	1,907	1,304	602
TOTAL	**$12,127**	**$14,034**	**$18,350**

The cost of being able to fish legally in Oregon in 2006 for resident anglers is shown in ODFW (2008). The maximum cost to participate in the salmon or steelhead fishery would occur if a person bought an annual license and adult tag (for salmon and steelhead) for $58.25, which allows the person to fish in all Oregon rivers and lakes (Table 6). The costs of fishing gear and tackle generally exceed the costs of the fishing license. Recreational anglers buy fishing licenses, which support fishery management and law enforcement activities. Anglers also pay a Federal excise tax on fishing gear which is returned to the states to support fisheries research, development, and public information actions (ODFW 2008).

No public opinion sampling has been formally conducted with regard to the Imnaha River and Grande Ronde River subbasin salmon fisheries, but several hundred anglers and tribal fishers have participated in the fishery each year. In addition, there are employment opportunities in the sector that supports such tourism and recreational services or the government sector that employs recreational fishery-related staff.

Table 6. Oregon resident annual costs for licenses in 2006 (ODFW 2006a).

Age Class	Annual Angling License ($)	Cost of Combined Angling License ($)	Cost of Hatchery Harvest (tag) ($)	Total Cost to Participate In Proposed Fishery ($)
Adult (Resident: 18 and older) license	24.75	21.50	12.00	58.25
Adult (Non-Resident: 18 and older) license	61.50	21.50	12.00	95.00
Juvenile (14 to 17 years of age)	6.75	6.00	12.00	24.75

3.8 Environmental Justice

This section was prepared in compliance with Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898), dated February 11, 1994, and Title VI of the Civil Rights Act of 1964.

Executive Order 12898 (59 FR 7629) states that Federal agencies shall identify and address, as appropriate "…disproportionately high and adverse human health or environmental effects of [their] programs, policies and activities on minority populations and low-income populations…." While there are many economic, social, and cultural elements that influence the viability and location of such populations and their communities, certainly the development, implementation and enforcement of environmental laws, regulations and policies can have impacts. Therefore, Federal agencies, including NMFS, must ensure fair treatment, equal protection, and meaningful involvement for minority populations and low-income populations as they develop and apply the laws under their jurisdiction.

Both EO 12898 and Title VI address persons belonging to the following target populations:

- Minority – all people of the following origins: Black, Asian, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander, and Hispanic[4]
- Low income – persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

[4] Hispanic is an ethnic and cultural identity and is not the same as race.

Definitions of minority and low income areas were established on the basis of the Council on Environmental Quality's (CEQ's) *Environmental Justice Guidance Under the Environmental Policy Act* of December 10, 1997. CEQ's *Guidance* states that "minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent or (b) the population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis." The CEQ further adds that "The selection of the appropriate unit of geographical analysis may be a governing body's jurisdiction, a neighborhood, a census tract, or other similar unit that is chosen so as not to artificially dilute or inflate the affected minority population."

The CEQ guidelines do not specifically state the percentage considered meaningful in the case of low income populations. For this study, the assumptions set forth in the CEQ guidelines for identifying and evaluating impacts on minority populations are used to identify and evaluate impacts on low income populations. More specifically, potential environmental justice impacts are assumed to occur in an area if the percentage of minority, Hispanic, and low income populations are meaningfully greater than the percentage of minority, Hispanic, and low income populations in the general population.

In the action area, there are minority and low-income populations to which this Executive Order could apply. For analytical purposes, this EA assumes that the tribes potentially affected, given the TRMPs submitted for this area, are the SBT, CTUIR, and NPT (See footnote 2). ~~The tribes affected are the SBT, CTUIR, and the Nez Perce Tribe.~~ The U.S. Census Bureau reported the race composition of Northeast Oregon residents in 2006 (U.S. Census Bureau 2006) to be 94-98 percent White, 1-3 percent Hispanic, 0-1 percent Asian, 0-1 percent Black or African American, and 1-2 percent Native American (U.S. Census Bureau 2006). The composition of the angling public in Oregon (as reported in the 2001 survey, USDOI et al. 2001) reflect participation by minorities proportional to race composition in Northeast Oregon, with whites accounting for 96 percent of the participants in Oregon. However, it is believed that all ethnic groups do engage in recreational fishing, and the TRMPs ~~are~~ specifically ~~designed to allow~~ describe harvest by tribal members.

THE FOLLOWING TEXT HAS BEEN ADDEDD TO THE SUPPLEMENTAL EA AND WAS NOT INCLUDED IN THE DRAFT EA

3.9 Cultural Resources

Impacts on cultural resources typically occur when an action disrupts or destroys cultural artifacts, disrupts cultural use of natural resources, or would disrupt cultural practices. Within the action area, it is possible that some cultural artifacts are present around fishing areas because of the historical use of these areas by local tribes.

The early history of non-Indian use of fishery resources in the Columbia River Basin is described in Craig and Hacker (1940). Prior to contact with European settlers, native

peoples harvested fish from the Snake and Columbia Rivers and hunted elk, deer, bear, and waterfowl. Salmon are culturally, economically, and symbolically important to the Pacific Northwest. Historically, natural resources have been the mainstay of the economies of the Native Americans in the Columbia Basin. Salmon were an important aspect of the cultural life and subsistence of the Indian tribes that occupied the Columbia Basin. Hunting, fishing, and gathering have been important to tribes for thousands of years. These activities continue to be important today for commercial, subsistence and ceremonial purposes[5].

Within the action area, natural fish resources are used for ceremonial, subsistence and commercial purposes. Salmon are critically important for cultural practices, as a food source, and for the tribal economy. This includes using traditional fishing equipment created by local tribal craftsmen. Fisheries in the larger tributaries are implemented by both states and tribes, but shift primarily to tribal fisheries in upstream, small tributaries. Tribal fisheries in the action area primarily target spring/summer Chinook salmon.

END OF NEW TEXT

4.0 ENVIRONMENTAL CONSEQUENCES

This section of the assessment evaluates the potential effects of the alternatives (including the Proposed Action) on the biological, physical, and human environments described in Chapter 3, Affected Environment. No other resources of the environment were identified that could potentially be impacted by or benefit from any of the alternatives.

4.1 Effects on Water Quality

4.1.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Fisheries proposed in the FMEPs and TRMPs would not be implemented under the No-action Alternative. The absence of fisheries under the No-action Alternative would not affect water temperature, in-stream flows, and contaminants levels, identified as limiting factors in Subsection 3.1, Water Quality, because there is no relationship between fishing activity and fluctuation of these water quality parameters.

The absence of fisheries under the No-action Alternative would be beneficial to water quality with respect to the amount of marine-derived nutrients delivered to the ecosystem by Chinook salmon that would die near the spawning grounds, before or after spawning, instead of being caught in the proposed fisheries. A small increase in marine-derived nutrients delivered to the ecosystem would be the only logical positive effect of the No-action Alternative on water quality. However, it is not certain if this small gain would yield measurable beneficial effects given habitat changes that have already occurred, and that may continue to occur, due to beaver trapping, logging, irrigation, grazing, pollution,

[5] See also U.S. Department of the Interior, Secretarial Order No. 3206 (1997).

dams, urban and industrial development in the action area (Subsection 3.1, Water Quality); for example, the reduction in large woody debris as a result of past logging practices would be expected to decrease the retention of salmon carcasses in the watershed. It is likely that the amount of marine-derived nutrients under the No-action Alternative would remain primarily a function of other factors in the action area, since the lack of fishing would not substantially impact the growth of riparian forests as described by Helfield and Naiman (2001) either beneficially or adversely. The functional and quantitative relationships between carcass density and productivity of salmonid rearing habitat are poorly understood and difficult to generalize (Quinn and Peterson 1996); therefore, it is difficult to estimate these relationships under the No-action Alternative. Note that ~~most~~ many hatchery-origin fish, which are the primary target of the proposed ~~fishery~~ fisheries, would be removed at hatchery weirs and not allowed to spawn in the wild under the No-action Alternative. Therefore, the No-action Alternative would not result in a substantial number of hatchery fish contributing to marine-derived nutrients to the ecosystem, and so would not result in a substantial increase in the total number of salmonids reaching the ecosystem.

There would be no other measurable effects on water quality from the No-action Alternative.

4.1.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this document assumes that the ~~The~~ Proposed Action Alternative would result in the ~~implementation~~ level of fisheries impacts as described in the FMEPs and TRMPs (See footnote 2). Compared to the No-action Alternative, the implementation of fisheries under the Proposed Action Alternative would not result in changes to water temperature, instream flows, and contaminants levels because there is no relationship between fishing activity and these water quality parameters. Compared to the No-action Alternative, the implementation of fisheries under the Proposed Action Alternative would result in the removal of a small percentage of Chinook salmon returning to the tributaries in the action area each year, relative to the expected tributary-specific returns, that would otherwise die in the streams after spawning as under the No-action Alternative (Table 2). ~~Most~~ Many of the hatchery-origin fish that would reach the hatchery weirs under either alternative would be removed and would not substantially contribute nutrients to the system regardless of alternative. Therefore, the Proposed Action Alternative would have only a small adverse effect on water quality compared to the No-action Alternative, and result in only a small loss in the amount of marine-derived nutrients delivered to the ecosystem by natural-origin fish that would die as a result of fisheries instead of dying after spawning.

The decrease in the amount of marine-derived nutrients under the Proposed Action Alternative compared to the No-action Alternative would be very small. It is probable that the potential small reduction in marine-derived nutrients would not be sufficiently different from the No-action Alternative to result in differences in the growth of riparian forests due to transfer of dissolved nutrients from decomposing carcasses into shallow

subsurface flow paths and the dissemination in feces, urine, and partially-eaten carcasses by bears and other salmon-eating fauna. However, it is not certain if this small reduction would yield measurable negative effects given habitat changes that have already occurred, and that may continue to occur, due to beaver trapping, logging, irrigation, grazing, pollution, dams, urban and industrial development in the action area (Subsection 3.1, Water Quality); for example, the reduction in large woody debris as a result of past logging practices would be expected to also decrease the retention of salmon carcasses in the watershed. It is likely that the amount of marine-derived nutrients under the Proposed Action Alternative would remain primarily a function of other factors in the action area, since proposed fisheries would not substantially impact the growth of riparian forests as described by Helfield and Naiman (2001) either beneficially or adversely. The functional and quantitative relationships between carcass density and productivity of salmonid rearing habitat are poorly understood and difficult to generalize (Quinn and Peterson 1996); therefore, as under No-action conditions, the degree of effect is difficult to estimate under the Proposed Action, but is anticipated to be minor.

There would be no other measurable effects on water quality from the Proposed Action Alternative.

4.2 Effects on Anadromous Fish Listed Under the ESA

4.2.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Even if the level of fishery impacts ~~fisheries~~ proposed in the FMEPs and TRMPs have been ongoing in recent years, for the purpose of analysis in this EA, it is assumed that these would not be implemented under the No-action Alternative. The absence of fisheries in the action area under the No-action Alternative would result in an improvement in the status and trends of the Snake River spring/summer Chinook salmon ESU described in Subsection 3.2, Anadromous Fish Listed under the ESA, in any given year proportional to the year-specific expected take as per Table 2. No fishing under the No-action Alternative would only preclude the harvesting of about two fish for the Snake River steelhead DPS described in Subsection 3.2, Anadromous Fish Listed under the ESA, in any given year, and thus the effects of the No-action Alternative on the ESU would be negligible.

With respect to Chinook salmon, the No-action Alternative would only affect the Imnaha/Grande Ronde MPG of the spring/summer Chinook salmon ESU. The maximum take (harvest or indirect mortality) of natural-origin Snake River spring/summer Chinook salmon by population in this MPG is presented in Table 3. The annual abundance under the No-action Alternative could increase from 1 to 9.2 percent of a population in any given year as a result of the No-action Alternative, given that the expected run-sizes for the affected spring/summer Chinook salmon populations in the foreseeable future are at or below the Minimum Abundance Thresholds (MAT) for most populations in the MPG. The expected increase in the number of fish reaching the spawning grounds under the No-action Alternative would be small in the foreseeable future (Table 3).

The maximum current take (harvest or indirect mortality) of Snake River steelhead DPS would be negligible under the No-action Alternative. The Grande Ronde River MPG take would be expected to be zero, and Imnaha River MPG take would be expected to number no more than two mortalities per year. The expected increase or decrease in the abundance trends for the two steelhead MPGs under the No-action Alternative would be up to two fish in the foreseeable future.

The No-action Alternative would have no effect on limiting factors and threats to spring/summer Chinook salmon or steelhead other than harvest (including hydropower projects, predation, harvest, hatchery program effects, and tributary habitat, ocean conditions). Therefore, these limiting factors and threats would continue to affect listed fish in the action area (Section 5, Cumulative Effects). The No-action Alternative could only have minor, if at all measurable, positive effects on harvest as a limiting factor and threat because the No-action Alternative would only eliminate tributary harvest for these species. Mainstem harvest in the Columbia River, which represents the majority of harvest effects for these species, would continue under the No-action Alternative. The magnitude of the harvest that would not occur under the No-action Alternative is represented in Table 3.

The No-action Alternative would have no effect on critical habitat for Snake River spring/summer Chinook salmon or steelhead. Fisheries currently do not affect designated critical habitat for any ESA-listed species because most of the harvest-related activities occur from river banks. Gear and methods used would include hook-and-line, spear, hoop-net, and/or other traditional and contemporary methods. None of these gear types or methods affect the primary constituent elements of critical habitat. Regardless, under the No-action Alternative, no gear or fishing methods would be employed because there would be no fisheries, thus, further reducing any risk to critical habitat.

4.2.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). ~~Fisheries proposed in the FMEPs and TRMPs would be implemented under the Proposed Action Alternative.~~ However, the Proposed Action Alternative would not result in a decrease in the abundance of ESA-listed fish in any given year compared to those described in Subsection 3.2, Anadromous Fish Listed Under the ESA, because abundance trends described for the current Affected Environment for all affected ESA-listed fish species account for fishery-related past and ongoing incidental mortality at levels comparable to those proposed in the FMEPs and TRMPs. Therefore, the abundance trends for ESA-listed species described in Subsection 3.2.1, Snake River Spring/Summer Chinook Salmon ESU, and Subsection 3.2.2, Snake River Basin Steelhead DPS, would be only slightly lower than those expected under the No-action Alternative (the absence of fisheries). The year-specific number of ESA-listed spring/summer Chinook salmon that would not spawn in the wild as a result of the Proposed Action Alternative would be

equivalent to the expected harvest numbers assuming current abundance presented in Table 3.

As under the No-action Alternative, the maximum take (harvest or indirect mortality) of listed Snake River steelhead resulting from the implementation of the proposed fisheries in the FMEPs and TRMPs under the Proposed Action Alternative would be expected to be negligible for the Grande Ronde River MPG and would be estimated at a maximum of two fish for the Imnaha River MPG. Similar to the No-action Alterative, the effect on the population's status as a result of this possible small change in abundance for the steelhead MPGs under the Proposed Action Alternative would be up to two fish in the foreseeable future.

As under the No-action Alternative, the Proposed Action Alternative would have no effect on limiting factors and threats to spring/summer Chinook salmon or steelhead (including hydropower projects, predation, harvest, hatchery program effects, and tributary habitat, ocean conditions). Therefore, these limiting factors and threats would continue to affect listed fish in the action area (Section 5, Cumulative Effects). The Proposed Action Alternative would result in the continuing of status quo fisheries, in conjunction with mainstem Columbia River fisheries, which represents the majority of harvest for these fisheries, and thus would result in a slight decrease in abundance to what could be realized under the No-action Alternative. However, the proposed harvest levels under the Proposed Action Alternative are equivalent to current harvest levels in the action area, which are reflected in the summary of status and trends for spring/summer Chinook salmon and steelhead (Subsection 3.2.2.1, Status and Trends, and Subsection 3.2.2.2, Limiting Factors and Threats).

Unlike the No-action Alternative, fishing would occur under the Proposed Action Alternative, including the use of hook-and-line gear, spears, hoop-nets, and other traditional and contemporary methods. However, as described under the No-action Alternative, gear and methods employed would have no effect on critical habitat for Snake River spring/summer Chinook salmon or steelhead. No other activities related to fisheries under the Proposed Action Alternative would affect critical habitat because of the relatively minor or negligible effects on the physical environment from fishing.

4.3 Effects on Non-listed Fish

4.3.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Even though the fisheries impact levels ~~fisheries~~ proposed in the FMEPs and TRMPs have been ongoing in recent years, for the purpose of analysis in this EA, it is assumed that these would not be implemented under the No-action Alternative. The absence of fisheries in the action area under the No-action Alternative may result in an increase or a decrease in the abundance of non-listed fish, native and introduced, compared to current conditions. If non-listed fish are potentially harvested by ongoing fisheries, even if at very low levels, the absence of Chinook salmon fisheries under the No-action Alternative could

result in an increase in abundance for non-listed fish if environmental and ecological conditions are favorable for these species. However, fishing gear and methods currently used for Chinook salmon fisheries (hook-and-line gear, spears, hoop-nets, and other traditional and contemporary methods) are unlikely to result in the harvest of non-listed non-salmonid fish. If non-listed fish are prey for adult Chinook salmon, their abundance could decrease under the No-action Alternative given that a small number of more Chinook salmon would be present in the action area. However, adult Chinook salmon approaching the spawning grounds do not actively seek prey during this period of their life cycle. Therefore, the No-action Alternative may result in slightly positive or slightly negative effects on non-listed fish species, although it is more likely that effects on this resource would be minimal.

4.3.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). ~~The Proposed Action Alternative would result in the implementation of fisheries as described in the FMEPs and TRMPs.~~ Fisheries targeting spring/summer Chinook salmon under the Proposed Action Alternative would not result in additional effects on non-listed fish species, native and introduced, beyond that considered under the No-action Alternative because the methods and gears in these fisheries (hook-and-line gear, spears, hoop-nets, and other traditional and contemporary methods) would not likely result in the incidental catch of non-listed fish. If non-listed fish are potentially harvested by proposed fisheries, even if at very low levels, the Proposed Action Alternative could result in a slight decrease in abundance for non-listed fish. If non-listed fish are prey for adult Chinook salmon, their abundance could increase under the Proposed Action Alternative given that a small number of additional Chinook salmon would be removed from the action area. However, adult Chinook salmon approaching the spawning grounds do not actively seek prey during this period of their life cycle. Therefore, fisheries in the action area under the Proposed Action Alternative could likely result in a slightly negative or slightly positive, if at all measureable, biological or ecological effect on non-listed fish species compared to the No-action Alternative.

4.4 Effects on Instream Fish Habitat

4.4.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Ongoing fisheries and the use of fishing methods and gears (i.e., hook-and-line gear, spears, hoop-nets, and other traditional and contemporary methods) do not result in any potential interaction between tribal fishermen or anglers and channel morphology (such as lack of large wood, low pool frequency, and reduced wetted width); habitat diversity; geological conditions; flows; or spawning, rearing, and migration potential for anadromous and resident fish. Therefore, the absence of fisheries under the No-action

Alternative would have negligible effects on these components of instream fish habitat in the tributaries where the Proposed Action would occur.

Fishing activity itself is not a major contributing limiting factor in the action area. Effects on instream fish habitat from past and ongoing road and railroad construction, residential development, and irrigated agriculture, water diversions (channel-spanning weirs and other impediments to fish passage), splash dams, push-up dams, an livestock grazing on instream fish habitat would continue under the No-action Alternative because, while there would be no FMEP- or TRMP-related fishing, these activities would continue to occur. Similarly, the effects of the loss of habitat diversity, channelization, and large woody debris from splash dam log transportation that occurred over 80 years ago in the Minam River would continue under the No-action Alternative. The instream fish habitat limiting factors in Lookingglass Creek affecting spawning, rearing, and migration potential for Chinook salmon would continue under the No-action Alternative. Reduced wetted stream widths and a lack of pools and large woody debris in Catherine Creek would continue under the No-action Alternative as well. The good instream habitat conditions in the Wenaha subbasin would continue under the No-action Alternative; a lack of fishing activity would neither benefit nor adversely impact this subbasin habitat in any measurable manner.

The effects of past removal of beavers and large wood from stream channels that contributed to poor quality and reduced frequency of pools throughout the subbasins in the action area would continue under the No-action Alternative regardless of the lack of fishing activity. Additionally, the effects of other human activities on substrate composition would continue under the No-action Alternative. Therefore, in the absence of any of the proposed fisheries (No-action Alternative), there would be no effect on this resource because of ongoing effects from other sources and the immeasurable impact that fishing activities have on this resource. All other existing effects on instream fish habitat, such as historical splash-damming, land-use practices, erodible soils, and extremes of flow (Subsection 3.4, Instream Fish Habitat) would continue under the No-action Alternative, with continued negative effects.

4.4.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). Potential effects on instream fish habitat under the Proposed Action Alternative would be related to fishing activity and deployment of gear and fishing methods. However, methods and gear that would be used under the Proposed Action Alternative (hook-and-line gear, spears, hoop-nets, and other traditional and contemporary methods) would not alter channel morphology (such as lack of large woody debris, low pool frequency, width-to-depth ratio, and reduced wetted width), habitat diversity, geological conditions, flows, or spawning, rearing, and migration potential for anadromous and resident fish because these do not result in any interaction with these elements of instream fish habitat. Therefore, the proposed fisheries under the Proposed

Action Alternative would have negligible effects on these components of instream fish habitat. Furthermore, any potential effect of the Proposed Action Alternative on instream fish habitat compared to the No-action Alternative, however negligible, would be limited in duration and geographical scope as described in the FMEPs and TRMPs. Fisheries would occur only for a short period of time each year (limited by ESA impacts and available fish for harvest) and in a limited portion of the action areas (fishery access points).

As stated under the No-action Alternative, fishing activity itself is not a major contributing limiting factor in the action area. While fishing would occur under the Proposed Action Alternative, it would not measurably contribute to the ongoing effects of other, more impactive and cumulative effects on instream habitat. Similar to the No-action Alternative, the effects of past and ongoing road and railroad construction, residential development, and irrigated agriculture, water diversions (channel-spanning weirs and other impediments to fish passage), splash dams, push-up dams, livestock grazing, on instream fish habitat would continue under the Proposed Action Alternative but because they would occur in conjunction with FMEP- or TRMP-related fishing. The effects of the loss of habitat diversity, channelization, and large woody debris from splash dam log transportation that occurred over 80 years ago in the Minam River would continue under the Proposed Action Alternative, and the combined effect of these activities with the proposed fisheries would be similar to the No-action Alternative. The instream fish habitat limiting factors in Lookingglass Creek affecting spawning, rearing, and migration potential for Chinook salmon would continue under the Proposed Action Alternative with the same comparison to No-action Alternative effects. Similar to the No-action Alternative, the reduced wetted stream widths and a lack of pools and large woody debris in Catherine Creek would continue under the Proposed Action Alternative. The good instream fish habitat conditions in the Wenaha subbasin would continue under the Proposed Action Alternative, and like conditions under the No-action Alternative, there would be no measurable negative effect on instream fish habitat from fishing activity, which has little or no direct impact on instream conditions.

Similar to the No-action Alternative, the effects of past removal of beavers and large wood from stream channels that contributed to poor quality and reduced frequency of pools throughout the subbasins in the action area would continue under the Proposed Action Alternative. Additionally, the effects of other human activity on substrate composition would continue under the Proposed Action Alternative. Therefore, there are no differences in the effects on this resource under either alternative because of the ongoing effects from sources unrelated to the proposed fisheries and the immeasurable impact that fishing activities have on instream habitat. Similar to the No-action Alternative, all other existing effects on instream fish habitat, such as historical splash-damming, land-use practices, erodible soils, and extremes of flow (Subsection 3.4, Instream Fish Habitat) would continue under the Proposed Action Alternative, but fishing would not measurably contribute to their individual or cumulative effects on instream habitat.

4.5 Effects on Wildlife

4.5.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Because proposed fisheries would not be implemented under the No-action Alternative, there would be no fishery-related effects on the spectrum of wildlife species listed in Subsection 3.5, Wildlife. Likewise, the lack of fish harvest (fish removal from the system) under the No-action Alternative could result in a small increase of salmonids spawning in the wild given the recent abundance of natural-origin fish (Table 3), but given the expected harvest numbers and the large geography of the action area, the No-action Alternative would not measurably affect the diet of any affected wildlife species that consumes natural-origin salmonids, including those listed in Subsection 3.5, Wildlife. These wildlife species may consume salmonid eggs, juveniles, adults, and/or carcasses, and the No-action Alternative is not expected to substantially alter the number of anadromous fish spawning (Table 3) and thus its ~~affect~~ effect on the number of eggs, juveniles, adults, or carcasses that may be available for consumption in any given year would be minimal. Because ~~most~~ many hatchery-origin salmonids are intended for harvest and are normally removed at hatchery weirs and not allowed to spawn in the wild, the absence of fisheries under the No-action Alternative would not substantially increase the abundance of salmonids in the diet of wildlife species including those listed in Subsection 3.5, Wildlife.

Since no fishery would occur, there would be no associated human activities in wildlife habitat (riparian/floodplain, shrub steppe, and agricultural lands) within the action area. There would be no new construction of fishery access points, roads, permanent camping sites, or any long-lasting habitat alterations of any kind under this alternative. Therefore, the No-action Alternative would not result in any fishery-related alterations of wildlife habitat such as forest, shrub steppe, agricultural lands, floodplains, wetlands, uplands, or transitional steppes where food is abundant for many species in the action area (Subsection 3.5, Wildlife). Furthermore, there would be no effect on dredge spoil deposited in rivers and wetlands, reservoir impoundments, tailrace outfalls, riparian/floodplain, shrub steppe, and agricultural lands, which is a component of wildlife habitat in the action area, under either alternative because fishing or the lack of fishing would not alter or contribute to dredge spoil depositions. There would be a small reduction of localized disturbances along river banks under the No-action Alternative. However, this reduction in disturbances would be localized to fishing areas and would be temporary in nature. Hiking, camping, and other shore-based activities would continue under the No-action Alternative. Therefore, the beneficial effects on riparian zones that are important habitats for a variety of wildlife species would be small.

Under the No-action Alternative, there would be no effect on nesting and feeding habitats for birds in the action area because there would be no fishing activity affecting these habitats. The potential reduction in disturbance of wildlife and wildlife habitat in the action area by the absence of fishery activities would be mostly counteracted by the

continued presence of humans engaged in other practices, such as camping, hunting, or boating.

The No-action Alternative could have a slight beneficial effect on wildlife and its habitat by reducing the risks of introduction of new invasive species, like the New Zealand mud snail and the zebra mussel, by potential introduction vectors such as recreation activities, and by wading in the streams.

4.5.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). Because proposed fisheries would be implemented under the Proposed Action Alternative, the potential exists for fishery-related effects on the wildlife species that could be present in the action area listed in Subsection 3.5, Wildlife. Effects on wildlife under the Proposed Action Alternative would be related to effects on the diet of any affected wildlife species that consumes fish in the action area, including those listed in Subsection 3.5, Wildlife. Some of these wildlife species may consume salmonid eggs, juveniles, adults, and/or carcasses, and, in contrast to the No-action Alternative, the Proposed Action Alternative is expected to slightly reduce the number of natural-origin anadromous fish migrating past fisheries and spawning in tributaries in any given year based on the harvest rates indicated in Table 2. However, the number of natural-origin fish intercepted by fisheries would be small (Table 2), and therefore the number of salmonid eggs, juveniles, adults, and/or carcass losses in streams in any given year that may be available for wildlife in the action area would also be small. Hatchery-origin fish would not contribute substantially to the diet of wildlife (salmonid eggs, juveniles, adults, and/or carcasses) under either alternative because many of these would be removed either by the proposed fisheries or in weirs in the absence of fisheries. Therefore, the Proposed Action Alternative would have little if any measurable effect on wildlife species compared to the No-action Alternative.

Human activities in wildlife habitat within the action area would be somewhat higher under the Proposed Action Alternative than under the No-action Alternative. However, similar to the No-action Alternative, the Proposed Action Alternative would not result in any fishery-related alterations of wildlife habitat such as forest, shrub steppe, agricultural lands, uplands, or transitional steppes where food is abundant for many species in the action area (Subsection 3.5, Wildlife) because anglers would not use these areas in fishery-related activities. The only potential effects on wildlife or wildlife habitat under the Proposed Action Alternative are in riparian areas adjacent to the streams in which fisheries would be implemented. The effect of the Proposed Action Alternative on wildlife compared to the No-action Alternative would be related to the presence and activity of anglers in riparian areas. The overall effect is expected to be low when compared to current conditions as other stream-use activities, such as hiking and camping, would continue to occur in conjunction with fishing activities. No new trails or any form of construction would occur in riparian areas under the Proposed Action Alternative.

As under the No-action Alternative, there would be no new construction of fishery access points, roads, permanent camping sites, or any long lasting habitat alterations of any kind under the Proposed Action Alternative in any wildlife habitat area.

Under the Proposed Action Alternative, there may be a small effect on nesting and feeding habitats for waterfowl in the action area compared to the No-action Alternative because fishing activity in or around these types of habitats would occur. The potential small disturbance of wildlife and wildlife habitat in the action area under the Proposed Action Alternative would be additive to the continued presence of humans engaged in other practices, such as camping, hunting.

The Proposed Action Alternative could have a slight negative effect by increasing the risks of introduction of new invasive species, like the New Zealand mud snail and the zebra mussel, by potential introduction vectors such as recreation activities and wading in the streams. The potential small increase in the risks of introduction of new invasive species under the Proposed Action Alternative would be additive to the continued presence of humans engaged in other practices, such as camping and hunting.

4.6 Effects on ESA-listed Plants

4.6.1 Alternative 1 (No-action) - Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Under the No-action Alternative, there would not be any fishing activities in any listed plant habitat area such as bunchgrass grasslands, sagebrush-steppe, open pine communities, steep river canyon grassland habitats, or mesic, alkaline habitats in the Baker- Powder River Valley region in Northeast Oregon. Other activities taking place in any of these sensitive plant habitat areas within the action area would likely continue and would affect Spalding's catchfly, Howell's spectacular thelypody, and MacFarlane's four-o'clock. However, impacts on these species specifically by anglers would not occur under the No-action Alternative.

4.6.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). Unlike the No-action Alternative, effects on ESA-listed plants under the Proposed Action Alternative could occur as the result of encounters with ESA-listed plants by potential anglers. However, fishing activity considered under the Proposed Action Alternative would not occur in bunchgrass grasslands, sagebrush-steppe, open pine communities, steep river canyon grassland habitats, or mesic, alkaline habitats in the Baker- Powder River Valley region in Northeast Oregon. Therefore, there is little or no likelihood of anglers encountering listed plants or their habitats (Spalding's catchfly,

Howell's spectacular thelypody, and MacFarlane's four-o'clock) under the Proposed Action Alternative. Other activities taking place in any of these sensitive plant habitat areas within the action area would likely continue, but would not result from the Proposed Action, and so effects resulting from the Proposed Action on ESA-listed plants would be equivalent to those expected under the No-action Alternative.

4.7 Effects on Socioeconomics

4.7.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

The potential effects of the No-action Alternative on socioeconomics would be low to moderately adverse, because the lack of spring/summer Chinook salmon fishery opportunities would preclude Native Americans from engaging in practices that are culturally, economically, and symbolically important to the tribes (Subsection 3.7, Socioeconomics). The No-action Alternative would reduce the demand for traditional fishing equipment created by local tribal craftsman. Tribal fishing would likely occur outside of the action area resulting in an increase in travel costs to tribal members. In addition, the absence of fish would result in increased reliance on other consumer goods, which would cost more than the low cost of tribal fishing. About 887 spring/summer Chinook salmon would not be harvested within the action area.

Similarly, the potential effects of the No-action Alternative on non-tribal socioeconomics would be low to moderately adverse because the lack of spring/summer Chinook salmon fisheries would preclude recreational fishing opportunities for Oregon and Washington State residents. The No-action Alternative would result in a reduction of visitors to this area engaging in recreational opportunities. This reduction could also result in reduced expenditures for fishing and camping gear, gasoline and supply sales, food, and lodging. It is not clear what effect this reduced expenditure may have on the median income in the three counties in the action area (Union and Wallowa County in Oregon and Asotin County in Washington are found within the Grande Ronde and Imnaha River subbasins), but a reduction in activities that use locally owned or operated businesses would be expected to have an adverse impact on the incomes of persons employed by those businesses.

4.7.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this EA assumes that the Proposed Action Alternative would result in the level of fishery impacts as described in the FMEPs and TRMPs (See footnote 2). Unlike under the No-action Alternative, the Proposed Action Alternative would have low to moderate positive impacts on socioeconomics in the action area. Such benefits would be realized by ~~providing~~ ensuring fishing opportunities for Native Americans with ESA coverage, ~~allowing~~ so that tribal members can engage in practices that are culturally, economically, and symbolically important to the tribes. The Proposed

Action Alternative would also have low to moderate positive impact on non-tribal socioeconomics in the action area because it would provide important recreational fishing opportunities for Oregon and Washington State residents.

The Proposed Action Alternative would result in an increased number of visitors to the action area engaging in recreational opportunities compared to the No-action Alternative. This increase could also result in increased expenditures for fishing and camping gear, gasoline and supply sales, food, and lodging. It is not clear what effect this increased expenditures may have on the median income in the three counties in the action area (Union and Wallowa County in Oregon and Asotin County in Washington are found within the Grande Ronde and Imnaha rivers subbasins); it is likely that median incomes would generally remain similar to those described by recent years' statistics, and higher than under the No-action Alternative, since the fisheries considered under this alternative are similar to those taking place recently and when the 2006 economic data were collected (Subsection 3.7, Socioeconomics).

Under the Proposed Action Alternative, 887 spring/summer Chinook salmon would be harvested within the action area compared to no fishing under the No-action Alternative. The Proposed Action Alternative would, therefore, maintain the demand for traditional fishing equipment created by local tribal craftsman. Compared to the No-action Alternative, tribal fishing would continue to occur inside of the action area, thereby eliminating an increase in travel costs to tribal members to fish elsewhere.

In addition, the harvest of fish would result in decreased reliance on other consumer goods for tribal members compared to the No-action Alternative. Less reliance on other consumer goods to substitute for salmon would result in less economic cost to tribes than under the No-action Alternative.

4.7.3 Effects on Tourism and Recreation

4.7.3.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

The potential effects of the No-action Alternative on tourism and recreation would be low to moderately adverse, because, as mentioned in Subsection 4.7, Effects on Socioeconomics, the lack of spring/summer Chinook salmon fisheries opportunities could result in fewer visitors to the action area who both fish and hunt, and who may spend financial resources on other tourist attractions while visiting (Subsection 3.8, Environmental Justice). This lack of visitor tourism for recreational opportunities could then result in reduced community expenditures for licenses, fishing and camping gear, gasoline and supply sales, food, and lodging. However, other tourism and recreational activities in the action area (hunting; river rafting and kayaking; hiking and camping; firewood, berry, and mushroom gathering; trail riding on horses, mountain bikes, and off-road vehicles; and non-consumptive observation of wildlife and scenery) would still be available to residents and tribal members.

Runyan (2009) provides economic estimates for freshwater fisheries for the action area presented in Table 4. The potential reduction of direct expenditures by freshwater anglers under the No-action Alternative would be on the order of $12 million yearly (Subsection 3.7.1, Tourism and Recreation) compared to current conditions. However, economic benefits of other tourism and recreational activities (e.g. travel, local recreation, equipment purchases) in the action area would still be realized. The economic benefit of travel, local recreation, and equipment purchases would be reduced somewhat from the approximately $2.5 billion in 2008 under the No-action Alternative. Similarly, travel-generated expenditures on the order of $862 million could still occur under either alternative since overnight and day trips of 50 or more miles (one-way) from home could still occur under the No-action Alternative.

Travel expenditures would not be affected under either alternative in most Oregon travel regions because fishing is only a small part of tourism and recreational activities. There is no expected effect on travel expenditures in large urban centers under the No-action Alternative because fishing is a negligible component of travel expenditures there. There could be a reduction on revenue to support fishery management and law enforcement under No-action Alternative as a result of a reduction of fishing license purchases, but law enforcement may not be needed in the action area since spring/summer Chinook salmon fisheries would not occur. There could be a reduction in Federal tax to support fisheries research, development, and public information actions as a result of a reduction of purchases of on fishing gear under the No-action Alternative, but other fisheries in the State that are not affected by this alternative would continue to generate tax revenues.

Additional negative impacts could occur from the No-action Alternative in the employment sector that supports such tourism and recreational services or the government sector that employs recreational fishery-related staff. In years when natural-origin adult abundance numbers are expected to be high, there could be a negative impact on economic activity for the communities in northeast Oregon because no fishing would be allowed under the No-action Alternative; sectors of the economy that benefit from fishing opportunities would no longer have access to this opportunity.

No economic data are available for tribal fisheries in the action area. However, the No-action Alternative would also diminish the economic contribution of the tribal fishermen at local retail vendors.

The No-action Alternative could result in negative impacts in the employment sector that supports such tourism and recreational services or the government sector that employs recreational fishery-related staff.

4.7.3.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this document assumes that the Proposed Action Alternative would result in the level of fisheries impacts as described in the FMEPs and

TRMPs (See footnote 2). Unlike the No-action Alternative, the potential effects of the Proposed Action Alternative on tourism and recreation in the action area would be low to moderately beneficial. Such benefits would be realized by visitors supporting community expenditures for freshwater fisheries, including through purchase of recreational supplies such as fishing gear, license fees, camping equipment, consumables and fuel at local businesses, and lodging expenditures. This positive effect would also be combined with any positive effect realized by tribal fishing and fishing opportunities and related expenditures for other tourist attractions/activities in the action area (Subsection 3.7.1, Tourism and Recreation).

Runyan (2009) provides economic estimates for freshwater fisheries for the action area presented in (Table 4). The potential increase in direct expenditures by freshwater anglers under the Proposed Action Alternative would be on the order of $12 million yearly (Subsection 3.7.1, Tourism and Recreation) compared to the same expected decrease under the No-action Alternative. However, the economic benefits of other tourism and recreational activities (e.g., travel, local recreation, equipment purchases) in the action area would be realized under both alternatives. The economic benefit of travel, local recreation, and equipment purchases would remain at approximately $2.5 billion in 2008 under the Proposed Action Alternative, and would increase somewhat compared to the No-action Alternative. Travel-generated expenditures on the order of $862 million could still occur under either alternative since overnight and on day trips of 50 or more miles (one-way) from home could occur under both alternatives.

Travel expenditures would not be affected under either alternative in most Oregon travel regions because fishing is only a small part of tourism and recreational activities. There is no expected effect on travel expenditures in large urban centers under the Proposed Action Alternative compared to the No-action Alternative because fishing is a negligible component of travel expenditures there. The expected revenue to support fishery management and law enforcement would remain the same as current under the Proposed Action Alternative, and could slightly increase compared to the No-action Alternative as a result of a increase purchases of fishing license. The Federal tax to support fisheries research, development, and public information actions would remain as current under the Proposed Action Alternative, and could increase as a result of an increase of purchases of on fishing gear compared to the No-action Alternative, but the increase would not be substantial because other fisheries in the State that are not affected by either alternative and would generate tax revenues regardless of alternative.

Additional positive impacts could occur under the Proposed Action Alternative in the employment sector that supports such tourism and recreational services or the government sector that employs recreational fishery-related staff. The Proposed Action Alternative could have a positive impact on the important contribution to economic activity for the communities in Northeast Oregon that result from fishing activities, especially when natural-origin adult abundance levels increase for each population.

No economic data are available for tribal fisheries in the action area. However, the Proposed Action Alternative would augment the economic contribution of the tribal fishermen at local retail vendors compared to the No-action Alternative.

4.8 Effects on Environmental Justice

4.8.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

The lack of fishing opportunities under the No-action Alternative would not result in a disproportionate negative impact on any minority or low income population group because the negative economic effect would be realized by all groups (White, Hispanic, Asian, African American, and Native American) in the action area. Because the lack of fishing opportunities would negatively impact all tribal fisheries and the overall tourism and recreation-based economic and employment sector in the action area, all population sectors would be potentially impacted under the No-action Alternative.

4.8.2 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

For the purposes of this analysis, this document assumes that the Proposed Action Alternative would result in the level of fisheries impacts as described in the FMEPs and TRMPs (See footnote 2).The Proposed Action Alternative would not provide exclusive fishing opportunities to select portions of the population sector and would be made available to all groups. There are no data to suggest that any one population group enjoys a disproportionately greater benefit from fishing opportunities in the action area than any other group (e.g., has more ceremonial, subsistence, or employment opportunity over other groups). Because the fishing opportunities would positively benefit tribal communities, and the overall tourism and recreation-based economic and employment sector in the action area, all population sectors (White, Hispanic, Asian, African American, and Native American) would potentially benefit under the Proposed Action Alternative.

THE FOLLOWING TEXT HAS BEEN ADDEDD TO THE SUPPLEMENTAL EA AND WAS NOT INCLUDED IN THE DRAFT EA

4.9 Effects on Cultural Resources

4.9.1 Alternative 1 (No-action) – Not Approve the FMEPs, and Issue a Determination that the TRMPs would Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

There may be some cultural artifacts present in the action area (Subsection 3.9, Cultural Resources). The lack of fishing opportunities under the No-action Alternative could result in a decrease in impacts to cultural resources compared to current conditions because it is

possible that some cultural artifacts are present around fishing areas due to the historical use of these areas by local tribes. the No-action Alternative would not have any effects on the availability of natural resources such as elk, deer, bear, and waterfowl to native people because the lack of fishing activities would not affect these resources or preclude the tribes from hunting and gathering these natural resources. The No-action Alternative would have a low-to-moderate negative effect on the tribes engaging in fishing activities inside the action area, and the tribes would have to travel outside the action area to fish for salmon.

Most negative effects on cultural resources under the No-action Alternative would result from the absence of fisheries in the action area. Salmon are an important cultural resource to tribes within the action area as a local, fundamental food source, as well as for commercial, subsistence, and ceremonial purposes (Subsection 3.9, Cultural Resources), and no fishing in the action area would reduce harvest by tribes. Fisheries in the large tributaries are implemented by both states and tribes, but shift primarily to tribal fisheries in upstream, small tributaries. As a result, tribal fisheries in the action area primarily target spring/summer Chinook salmon (Subsection 3.9, Cultural Resources) in upstream tributaries. Therefore, the absence of fisheries in the action area would reduce the fish available for commercial, subsistence, and ceremonial purposes and would have a negative impact on tribes.

4.9.1 Alternative 2 (Proposed Action) – Approve the FMEPs, and Issue a Determination that the TRMPs would Not Appreciably Reduce the Likelihood of Survival and Recovery of the ESA-listed Species

Under Alternative 2, most effects on cultural resources would result from fishing in the action area relative to Alternative 1.

There may be some cultural artifacts present in the action area (Subsection 3.9, Cultural Resources). Fishing under the Proposed Action Alternative could result in small in impacts to cultural resources compared to the No-action Alternative if fishermen come into contact with cultural artifacts that are present around fishing areas, but the likelihood of contact is minimal. Similar to the No-action Alternative, the Proposed Action Alternative would not have effects on the availability of natural resources such as elk, deer, bear, and waterfowl to native. Compared to the No-action Alternative, the Proposed Action Alternative would have a low-to-moderate beneficial effect on tribes engaging in fishing activities inside the action area, as the tribes would not have to travel outside the action area to fish for salmon.

Most beneficial effects of the Proposed Action Alternative on cultural resources would result from fishing in the action area relative to the No-action Alternative. Salmon are an important cultural resource to tribes within the action area as a local, fundamental food source, as well as for commercial, subsistence, and ceremonial purposes (Subsection 3.9, Cultural Resources). Fisheries in the large tributaries are implemented by both states and tribes, but shift primarily to tribal fisheries in upstream, small tributaries. As a result, tribal fisheries in the action area primarily target spring/summer Chinook salmon (Subsection 3.9, Cultural Resources) in upstream tributaries. Therefore, fishing in the

action area under the Proposed Action Alternative would maintain the fish available for commercial, subsistence, and ceremonial purposes and would have a positive impact on tribes compared to the No-action Alternative.

END OF NEW TEXT

5.0 CUMULATIVE IMPACTS

5.1 Other Agency Programs, Plans, and Policies

Cumulative impacts of NMFS' Proposed Action Alternative (Alternative 2) under the 4(d) Rule and Tribal 4(d) Rule would be minor, if at all measurable. Other Federal, tribal, and state actions are expected to occur within the action area, in the Snake River Basin, in other Columbia River tributaries, and in the migration corridor between the Snake River and the Pacific Ocean that would affect the fish populations considered under the Proposed Action. State and tribal fisheries occur in Idaho, Oregon, and Washington portions of the Snake River Basin and in the mainstem Columbia River. Land management and water-use decisions that affect these populations are made inside and outside the Snake River Basin. There are overarching concerns and legal mandates for the recovery of listed salmon and steelhead populations in the Columbia River Basin; at the same time, there are social and cultural needs for sustainable fisheries and sustainable economic use of resources.

There are numerous initiatives by State, Federal, tribal, and private entities designed to restore salmon and steelhead populations, but it is not usually clear who or when those initiatives would be implemented, or how effective they would be. In part, this is due to the reduced effectiveness of individually and separately implemented actions at the local scale. An exception to this uncertainty, then, would come as a result of a more broad-scale implementation of different actions across larger portions of the watersheds – such a broad-scale approach exists in several scenarios currently playing out in the Columbia and Snake River basins. In large part, these actions are coordinated through or in association with Federal ESA recovery plans either already developed or currently in development by NMFS. These plans are intended to provide a framework by which Federal, state, local, tribal, and private actions can be designed and implemented in a manner that would most effectively restore salmon and steelhead populations. Federal actions for salmon recovery in the Columbia River Basin that are currently underway include initiatives by the Northwest Power and Conservation Council to mitigate impacts of the Federal Columbia River Power System. Council initiatives include development of subbasin plans in support of regional planning and recovery efforts. Additionally, NMFS and the USFWS are currently negotiating an ESA section 6 agreement for a state forestry program with Idaho Department of Lands that addresses listed fish species issues raised during the Snake River Basin Adjudication process. State initiatives include legislative measures to facilitate the recovery of listed species and their habitats, as well as the overall health of watersheds and ecosystems. Regional programs are being developed that designate priority watersheds and facilitate development of watershed Management Plans. All of these regional efforts are expected to help increase salmon and steelhead populations in the action area (and elsewhere in the region) because of compatible goals and objectives.

5.2 Conservation Management under the ESA

Fisheries that may impact listed salmon and steelhead within the action area are managed based on the impacts on ESA-listed fish that are returning to the Snake River. Because the allowable impacts on listed species are based on an abundance-based, sliding scale for allowable ESA impact in conjunction with a carefully managed conservation program, if other conservation measures are unsuccessful in returning fish to the area, fishery impacts would remain constrained. If the cumulative effects of other fisheries, pinniped predation on salmonids, ocean conditions, hydropower mortality or conservation efforts do not allow sufficient escapement of returning adult salmon to the action area to meet conservation needs while ~~providing for~~ ensuring the implementation of the proposed fisheries, fishing would be constrained according to the stipulations included in the proposed FMEPs and TRMPs. Similarly, hatchery-origin (i.e., non-ESA-listed fish) fish in the basin are managed for escapement goals; if the cumulative effects of other fisheries, pinniped predation on salmonids, ocean conditions, or hydropower mortality do not allow sufficient escapement to hatcheries in the action area, fishing would necessarily be constrained according to the stipulations included in the proposed FMEPs and TRMPs (ODFW 2011; ODFW ~~2011b~~ 2012; CTUIR ~~2011~~ 2012; SBT 2011; NPT 2012).

If the cumulative effects of salmon management efforts fail to provide harvestable fish, then impacts due to fishing in the action area would be substantially diminished. Therefore, the cumulative impacts of NMFS' current Proposed Action are expected to be minor because of reporting and monitoring requirements that would ensure compatibility with other conservation strategies. Conservative management of fishing opportunity is only one element of a large suite of regulations and environmental factors that may influence the overall health of listed salmon and steelhead populations and their habitat. The proposed fishing programs are coordinated with monitoring and adaptive management measures so that fishery managers can respond to changes in the status of affected listed species. Monitoring and adaptive management would help ensure that the affected ESU and DPS are adequately protected and would help counter-balance any potential adverse cumulative impacts. Healthy and self-sustaining Snake River salmon and steelhead populations would be an important component in long-term recovery of each of the affected species as a whole.

5.3 Climate Change

The action area – the Snake River Basin – is located in the Pacific Northwest. The climate is changing in the Pacific Northwest due to human activities, and this is affecting hydrologic patterns and water temperatures. Regionally averaged air temperature rose about 1.5°F over the past century (with some areas experiencing increases up to 4°F) and is projected to increase another 3°F to 10°F during this century. Increases in winter precipitation and decreases in summer precipitation are projected by many climate models, although these projections are less certain than those for temperature (USGCRP 2009).

Higher temperatures in the cool season (October through March) are likely to increase the percentage of precipitation falling as rain rather than snow, and to contribute to earlier snowmelt. The amount of snowpack measured on April 1, a key indicator of natural water storage available for the warm season, has already declined substantially throughout the region. The average decline in the Cascade Mountains, for example, was about 25 percent over the past 40 to 70 years, with most of this due to the 2.5°F increase in cool season temperatures over that period. Further declines in Northwest snowpack are likely due to additional warming this century, varying with latitude, elevation, and proximity to the coast. April 1 snowpack is likely to decline as much as 40 percent in the Cascades by the 2040s (USGCRP 2009).

High and base stream flows are likely to change with warming. Increasing winter rainfall is likely to increase winter flooding in relatively warm watersheds on the west side of the Cascade Mountains. Earlier snowmelt, and increased evaporation and water loss from vegetation, will increase stream flows during the warm season (April through September). On the western slopes of the Cascade Mountains, reductions in warm season runoff of 30 percent or more are likely by mid-century. In some sensitive watersheds, both increased flood risk in winter and increased drought risk in summer are likely due to warming of the climate (USGCRP 2009).

In areas where it snows, a warmer climate means major changes in the timing of runoff: increased stream flows during winter and early spring, and decreases in late spring, summer, and fall. Flow timing has shifted over the past 50 years, with the peak of spring runoff shifting from a few days earlier in some places to as much as 25 to 30 days earlier in others. This trend is likely to continue, with runoff shifting 20 to 40 days earlier within this century. Major shifts in the timing of runoff are not likely in areas dominated by rain rather than snow (ISAB 2007; USGCRP 2009).

Fish habitat changes due to climate change are likely to create a variety of challenges for ESA-listed species of fish. Higher winter stream flows can scour streambeds, damaging spawning redds and washing away incubating eggs (USGCRP 2009). Earlier peak stream flows could flush young salmon and steelhead from rivers to estuaries before they are physically mature enough for the transition, increasing a variety of stresses and the risk of predation (USGCRP 2009). Lower summer stream flows and warmer water temperatures will degrade summer rearing conditions in many parts of the Pacific Northwest for a variety of salmon and steelhead species (USGCRP 2009), and are likely to reduce the survival of steelhead fry in streams with incubation in early summer. Other likely effects include alterations to migration patterns, accelerated embryo development, premature emergence of fry, and increased competition and predation risk from warm-water, non-native species (ISAB2007). The increased prevalence and virulence of diseases and parasites that tend to tend to flourish in warmer water will further stress salmon and steelhead (USGCRP 2009). Overall, about one-third of the current habitat for the Pacific Northwest's coldwater fish may well no longer be suitable for them by the end of this century as key temperature thresholds are exceeded (USGCRP 2009).

Climate change is also likely to affect conditions in the Pacific Ocean. Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances (USGCRP 2009). It is likely that, as ocean conditions change, abundances of salmon and steelhead will continue to change accordingly, resulting in changes in abundance of adults returning to freshwater to spawn.

While climate change may well have impacts on the abundance and/or distribution of ESA-listed salmonids that are considered under the Proposed Action, the fishery management scheme described in the FMEPs and TRMPs is directly responsive to observed fish abundance, and so, as abundances change, fisheries would be adjusted accordingly.

6.0 AGENCIES CONSULTED

National Marine Fisheries Service
Oregon Department of Fish and Wildlife
Confederated Tribes of the Umatilla Indian Reservation
Shoshone-Bannock Tribes
Washington Department of Fish and Wildlife
Nez Perce Tribe

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8.0 Draft Environmental Assessment Response to Comments